

ગુજરાત યુનિવર્સિટી



ગુજરાત યુનિવર્સિટીની ઓરેમિક કાઉન્સિલની સભા રવિવાર, તા. ૪.૬.૧૯૭૨ના રોજ નીચેના મુદ્દાઓ પર ચર્ચા કરવામાં આવી હતી. સભામાં પ્રમુખસ્થાન કુલપતિશ્રી એસ. બી. પોરવાળાએ ભર્યું હતું. સભામાં હાજરી નીચે પ્રમાણે હતી :

ક્રમ	સભ્યનું નામ	તા. ૪.૬.૧૯૭૨
૧.	પ્રો. એસ. બી. વોરા, કુલપતિશ્રી	હાજર
૨.	પ્રો. કે. એસ. શાસ્ત્રી, ઉપકુલપતિશ્રી	હાજર
૩.	પ્રો. એન. એમ. પરીખ	ગેરહાજર
૪.	ડૉ. વા. કે. અન્નાવાલ	હાજર
૫.	પ્રિ. ડી. એમ. શીખ	હાજર
૬.	પ્રિ. બી. એમ. મોદી	હાજર
૭.	ડૉ. સી. એ. દેસાઈ	હાજર
૮.	પ્રિ. એચ. એમ. દેસાઈ	ગેરહાજર
૯.	પ્રો. વી. પી. ભારદ્વાજ	હાજર
૧૦.	પ્રો. એસ. ડી. ગુપ્તા	હાજર
૧૧.	પ્રો. આર. ડી. મુળિયા	હાજર
૧૨.	પ્રો. યુ. એમ. રાવલ	હાજર
૧૩.	ડૉ. એસ. આર. દવે	ગેરહાજર
૧૪.	ડૉ. સુમન જી. શાહ	હાજર
૧૫.	ડૉ. આલોક ગુપ્તા	હાજર
૧૬.	શ્રી એ. આર. શુક્લ	હાજર
૧૭.	પ્રો. વી. વી. પાઠક	હાજર
૧૮.	પ્રો. એન. એમ. અન્સારી	ગેરહાજર
૧૯.	પ્રો. વા. એસ. શાસ્ત્રી	ગેરહાજર
૨૦.	પ્રો. એન. એન. શાહ	ગેરહાજર
૨૧.	પ્રો. આર. જી. ભટ્ટ	ગેરહાજર
૨૨.	પ્રિ. એમ. એમ. દેસાઈ	હાજર
૨૩.	શ્રી બી. બી. જાની	હાજર
૨૪.	શ્રી એ. આર. શાહ	ગેરહાજર
૨૫.	પ્રિ. કે. જી. પટેલ	હાજર
૨૬.	શ્રી સી. પી. જોશી	ગેરહાજર
૨૭.	પ્રિ. આર. એચ. વ્યાસ	હાજર
૨૮.	પ્રો. જે. સી. ત્રિવેદી	હાજર
૨૯.	પ્રો. એ. એલ. પાઠક	હાજર
૩૦.	ડૉ. કેતન દેસાઈ	ગેરહાજર
૩૧.	શ્રી કે. જી. પરમાર	ગેરહાજર
૩૨.	ડૉ. આર. પી. મહેતા	હાજર
૩૩.	શ્રીમતી મીરાબહેન ડી. મેનન	હાજર
૩૪.	શ્રી બી. એન. મુદાગિયા	હાજર

૧. તા. ૨૫-૮-૧૯૯૮ના રોજ મણલ એકેડેમિક કાર્ડિનલની સભાની તૈયારી માટે કરતા બાબત તા. ૨૫-૮-૧૯૯૮ના રોજ મણલ એકેડેમિક કાર્ડિનલની સભામાં નામ નીચેના સભાના નામ મળે છે. આમાં આવી તથા તે પર પ્રમુખશ્રીએ સહી કરી.

“અભાની નોંધની બાબત કમલકે એમાં નીકળે. કમિટીની સભાની નોંધ ત્યાં, એ પે વચ્ચેના વિવાદનો બી.એ.એ.ની દોષે અરજી ચિત્રણમાંથી ચર્ચા મંજૂરી આપી નથી તેમ સંપાદકે જ્યે.”

૨. કુલપતિશ્રીએ મંજૂર કરેલાં નીચેનાં કાર્યો (જાણ સારું) :

[illegible]

(નોંધ.—ફર્સ્ટ બી.એસસી. અને સર્ક બી.એસસી. માટે સુધારાનો અભ્યાસક્રમ તબીબી અને સામાજિક વિજ્ઞાન પ્રવિષ્ટ રૂપ અને ૩૩ પરિશિષ્ટ “૧” તરીકે સામેલ છે.)

[illegible]

(नोध.—सुधारिता) अन्वयानुक्रम परिपत्र-१२ परिशिष्ट "२" शीर्षके भाग-१, २, ३

કે-૩૩. અમારાશાસ્ત્ર વિષયનો અભ્યાસરેખાચિત્રનો તાર. ૩૩૨-૧૬૬૭નો સમાવેશ અમને, 'વિષય' ૧૧૧-૧૧૨ અને એમકેફના અમારાશાસ્ત્ર વિષયનો અભ્યાસક્રમ 'જુન. ૩૬૬૭નો સમાવેશ' ૧૧૧-૧૧૨માં છે. બહુમતે, અમે એમકેફ, વિષય-૧ અમારાશાસ્ત્રનો યોગદાજ કરી પૂર્ણ કરીએ છીએ. આમાં અમારો ધ્યાનરેખાચિત્રો અમને તાર. અહીંના કોષ્ટકને પરિશીલન કરીએ:

[illegible][illegible]

सिविल इंजिनियर :

9. $\{a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8, a_9, a_{10}, a_{11}, a_{12}, a_{13}, a_{14}, a_{15}, a_{16}, a_{17}, a_{18}, a_{19}, a_{20}, a_{21}, a_{22}, a_{23}, a_{24}, a_{25}, a_{26}, a_{27}, a_{28}, a_{29}, a_{30}, a_{31}, a_{32}, a_{33}, a_{34}, a_{35}, a_{36}, a_{37}, a_{38}, a_{39}, a_{40}, a_{41}, a_{42}, a_{43}, a_{44}, a_{45}, a_{46}, a_{47}, a_{48}, a_{49}, a_{50}, a_{51}, a_{52}, a_{53}, a_{54}, a_{55}, a_{56}, a_{57}, a_{58}, a_{59}, a_{60}, a_{61}, a_{62}, a_{63}, a_{64}, a_{65}, a_{66}, a_{67}, a_{68}, a_{69}, a_{70}, a_{71}, a_{72}, a_{73}, a_{74}, a_{75}, a_{76}, a_{77}, a_{78}, a_{79}, a_{80}, a_{81}, a_{82}, a_{83}, a_{84}, a_{85}, a_{86}, a_{87}, a_{88}, a_{89}, a_{90}, a_{91}, a_{92}, a_{93}, a_{94}, a_{95}, a_{96}, a_{97}, a_{98}, a_{99}, a_{100}\}$

५. अंम. ३३. सिविल टुन्सुजोईआ... अन्वये नरादिआ... नरा... नरा...

3. अथवा, CASAD के सम्बन्धित प्रश्नों पर उत्तर देने पर प्रत्येक प्रश्न के लिए 10 अंक दिए जाएंगे।

मिडनिकल ग्राम्य :

૬. સંમિલન-૫ અને ૬ના સુધારાના અભ્યાસક્રમ

4. 64.5.5 (CAD) zu 64.5.6 (CAM) über 64.5.7 (19.11.2012) und 64.5.8 (19.11.2012)

પરિશિષ્ટ તાલિકા :

७. भिकुनिष्ठसंभोगेना संमिन्दर उ आने दया ज्ञानात्ता अस्तिद्विष्टता तां एव। एतन्मात्रं
अस्तिद्विष्टता टेकनासाञ्च १ आने मत्ता सुपरराती सम्भासकम्.

ઇ-કર્મશીન ટેકનોલોજી બ્રાન્ચ :

9. સંમિશ્રિત ૧થી ૮ની સ્ત્રીઓ અને સંમિશ્રિત ૧ અને ૮ના પુરુષોના સંમિશ્રિત

वधूमां वीर्यं (स्त्रियं) समिहतर इमां 'अपकृष्टम्' अथ 'अपक्वम्' अर्थात् 'अपक्वम्' इत्यर्थः
नाम अपक्वम् 'मिष्टम्' अन्तः दाडिमं 'आम्रम्' आद्यु सौम्यैश्च कथं वृद्धम् अन्तः
कृत्वामां आद्यु ३३

(नॉथ-अभ्यासकम्प्लि) १३३ पुडिशिपट "४" १३३ १३३

એકેડેમિક કાઉન્સિલ : તા. ૪-૪-૧૯૯૯

૧. (૧). ગુજરાત વિાપચની અભ્યાસસમિતિની તા. ૧૦.૭.૧૯૮૭ની અભ્યાસ કમીટીની રાજ્ય સરકારને રજૂ કરેલ રીપોર્ટની પૃષ્ઠ ૩૫ અને ૩૬ અને ચર્ચા સમિતિની રાજ્ય સરકારને રજૂ કરેલ રીપોર્ટની પૃષ્ઠ ૧૦૭ અને ૧૦૮માં ઉલ્લેખ કરેલો અસમજાત સ્વિકાર્યો ની નોંધ લેવામાં આવેલો છે.

(नॉथ.-शैक्षणिक वर्ष १९९८-९९ला वर्ष भाटे जूना तेंम ज नया काले याप नाले १९९८-९९
 १९९८-९९ला अन्वयात्मक (परिपत्र नं. ३१) परिशिष्ट "घ" तर्कीक नापर ३१

૧. (૧). બિઝનેસ મેનેજમેન્ટ વિષયની અભ્યાસસમિતિએ તેની તા. ૨૮-૯-૧૯૮૬ની મળેલા તથા ૧૯૮૮-૮૯ મોટે થઈ બી.કોમ.માં બિઝનેસ મેનેજમેન્ટ વિષયના પંચરૂપના ફિઝિકલ (ટોપિક્સ) નિયત કર્યા તે મંજૂર કરી પ્રેરણ વાણિજ્ય વિદ્યાશાળાની કાર્યજનક માટે.

(નોંધ.—શ્રી. કોમ. માટે વિજ્ઞાન મેનેજમેન્ટ ધેપર-પના દિગ્ગટેશનના મુદ્દાનાં નિર્ણયો આપવામાં આવેલા પરિપત્ર નં. ૩૫) પરિશિષ્ટ "ડ" તરીકે સામેલ છે.)

૨ (૩). ફાર્મસી વિષયની એકાદોકી સમિતિની તા. ૫-૧૯-૧૯૯૮ની સલાહને કડે બોમ્બે ડિસ્ટ્રિક્ટ ગવર્નામેન્ટ નંબર, ૧૯૯૮થી અમલી બનાવવા કરેલી અલામત્ત સ્વીકારીને 'પ્રાઇવેટ' તથા સંલગ્ન કોલેજોને પરિચિત કર્યાં;

(નોંધ.—પેઢર-૫ આયોજિત સ્થિતિઓનો અભ્યાસક્રમ કરીથી સુધારેલ છે. પાના નં. ૩૪, ૩૬)
(પરિપત્ર નં. ૩૪, ૩૭) પરિશિષ્ટ “૭” તરીકે સામેલ છે.)

આથી કરાવવામાં આવે છે કે કુલપતિશ્રીએ મંજૂર કરેલાં ઉપરોક્ત કમાંક : ૨ (૧)માં : - ૩૧.૧૦ - ૨૦ - ૨૦
કાર્યોની નોંધ લેવામાં આવી.

૩. કાર્યવેલેન્સ ઓફ એક્ઝામિનેશન્સ અંગેની સ્થાયી સમિતિની તા. ૩-૭-૧૯૯૮ની સલાહોના અંગ્રેજીમાં મુદ્દા ૧ ની અનુસાર વિચારણા કરવા બાબત.

(નોંધ.—સદરજૂ સમિતિની બહામણે પરિશિષ્ટ “૮” તરીકે સામેલ છે.)

નાથી ઠરાવવામાં આવે છે કે સદરહુ સમિતિની બલામણોનો સ્વીકાર કરવો.

૪. સ્ટેન્ડિંગ કમિટી ઓન ઇક્વિવેલેન્સ ઓફ એક્ઝામિનેશન્સની તા. ૧૪-૧૦-૧૯૯૮ની સમાવી 'બાંધ' પરત્વે વિચારણા કરવા બાબત.

(નોંધ.—સદરજ સમિતિની બહામણો પરિશિષ્ટ "૯" તરીકે સામેલ છે.)

આથી ઠરાવવામાં આવે છે કે સદરજુ સમિતિની ભલામણોનો સ્વીકાર કરવો.

૫. આગામી માર્ચ/એપ્રિલ/મે, ૧૯૯૯ અને ઑક્ટો/નવેમ્બર, ૧૯૯૯માં લેવાનાર યુનિવર્સિટી પરીક્ષાના પરીક્ષા સમિતિઓએ તૈયાર કરેલ પેનલો ગુજરાત યુનિવર્સિટી એક્ટની સંસ્કારન ૪૬-એ મુજબ રજૂ કરેલા નહીં.

આવી દરાવવામાં આવે છે કે સદરહુ આખતે વઢતો નિર્ણય લેવા કુલપતિશ્રીને સત્તા નાનવી.

આર આદ સમાન કામકાજ પર થયે હતું.

નં. એફ. ૬૪૬/૧૯૪૪/૧૯૯૯
ગુજરાત યુનિવર્સિટી કાર્યાલય,
અમદાવાદ-૩૮૦૦૦૯. તા. ૩-૭-૧૯૯૯.

કુલસચિવ
એમ. પી. જડિયા

પરિશિષ્ટ "૧"

કામકાજ ક્રમાંક ૨(૧)

ફર્સ્ટ બી.એસસી. રસાયણ વિજ્ઞાનના પ્રેક્ટિકલ પરીક્ષાની સમયમર્યાદા ૩.૫ કલાકનો બદલે ૪.૫ કલાકની કરવામાં આવી છે. ૧૯૯૯ની પરીક્ષાથી ફર્સ્ટ બી.એસસી. કેમિસ્ટ્રી પ્રેક્ટિકલ્સમાં પુસ્તકોનો ઉપયોગ થઈ શકશે નહીં, તેમ જ પ્રેક્ટિકલ્સમાં સેમિ-માઇક્રો- એનાલિસિસની પદ્ધતિ અપનાવવામાં આવશે.

Syllabus for Third Year B.Sc. (Chemistry)

(Effective from June, 1998)

1. A student offering Chemistry at Third year B.Sc. will offer Theory papers VI, VII, VIII, IX & X (five papers) each paper being 100 marks (70 external + 30 internal) and practical of 250 marks (175 external + 75 internal).
2. Each theory paper at the external examination shall be of three hours duration and carry 70 marks. Each practical examination shall be for three consecutive days, each of seven hours duration.
3. Internal assessment will be from 30 marks for each theory paper and 15 marks for each practical papers.
4. For each theory paper, there will be three lecture periods each of 45 minutes per week. For practical, there will be practical periods each of 45 minutes and the total of 16 practical periods per week.
5. Each theory paper has been divided into five (5) units as mentioned. From each unit, one question should be set proportionate weightage should be given to each sub topic while setting the paper.
6. At the time of practical examination the candidate must produce the certified journal.

Chemistry Paper-VI

Unit I :

(14 marks)

Symmetry Elements and Symmetry Operation Symmetry point groups C_i , C_s , C_i , D_n , D_{nh} , D_{nd} , C_n , C_{nh} , C_{nv} , T_d and O_h . Group theory and basic properties. Multiplication Table for point groups C_{2v} , C_{2h} and C_{3v} . Representation of groups.

Text books

1. Physical Chemistry by Daniels and Alberty 4th Ed. Page 434-446.
2. Chemical application of Group Theory by F.A. Cotton 2nd Ed. Page 14-32, 33-38, 45-52, 62-73.
3. Introductory Quantum Chemistry by A. K. Chandra 3rd Ed. Pages 252-273.
4. Chemical Bonding. An Introduction by Raval, K. C. Patel and R. D. Patel 2nd Ed. Pages 179-189.

Unit II :

(14 Marks)

The Electronic Spectra of Atoms and Term Symbols. Spectroscopic Terms, the Permissible microstates and terms. Russell-Saunders coupling. f and d configuration. Determination of ground state term by using Hund's Rules. Electronic spectra of $d1$ to $d9$ Octahedral and Tetrahedral Complexes.

Text books

1. A Concise Inorganic Chemistry by J. D. Lee 3rd Ed. Pages : 463- 483.
2. Chemical Methods in Inorganic Chemistry by Drago, pages 21-28, 161-164.
3. Coordination Compounds by SFA Kettle Pages 100-124.

Unit III :

(6 Marks)

(a) Mossbauer Spectroscopy

Principles and applications of Mossbauer Spectroscopy.

Reference books

1. Chemical Methods in Inorganic chemistry by R. S. Drago page 362- 372.
2. Basic Principles of Spectroscopy by R. Chang pages 90 - 92.
3. Fundamentals of Molecular spectroscopy by C. N. Banerji Reprint 1998 pages 313-3.

(b) Infrared and Raman Spectroscopy.

(8 Marks)

Basic Principles and instrumentation simple application in structural determination of diatomic and triatomic molecules by I. R. Spectroscopy. Basic principles and simple application to Inorganic compounds of Raman Spectroscopy.

Reference Books

1. Basic principles of Spectroscopy by R. Chang Pages 149, 167, 182- 185.
2. Physical methods in Inorganic Chemistry by R. S. Drago.
3. Fundamentals of Molecular spectroscopy by C. N. Banwel.

Unit IV :

- (a) I. R. Spectra : Sample preparation, Group frequencies; spectra; Structural determination with respect to C-R Stretching and C-O stretching frequencies. I. R. Spectra of Hydrogen bonding, I. R. Spectra of tautomers and Cis and trans isomers. (5 Marks)
- (b) NMR Spectra, Principle, equivalent and non-equivalent protons, chemical shifts, factors affecting chemical shifts, relative intensity of signals, spin-spin coupling constant, deuterium labelling. (7 Marks)
- (c) Mass Spectra, Basic Principles (2 Marks)

Unit V :

Problems based upon the application of G. V., I. R. and NMR spectroscopy.

Text Books

1. Application of Absorption Spectroscopy of Organic Compounds by J. R. Dyer.
2. Spectrophotometric Identification of Organic Compound by Silver Stein.

Chemistry Paper VII : (Inorganic Chemistry)

Unit I : Quantum Chemistry

(14 Marks)

Time dependent Schrodinger wave equation-elimination of time part- stationary states. Important theorems concerning hermitian operators, partial in a three dimensional box-separation of variables- eigenfunctions and eigenvalues-Symmetry and degeneracy.

Electron in a ring. Rigid rotator problem-application to rotational spectra of diatomic molecules, Hydrogen atom : Schrodinger equation in Spherical polar co-ordinates, separation of variables, solution of (and f equation, total energy of hydrogen atom in the variation method and the secular equation.

Text Books

1. Introductory Quantum Chemistry 3rd Ed. by A. K. Chandra. (Sections 2.3, 2.5, 2.7, 3.2, 3.3, 3.4, 3.5, 3.7, 3.8, 3.9, 4, 5).
2. Quantum Mechanics in Chemistry by Melvin. W. Hanna.
3. Chemical bonding, An introductory, by A. K. Raval K. C. Patel, R. D. Patel.
4. Theoretical Inorganic Chemistry by M. C. Day Jr. & J. Selbin, 2nd edn., East West Press.

Unit II :

(7 Marks)

- (a) V. B. Treatment of H_2 and $H_2 +$ Comparison of V. B. and M. O. for these molecule, Molecular orbital Treatment for, square Planar tetrahedral and octahedral complexes Molecular orbital treatment of polyatomic molecules such as $BeCl_2$, BeH_2 , BH_3 , CH_4 , H_2O , NH_3 . (7 Marks)
- (b) Three centred Bond in B_2H_6 and structures of Boranes. M. O. Treatment for complexes such as $(PtCl_4)_2$, $(IrF_6)_4$, $V(CN)_6$ Simple Huckel theory.

Text books

1. Electron and Chemical Bonding by Harry B. Gray.
2. Valency and Molecular Structure by E. Cartmell and G.W.A. Fowles 4th Ed.
3. Advance Inorganic Chemistry By F. A. Cotton & Wilkinson.
4. Concise Inorganic Chemistry by J. D. Lee 4th edn.

Unit III :

- Co-ordination Chemistry: reaction, Kinetics & mechanism : Trans, effect and trans influence, its application in synthesis, Mechanism of trans effect lability inertness, stability and instability. (5 Marks)
- Kinetics and reaction rates of octahedral hammett field effect and reaction rates. Mechanism of substitution reaction in octahedral complexes substitution in octahedral Co (III) complexes (Cis effect) Associative dissociative and $s_{\text{N}}1$ mechanism. (5 Marks)
- Mechanism of redox reactions : Inner and outer sphere reactions, Electron Transfer reaction (3 Marks)

Text Books

- Inorganic Chemistry by James E Huhee 2nd Ed. pages 489-509.
- Mechanism of Inorganic reactions by Basello and Pearson.

Unit IV :

- Metal Carbonyls : Mono and polynuclear metal carbonyl is such as $\text{Ni}(\text{CO})_4$, $\text{Fe}(\text{CO})_5$, $\text{Cr}(\text{CO})_6$, $\text{Fe}_2(\text{CO})_9$, $\text{Co}_2(\text{CO})_8$, $\text{Mn}(\text{CO})_5$, $\text{Ir}_4(\text{CO})_{12}$. Metal Carbonyl in I. R. application, Metal Nitrosyls and metal carbonyl hydrides, Roles of IR Spectra in their structure determination. (5 marks)
- Magnetochemistry Hard and soft acid and base. (4 marks)
- Organometallic Compounds : Definition, Classification, Synthesis (General methods) properties and structure and application of organometallic compounds of Mg, Al and Be, Organometallic compounds of first transition series elements. (5 marks)

Text Books

- Advanced Inorganic Chemistry by Cotton and Wilkinson 3rd Ed. pages 683-698, 702-706 and 713-715, 728-769.
- Inorganic Chemistry by Huhee.
- Introduction to Advanced Inorganic Chemistry by Durrant and Durrant.
- Basic Inorganic Chemistry by F. A. Cotton & G. Wilkinson, SRD edn., (P. 680-698)
- Principles of Organic Metallic Chemistry, G. E. Coates, Green Powell and Wode (P. 150-167).

Unit V :

- Glass Industries (3 Marks)
- Generation of Electricity from Nuclear Energy and its relative merits, Hydrogen energy. (6 Marks)
- Air Pollution CO , SO_x , NO_x , O_3 layer pollution due to plastic industries. (5 Marks)

Text Books

- Industrial Chemistry by Dryden-Revised by Gopal Rao.

Chemistry Paper VIII

Unit I :

- Stereo Chemistry (8 Marks)
 - Molecular asymmetry as illustrated by Diphenyls, allenes, and spirans. (Finar-Volume II)
 - Stereo-Selective and Stereo-Specific reaction (M. B. Vth Ed. Chap. 9, Sections 9.2, 9.3, 9.5, 9.6)
 - (i) Properties of Diastereoisomers (p. 42).
 - (ii) Resolution of Racemic Mixtures (p. 43-47).
 - Concept of Prostereo isomerism (p. 63-76) and Chiral Synthesis (Assym. Induction) Cram's rule, Prelog's generalization prelog's rule and asymmetric additions.

Text Books

- Stereochemistry, Conformation and Mechanism P. S. Kalsi, Wiley Eastern Ltd., (page 6)
- Oxidation-Reduction (6 Marks)
 - Use of specific reagents and their synthetic application with mechanism.
 - Aluminium---Isopropoxide
 - Lithium---Aluminium Hydride
 - Osmium Tetroxide
 - Selenium---Dioxide
 - Lead Tetra-acetate
 - Per-iodic acid.

- Principle, Mechanism and Synthetic applications of the reactions "Aldi-Ester reaction, Fries Migration, Hoffmann's Reaction. (7 Marks)

Unit II :

- Nucleophilic Substitution at a Saturated Carbon Atoms: Mechanism and scope : reaction-avoidable mechanisms Kinetic characteristics, scope of reaction, stereoisomerism of $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reactions Relative reactivity in substitution, solvent effect, Variation at Carbon site, Relative leaving group activity, $\text{S}_{\text{N}}1$ mechanism, Neighbouring Group-Participation and Cyclization Elimination Reactions- E_1 and E_2 mechanism, Hofmann elimination, Carbocation ion rearrangement, Orientation of E_1 and E_2 reactions, Elimination vs. substitution (Trans- Hedrickson Hammett 10.1-10.5)
- Nucleophilic Aromatic Substitution : nucleophilic aromatic substitution-Bimolecular displacement and its mechanism, Reactivity, Orientation, Electron withdrawing resonance, Evidence for the two steps-mechanism Elimination-addition mechanism: Benzene. (M. P. Vth Ed. Ch. 29.8, 29.9, 29.10, 29.11, 29.12, 29.13-17 Marks)

Unit III :

- Isoprenoids (Terpenoids) Classification General methods of determining structure, Isoprene Rule, Chemistry of Citral, Alpha- terpinolene, Camphor and their synthesis, Study of reaction of Beta- Carotene (No synthesis) (Ref. Finar Vol. II). (8 Marks)
- Alkaloids Classification General methods of determining structure- analytical and synthetic methods. Structure of Conine, Nicotine and Atropine (Ref. Finar Vol. III). (6 Marks)

Unit IV :

- Carbohydrates : (10 Marks)
 - Disaccharides : Structure of (+) maltose, (+) Cellobiose, (+) Lactose and, (-) Sucrose.
 - Polysaccharides : Starch and Cellulose (M. Boyd 5th Ed.) (10 Marks)
- Purine-Pyrimidines : (4 Marks)
 - Purine-synthesis of purines adenine and guanine (Finar-Vol. II)
 - Pyrimidines Synthesis of Pyrimidine, Uracil, Thymine and Cytosine (Finar Vol. II) (4 Marks)

Unit V :

- Synthetic Dyes : (5 Marks)
 - Synthetic Dyes : Anionic and Cationic dyes, mordant and Vat Dyes, Reactive and Dispersed dyes, Synthesis of Alizarin, Madder lake green, Indigo, Congo Red, Eosine
 - Synthetic Drugs : General-Classification Chemotherapy Methods of Preparation of Sulpha-Thiazole, sulpha-diazine, Paracetamol, Penicillamine, Para-amino-Salicylic Acid Phenacetin, Anti-pyrene, Tolbutamide, Trimethoprim Chloramine-T and n-hexyl Resorcinol (5 Marks)
 - Pesticides : General introduction Methods of preparation of D.D.T., Gamma-hexachlorocyclopentadiene, Aldrin, Malathion. (4 Marks)

Chemistry Paper IX :

(14 Marks)

Unit I :

- Zeroll Law of Thermodynamics, Difference between Heat and Temperature Thermodynamic equation Application of Clausius- Clausius equation only Trouton's Law and Craft equation.

Colligative Properties : Elevation of Boiling Point, Depression of Freezing Point Van't-Hoff reaction isotherm Van't-Hoff equation (isochore)

Third Law of Thermodynamics : Determination of absolute entropy from thermal measurements, Nernst Heat Theorem, Partial Molar Volume, free energy or chemical potential Thermodynamics derivations of law of mass action using chemical potential.

Unit II : Electro Chemistry

(14 Marks)

Reversible Cells and reversible electrodes Electrical double layer and electrode potential. Equation for the potential of single electrode, Electrodes reversible w.r.t. cations (metal/metal ion electrodes) Electrodes reversible w.r.t. anions, metal insoluble salt anion electrodes, Oxidation-reduction electrodes.

Reference electrodes : Hydrogen electrode, Calomel electrodes Quinhydrone electrode Potentials and e.m.f. series. Calculation of e.m.f. of a cell, Poggendorff's method of the measurement of a cell

Weston Cell : Concentration Cells : Electrodes Concentration cells. Solution concentration cells : Cell with transference, Cell without liquid-liquid junction. Potential Derivation of the emf for the concentration cells with and without transference using chemical potential. Free energy and e.m.f. effect of temperature on cell e.m.f. and relationships. Determination of standard e.m.f. of the cells. Application of e.m.f. measurements. Activity and activity coefficient (elementary concept) Decomposition potential, Overvoltage, Tafel equation and its derivation

Unit III : (4 Marks)

(a) Chemical Kinetics : (4 Marks)

Activated Complex Theory, predictions of reaction rates, ionic reactions and salt effect. Heterogeneous gas reactions. Retardation of surface reaction.

(b) Polymer Chemistry : (5 Marks)

Molecular weight and degree of polymerization, polymer solution, thermodynamics of polymer dissolution, Flory-Huggins Theory of polymer solutions (No derivation). Ovarian : Polymer Chemistry.

(c) Phase Rule : (5 Marks)

Theoretical derivation of phase rule system of one component, Water and sulphur systems. Systems of two components. Condensed (Reduced) phase rule Zn-Cd system eutectic points. Solid solutions : Zeotropic and azeotropic freezing mixtures, Triethylamine-water system. Liquid phenol-water, Phenol-H₂O system, Nicotine water, Vapour Pressure of a mixture of immiscible liquids, Steam distillation.

Unit IV : Nuclear Chemistry Mass Spectrograph : (5 Marks)

(a) Direction Focussing mass spectroscopy (Dempster) Velocity focussing mass spectroscopy (Bainbridge), Double focussing mass spectroscopy (Nier) Artificial nuclear reactions. Interaction of nuclei particles : neutrons, protons and deuterons as projectile particles. Types of nuclear reactions. Artificial or induced radioactivity, Energy change in nuclear reactions. Rates of nuclear cross-sections, coulomb barrier. Neutron activation analysis isotope dilution analysis, nuclear fission, chain reactions, Thermonuclear reactions.

(b) Molecular Spectra : (4 Marks)

Vibration rotation and Raman spectra. Ortho Para hydrogen.

(c) Photochemistry : (5 Marks)

Effect of absorption of light photophysical reactions : Fluorescence and phosphorescence Photochemical reactions.

Source of light : Instrument for measuring radiation Einstein's Law High and low quantum yield, Types of photochemical reactions, Photochemical equilibrium photochemical inhibitors, chemiluminescence, flash photolysis.

Unit V--Industrial Chemistry : (14 Marks)

Corrosion--Cathodic technical reactions--Anodic technical reactions--Fuel Cells--Electrochemistry and pollution control--Desalination (reverse osmosis)--Pollution Control Techniques--(Ref. Book : Environmental Chemistry by A. K. De) 8.1, 8.2, 8.3, 8.4.

Chemistry Paper X--(Analytical Chemistry)

Unit I :

1. Types of Analytical Methods (General) : Advantages and limitations of instrumental and chemical methods. Literature of Analytical Chemistry. (3 Marks)

2. Separation Precipitation : Separation of metals with 8-hydroxyquinoline, Cupferron, Dimethylglyoxime, benzoin oxime, Dithionite. (5 Marks)

3. Detection and Determination of functional Group : Carboxylic and Sulphuric acid groups, Amine groups, ester groups, Carbonyl, Azo, OCH₃, and O=C₂ H₃ N-acetyl, -acetyl, -OH, (alcoholic and Phenolic) and CHO group. (6 Marks)

Unit II :

1. Redox Titration : Calculation of potentials at various points on the titration curve, redox indicators, Potential requirements of oxidation-reduction titration, multielemental titrations, Iodometry, metal reducers (5 Marks)

2. The scope of potentiometric titrations precipitations and neutralisation titrations, reference half cells used in potentiometric titrations : Graphical methods including Gran's plot for selection of end point. Differential titrations, Dead stop titrations, ion electrode (elementary), principle of pH meter. (4 Marks)

3. Polarography : Principle, electrodes, types of currents, half wave potential, Ilkovic equation, methods of determining concentration. (5 Marks)

Unit III :

1. Colorimetry and spectrophotometry : Laws of Absorbance, Visual colorimetric methods, Spectrophotometric instrumentation-light sources, Optical system, the wavelength selector, Light sensitive devices, accuracy and error of spectrophotometry, analysis of mixtures, Flame photometry, Atomic Absorption, spectrometry principles. (7 Marks)

2. Chromatography and Ion exchange : Column chromatography, thin layer chromatography, paper chromatography, Gas chromatography, Instrumentation Evaluation-Evaluation, ion exchange synthetic materials, Mechanism of exchange, distribution coefficient, Applications. (7 Marks)

Unit IV :

1. Acid-base Titrations : Titration of polyprotic acid and mixtures of acids, titration of salts, Differential titration of alkalis, Buffers, level range and capacity of buffers. (7 Marks)

2. Complexometric EDTA Titration : Types, indicators, masking and demasking, construction of the titration curve. (7 Marks)

Unit V :

1. Treatment of Analytical data : Significant Figures, Accuracy, Precision, Errors-Types, Ways of expressing accuracy and precision, Rejection of a result, Test of Significance correlation coefficient. (3 Marks)

2. Theory of Precipitation : Formation of Precipitates, Particles size of precipitates impurities in precipitates, purification of precipitates Precipitation from homogeneous solution, precipitation titrimetry so that titrimetry. The Mohr method, Fajans methods, Volhard method. Construction of option titration curve, Factors influencing the sharpness of end points. (6 Marks)

3. Solvent extraction : Distribution coefficient, Distribution ratio, Solvent extraction of metals The extraction process separation efficiency. (5 Marks)

Text Books

1. Analytical Chemistry (2nd Ed.) Douglass. Skoog and Donald H. West. Kinhardt, New York, 1979.
2. A Text Book of Quantitative Inorganic Analysis A. I. Vogel, Logman, 1973.
3. A Text Book of Quantitative Analysis Day & Underwood.

Practicals of four periods a day for four days a week. All types of practicals given in the syllabus are to be performed during the year.

(a) Inorganic Qualitative Analysis : Analysis of mixture of powders containing six radicals only by Semi-micro Methods (at least 8 mixtures to be done)

(b) Volumetric Analysis :

- (1) Estimation of Fe₂+ and Cr₃+ in a mixture by EDTA.
- (2) Determination of Bi₃+ by EDTA.
- (3) Percentage purity of H₂O₂ solution by iodometric method
- (4) Estimation of chloride by Silver Nitrate (Mohr's method)
- (5) Estimation of Zn + 2 and Cd + 2 in a mixture by EDTA
- (6) Estimation of Ca₂+ and Mg₂+ in mixture by EDTA.

(c) Gravimetric determinations of the radicals after removal of the interfering radical

- (1) BaCl₂, FeCl₃, HCl
- (2) CuCl₂, MnCl₂, HCl
- (3) CuSO₄, FeSO₄ (NH₄)₂ SO₄, H₂SO₄
- (4) CuSO₄, Al₂(SO₄)₃, H₂SO₄
- (5) Analysis of Brass
- (6) Analysis of German silver

Organic Practical :

- (a) Separation of two components from the mixture of organic compounds using semi-micro methods. Identification of components by sodium fusion test, physical and chemical tests. M, P, B/P and derivatives
- (b) (i) Estimation of functional groups (i) Acid (ii) Ester (iii) Saponification of oil (iv) Ketone
- (c) Chromatographic Separation-paper chromatographic method and thin layer chromatographic method to be used to separate. Metallic cations to be separated by paper chromatography Ag⁺, Pb²⁺, Hg²⁺, Cu²⁺, Bi³⁺, Cd²⁺, Hg²⁺, Fe²⁺, Fe³⁺, Cr³⁺, Al³⁺, Ca²⁺, Ni²⁺, Ba²⁺
- (2) Preparation of substance by signal stage method
 - (1) m-Nitroaniline from m-dinitro benzene
 - (2) m-dinitrobenzene from NO₂/benzene
 - (3) p-Bromo acetanilide from acetanilide
 - (4) p-Nitro acetanilide from acetanilide
 - (5) Benzene acid from benzaldehyde (Ganizao reactions)

Physico-Chemical Exercises

(in force from June 1998)

- (a) Chemical Kinetics
 - (1) To study the reaction between (i) $K_2S_2O_8 + KI$ (ii) $HBrO_3 + HI$ (iii) $H_2O_2 + HI$ under two conditions i.e. $a = b$ and $a < b$
 - (2) To determine the temperature coefficient and energy of activation of hydrolysis of methylacetyl acetate catalysed by acid
- (b) Distribution of
 - (1) Ammonia between
 - (2) between water and non-aqueous Solvent Conductometry.
- (c) Conductimetry
 - (1) To determine the solubility product (Ksp) of $PbSO_4$ and $BaSO_4$
 - (2) To titrate a mixture of strong base and weak base vs strong acid
- (d) pH-metry
 - (1) Titration of strong acid vs strong base
 - (2) Titration of a mixture of strong base and weak base vs strong acid
- (e) Potentiometry
 - (1) Titration of a strong acid vs strong base
 - (2) Titration of Fe^{+2} ions vs $Cr_2O_7^{2-}$ ion
- (f) Colorimetry
 - To study Beer's Law and determine the concentration of an unknown of Cu^{+2} , Co^{+2} , Ni^{+2} , Fe^{+3} and Fe^{+2}
- (g) Chromatographic Separation paper chromatographic method and thin layer chromatographic method to be used to separate Metallic cations to be separated by paper chromatographic. Ag^+ , Pb^{+2} , Hg^{+2} , Cu^{+2} , Ba^{+2} , Ca^{+2} , Fe^{+3} , Al^{+3} , Cr^{+3} , Sr^{+2} , Ba^{+2}

Practicals (Three days seven hours in one day)

- | | | |
|---|------------------------------------|----------|
| 1 | (a) Physical | 30 marks |
| | (b) Inorganic Qualitative Mixture | 25 marks |
| 2 | (a) Gravimetric | 25 marks |
| | (b) Volumetric | 25 marks |
| | (c) Viva | 10 marks |
| 3 | (a) Organic Separation | 25 marks |
| | (b) Organic Estimation/preparation | 25 marks |
| | (c) Chromatography | 10 marks |

Total 127.000

AB—Certified journals must be produced at the time of practical examination (175 certified + 75 internal)

परिशिष्ट "२"

કામદાજ કમંડ ૨(૨)

આંકડાશાસ્ત્રના પ્રેક્ટિકલની બેચમાં વિદ્યાર્થી સંખ્યા ૨૦ને બદલે ૧૫ની ગણવી.

First B.Com. (Optional Paper)

Mathematics & Statistics for Actuarial Science (Paper-1)

To be effective from June, 1998 Academic Year 1998-99

1. (a) Sequence and Series - Meaning of A.P. and G.P. Proof of formula for T_n and S_n for A.P. and G.P. - A.M. and G.M. of two numbers. Applications of the formulae- $\frac{a}{b} = \frac{c}{d}$ for n_1, n_2 and n_3 with simple numerical examples. (20%)
- (b) Indices and Logarithms - Rules of indices and logarithms (without proof) Use of 4 figure tables on logarithmic-simple numerical examples. (20%)
2. (a) Simple and compound interest, calculation of annuity and depreciation. (20%)
- (b) Function of one and two variables, graphs of linear and quadratic functions-idea of limit, limit of a function-rules of limit-continuity of a function at a point. (20%)
3. (a) Linear and quadratic functions-Solution of linear equations upto three variables. Discriminant of a quadratic equation-sum and product of the roots of quadratic equation-simple examples. (10%)
- (b) Matrix Algebra - Meaning and types of matrices addition, subtraction and multiplication of matrices, determinant of a square matrix-solution of simultaneous equations by using inverse of a matrix-simple numerical examples. (10%)
4. (a) Basic Probability - Concept of a sample space, Random experiment and sample space, Event and algebra of events - classical definition of probability. Theorems on probability addition theorem of probability, conditional probability, multiplication theorem on probabilities. Independent events-Pascal's theorem for three exclusive events. (20%)
- (b) Mathematical Expectation - Definition of a random variable-probability function of a random variable, mean and variance of a random variable, use of mathematical expectation in EMV method of decision theory, simple numerical examples. (10%)
5. (a) Interpolation & Extrapolation - Meaning and use of interpolation and extrapolation and use of the operators D, Δ and E -Newton's forward differences-Binomial expansion and Lagrange's methods of interpolation and extrapolation (without proof) Numerical applications. (20%)
- (b) Vital statistics - Meaning and importance of vital statistics-methods of collecting vital statistics, calculation of mortality rates - CDR, SDR and IMR, calculation of Fertility, rates, C.I.R., S.I.R., G.F.R., S.F.R. and T.F.R. (construction and use of life tables). (20%)

Second B.Com. (Optional Paper)

Mathematics & Statistics for Actuarial Science (Paper II)

(To be effective from June, 1999 Academic Year 1999-2000)

1. Idea of Convergence and divergence, Comparison test with auxiliary series, D'Alembert's ratio test, Cauchy's test (without proof) and applications, Expansion of e^x , a^x , $\log(1+x)$, $\log(1-x)$. (20%)
2. Differentiation and Iteration: Definition of derivative of $f(x)$, rules of derivatives (without proof) derivatives of the functions, $\sin^x x$, $\log x$, a^x derivative of implicit function and log thmic function, Iteration: a reverse process of differentiation, Integration by substitution and integration by parts, Definite integration: simple applications. (20%)
3. Correlation & regression analysis: Meaning & types of linear correlation, coefficient of correlation and its properties, scatter diagram method, Karl Pearson's method and spearman's method of studying correlation for grouped and ungrouped data for two variables-Meaning and use of regression analysis-linear regression model and its application-coefficients of regression, their properties and interpretation of R of (20%)
4. Application of statistics in Insurance and Actuarial Science: concept of life contingencies & mortality-mortality table and its application- Functions of the mortality table-force of mortality, probability of living and dying-Meaning, interpretation and application of

selected tables-pure endowments and annuity-commutation functions-types of annuities-evaluation of annuities-Assurances-life insurance-whole life, deferred, endowment and increasing insurances-annual premiums, evaluating insurances simple illustrative examples (20%)

- 5 Business Applications of Linear Programming : Meaning of linear programming, use and limitations of linear programming, linear programming problem and its mathematical formulation-solution of linear programming problem involving two variables by graphical method, examples of linear programming problems related to business, commerce and industries (20%)

Selected reference books for F.Y.B.Com. & S.Y.B.Com. Paper I & II

1. Business Mathematics by Sancheti : Kapoor (S. Chand).
2. Business statistics by Sanchetikaipoor (S. Chand).
3. Fundamentals of Mathematical statistics by Gupta & Kapoor.
4. Applied statistics by Gupta & Kapoor.
5. Probability for statistical decision makers by Ewart P. J.
6. Statistics for modern business decisions by Lapin L. (Wiley Eastern Co.)
7. Mathematics for Actuarial Sciences by H. Freeman.
8. Technical Demography by R. Rankumar.
9. Life and other contingencies Pt. I & II by P. F. Hooker.
10. Mathematics for statistics by surajan saha.
11. Actuarial tables-(Cambridge Univ. Press).
12. Applied statistics by S. P. Gupta.
13. Statistics : Theory & Practical Vol. I & II by Goon, Gupta & Dasgupta.

Second B.A./Second B.Sc. Statistics New Course

Modified Syllabus to be Effective from June, 1998 (Academic Year 1998-99)

Statistics Paper III---(Mathematical Statistics-I) 3L + 1T :

1. Probability : Statistical regularity of chance phenomena, frequency approach to probability, classical definition of probability, Axiomatic approach-concepts of random experiment outcome Sample space, events, algebra of events-union, intersection and complementation, Axiomatic definition to probability, conditional probability, addition and multiplication rules of probability, Independence of two or more events, Bayes theorem: Expressions for probability of Occurrence of exactly K events out of three events A, B, C for $K = 1, 2, 3$
Proof of following inequalities for two events A & B :
(a) $P(A \cup B) \geq \max [P(A), P(B)]$
(b) $P(A \cup B) \geq \max [0, P(A) + P(B) - 1]$
(c) $P(A \cup B) \leq \min [P(A), P(B)]$
2. Distribution Theory : Distribution of a random variable and its probability distribution. Discrete and continuous random variables, Distribution function of continuous and discrete random variable and their properties Mathematical Expectation, function Raw and central moments and cumulants with their interrelationship up to fourth order, mode, quartiles, coefficient of variation and measure of kurtosis and skewness.
3. Univariate distributions and their properties : Binomial, Poisson, Hypergeometric, uniform, normal, Gamma, Beta distributions: Geometric, Negative binomial, Cauchy, Weibull distributions. Truncated binomial and Poisson (truncated at zero only) distributions and their properties: movement, and Movement generation

The course is roughly covered by following books :

1. Mood A. M. (Greybill, F. A. & Boes, D. C. : Introduction to the theory of Statistics (Third edition, McGraw Hill) Chapter I Full, Chapter II Articles 1, 2, 3, 4 (Omit 4.4 & 4.5), Chapter III (Omit articles 2.6, 4.3 (except contiguous distribution)
2. Kenny J. F. & Keeping E. S. : Mathematics of Statistics Part-II Van Nostrand. Chapters I, II, IV (Omit articles 4.13 to 4.17)

Books for further reference

1. Hogg, R. V. & Craig, A. T. : Introduction to Mathematical Statistics (Third edition, Collier-Macmillan)

2. Chung, K. L. : Elementary probability theory with stochastic process (Narosa, 1978)
3. Kathleen, Subchannans : A Primer in Probability (Marcel-Dekker, 1970)
4. Feller W. : Intro to Probability theory and its applications (Vol. I)
5. Modhi, J. : Statistical methods --An introductory text (Wiley eastern)

Statistics Paper IV---(Applied Statistics) (3L + 1T)

1. Sample surveys and sampling techniques : Sampling versus complete enumeration, different steps in large scale sample survey, Biases in survey, types of population and types of sampling, Simple Random Sampling, derivation of variance of sample mean, Random Sampling for proportion, estimation of sample size and population total (20%)
2. Demographic Methods : Importance of population census, methods of census with their relative merits and demerits
Vital Statistics : Role of vital events
Measurement of mortality---Crude Death Rate, Specific Death Rate, Standardised Death Rate
Measurements of Fertility-Crude Birth Rate, General Fertility Rate, Total Fertility Rate, Gross and Net Reproduction Rates
Concept of Life Table and its Construction and uses. Measurements of population growth and population projection. (30%)
3. Economic Statistics (50%)
 1. Index Numbers : Construction and use of index numbers, weighted index numbers, Laspeyres, Paasche, Fisher, Marshall-Edgeworth formulae of index numbers. Errors in index numbers. Tests of index numbers, Chain index numbers, Construction of cost of Living Index number and Wholesale price index numbers (20%)
 2. Time Series : Components of time series, Measurement of trend by method of moving average and polynomial upto second degree Computation of Seasonal Indices (10%)
 3. Mathematical Economics : Formulation of Demand and Supply functions, Market Equilibrium, Determination of demand and supply curves from time series data. Utility function and its use in derivation of demand curves. Elasticity of demand and supply and cost function Optimization of Revenue for a given demand law, use of elasticity in classification of goods into necessities and luxuries, Problem of monopoly (20%)

The course is roughly covered by following books

1. Cochran, W. G. : Sampling Techniques (Third Edition, Wiley Eastern) Chapters : I, II (articles 2.1 to 2.10), III (articles 3.1 to 3.6) IV (articles 4.1 to 4.6)
2. Modhi, J. : Statistical Method-An introductory text (Wiley Eastern, 1992) Chapters 5, 12 (articles 12.1 to 12.5), 13
3. Pathak, K. B. & Ram, F. : Techniques of demographic analysis Himalaya Publishing House, 1992 Chapter 9 (articles 9.1 and 9.11 only).
4. Allen, R. G. D. : Mathematical Analysis for Economists ELBS and Macmillan. Chapters 5 (articles 5.1, 5.2, 5.4, 5.5) 8 (articles 8.7 only), 10 (articles 10.5 to 10.8), 11 (article 11.9 only).

Books for Reference

1. Agarwal, B. L. : Basic Statistics (Wiley Eastern, 1958)
2. Ramakumar, R. : Technical Demography (Wiley Eastern)
3. Goon, Gupta & Dasgupta : Fundamentals of Statistics Part-II World Press, Calcutta
4. Croxton & Cowden : Applied General Statistics (Prentice Hall of India)
5. Jaiswal, M. C. : "মৌলিক পরিসংখ্যান" (প্রথম দফা সহ) (১ম খণ্ড)
6. Pressat, R. : Statistical Demography (Methuen)

Statistics Paper V---(Mathematical Statistics-II) (3L + 1T)

1. Correlation and Regression : General concept of bivariate and trivariate distributions, marginal and conditional distribution, covariance, product moment, correlation-coefficient, spearman's Rank correlation coefficient, Independence and uncorrelatedness of random variables. Concept of regression, error in regression, fitting of linear and quadratic curves

- which are reducible to linear forms by method of least squares. Regression and correlation in three variables, partial and multiple regression, partial and multiple correlation coefficient and their interrelationships. (40%)
2. Sampling distribution and Standard Errors : Concept of sampling distribution, sampling distribution of sample total from Binomial, poisson and normal distribution, sampling distribution of the difference of two sample means from independent normal populations, concept of standard error of sample moments. (10%)
3. Small Sample Tests : Idea of null hypothesis, alternatives hypothesis, level of significance and degree of freedom. Chi-square, t and F tests and their uses in the tests of significance concerning means, variances, total, partial and multiple correlation coefficients. (20%)
4. Large Sample Tests : Contingency tables and association of attributes Chi-square tests in testing independence of attributes in contingency tables, and goodness of fit. Tests for sample proportion, Fisher's z-transformation and its uses in testing significance of total and partial correlation coefficients. (20%)
5. Non-Parametrics Tests : Parametric versus Non-parametric tests, Sign, median, Wald-wolf witz runs and Mann-whitney tests. (10%)

The course is roughly covered by the following books

- Kendall, M. G. & Stuart, A. : *Advance Theory of Statistics Vol I* (Charles Griffin) Chapter 16 (articles 16.1, 16.3, 16.10, 16.11, 16.15, 16.17)
- Cramer, H. : *Mathematical Methods of Statistics* Chapter 21 (Omit articles 21.20, 21.11, 21.12), Chapter 22 (Omit articles 22.4, 22.5, 22.7), Chapter 23 (Omit articles 23.6)
- Medhi, S. : *Statistical Methods-An Introductory Approach* (Wiley Eastern) Chapter 9, 10, 11
- Agrawal, B. L. : *Basic Statistics* (Wiley Eastern) Chapters 9, 10, 11, 13, 14
- Siegel, S. : *Nonparametric Tests for Behavioural Sciences* (McGraw Hill, 1956)

Books for further reference

- Croxton & Cowder : *Applied General Statistics* (Prentice Hall)
- Kenney and Keepm : *Mathematics of Statistics Parts I & II* (Van Nostrand)

Second B.A./Second B.Sc. Statistical Practicals

Practical Paper-I : (Three hours duration)

- Classification and tabulation of data, diagrammatic representation on statistical data; graphical representation of statistical data by Histogram, frequency polygon and ogives; stem and leaf diagram of ungrouped data, classification of bivariate statistical data.
- Computation of various measures of central tendency and computation of quartiles, deciles and percentiles from ungrouped and grouped data computation of moment upto forth order with and without sheppard corrections, computation of measures of dispersion, coefficient of variation, mean deviation, quartile deviation, coefficient of skewness and kurtosis using grouped and ungrouped data.
- Drawing of random samples from uniform, normal, exponential weibull and binomial and poisson and geometric distributions. Fitting of binomial, poisson and normal distributions with testing of goodness of fit
- Theoretical problems of poisson, binomial, hypergeometric; uniform, normal, gamma and beta distributions.

Practical Paper II-(Three hours duration) :

- Drawing of random samples from finite populations, Estimation of population mean, population total, population proportion alongwith their standard errors using simple random sampling without replacement Estimation of sample size
- Computation of crude birth and crude death rates, computation of standard death rates by direct and indirect methods. Computation of gross fertility rate (GFR), age specific fertility rate, gross and net reproductions rates, problems on construction of life tables.
- Measurement of linear trend in time series by method of moving, average and method of least squares. Fitting of demand curve from time series data and calculation of price elasticity of demand.
- Construction of price index numbers and quantity index numbers by average of price relatives; conversion of chain base index numbers to fixed base index numbers & vice

versa. Construction of cost of living index numbers by (i) aggregate expenditure method and (ii) Family Budget method, base shifting, splicing and deflating of index numbers

Practical Paper III (Three hours duration)

- Computation of coefficient of correlation and regression from bivariate frequency distribution and bivariate grouped and ungrouped data. Computation of spearman rank correlation, coefficient fitting of linear, quadratic and exponential curves to given bivariate data examining the consistency of data.
- Computation of partial, multiple correlation & regressions involving three variables only. Fitting of a linear regression plane to statistical data and prediction problem.
- Application of Chi-square, t and F distributions. Test of significance (based on large samples) for single proportion and sample mean, differenced proportion and difference of means and standard deviations, test of independence of attributes in contingency table
- Problems on sign, run, median, Mann-whitney tests.

M.Phil (Science) Statistics

Optional Paper III : Advanced SQC Techniques

- Quality improvement in the modern business environment-meaning of quality and quality improvement-Statistical methods for quality improvement-Total quality management-Link between quality and productivity-Quality Costs.
- Statistical process control (SPC)-Implementing SPC-CUSUM Control charts-Economic design of Control charts-Process Capability analysis-Multivariate Quality control.
- Process Design and improvement with designed experiments-2nd factorial designs-Fractional replication in 2nd design-Taguehi's contribution to quality engineering
- Some acceptance sampling plans for variables special categories of acceptance sampling plans-Sequential Sampling by variables-Chain sampling-continuous sampling plans-Dorian shavnis lot plot method-Skip-Lot sampling plans
- ISO 9000 inspection standard-ISO 9001 ISO 9002 etc. plans. Some recent advances and developments in quality management.

Selected References

- Douglas C. Montgomery (1996) : *Introduction to SQC* (John Wiley & Sons)
- James R. Evans & W. M. Lindsay (1993) *The Management and control of quality* (West Publishing Co.)
- Anutava Mitra (1993) : *Fundamentals of Quality Control and Improvement* (MacMillan Publishing Co)
- Zaidi A. (1995) *SPC : Concepts, Methodology & Tools* (Prentice Hall)
- Juran, J. M. : *Quality Control Handbook* (Mc Graw Hill)
- Deming W. Edward : *Quality, Productivity and Competitive Position* (MIT)

Optional Paper IV : Advanced Theory of Inventory Control and Queues (12)

- Inventory Control : Some recent advances in deterministic and probabilistic inventory control models such as price change anticipation, Linear trend in demand, models with the marketing policies, models with random supply, models for deteriorating items, models with two storage facilities, models when delay in payments are permissible etc. Dynamic version of EOQ model. Some case studies.
- Queuing Theory : bulk queues, G/M/1 and GI/M/1 queues, priority queues, queues for decision making, M/Ek/M queues, Queuing networks, formulation of waiting cost functions. M/M/D (GD/00/00) self sufficient model. Applications of queuing theory.

Selected References

- Naddor E. : *Inventory systems*
- Tersine : *Inventory Management*
- Jaiswal N. K. : *Priority Queues*
- Chaudhari : *Queuing theory*
- Hdley & Whiting : *Inventory control*
- Taha H. : *Introduction to O. R.*
- Hiller & Lieberman : *Introduction to O. R.*

(In addition to the above, some selected references from various journal will be prescribed from time to time.)

Optional Paper V : (Demography)

1. Definition, Nature and Scope of Demography. Definition of demography--Scope of the Study--Nature of the study-- Advantages of population study--Some basic concepts-- Natural increase and rate of natural increase Board heads of Demography- Techniques of Demographic analysis
2. Vital Statistics. Meaning and uses, Methods of obtaining. Rates and ratios of vital events. Types of rates, Sex ratio child-woman ratio, Rate of population growth person years lived in a population, estimating the mid-year population, crude fertility rates, specific fertility rates, gross and net reproduction rates, family size, crude mortality rate, infant mortality rates, Mortality by cause of death, standardised rates
3. Life Tables. Construction, properties and uses. Derivation of annual and central rates of mortality, Natural life tables, U. N. model of life tables, Abridged life tables, stable population stationary population
4. Population projection techniques. Mathematical and component methods, fitting of modified exponential, logistic, makham and Gompertz curves
5. Some recent demographic models
(Note: (1) New developments and recent techniques may be suggested by the faculty as per suitability and availability from time to time
(2) Faculty concerned may have option to include practicals for submission as well as assessment work from time to time)

Selected References

1. Haretra (1984) Fundamentals of Demography (Third Ed.)
2. George W. Baridav Techniques of Population Analysis (John Wiley of Sons, Inc. N.Y.)
3. Mortimer Spiegelman Introduction to Demography (Harvard University Press)
4. Ransdman R (1986) Technical Demography (Wiley Eastern Co.)
5. Pathak R. B. & (1972) Techniques of demographic analysis (Himalaya Ram R. Publishing House)
6. Prasad R. (1978) Statistical Demography (Methuen & Co.)
7. K. V. Sridhi Population Explosion
8. Hogue & Donald Joseph Principles of Demography (New York etc. Wiley)
9. Cox and Smith Demography (Cambridge Univ. Press, 1961, 1969)

Optional Paper VI : Computer Based Statistical Techniques

- (a) Computer Programming Using C Language. Variables, data types, Arithmetic and logical expressions, PRO/GRAM looping, making decisions, the conditional expression operator, the Switch statement, Arrays, FUNCTIONS, Automatic and Static Variables, Structures, Pointers, Input-Output statements, Some advanced features using G++ Various programs using above features
- (b) Statistical Applications. Use of Commonly available statistical packages such as SPSS and SYSTAT to solve problems on regression analysis, Optimization models, design of experiment, multivariate methods, fitting of distributions, parametric and non-parametric tests, numerical methods
(Note: (1) Looking to very rapid development in this field, different packages may be included by the faculty as per availability.
(2) The pattern of examination particularly for this paper has been suggested as under: (a) 70% for theory paper (b) 30% for practical paper (Practicals to be done individually by the candidates on computer)
(3) The faculty concerned may make any appropriate changes as per suitability and availability of the resources]

Selected References

1. Kennedy and Gentile Statistical Computing (Marcel Dekker)
2. Stephen G. Kochan (1991) Programming in C (CBS Publ.)
3. Brian W. Knapman & Denise M. Ritchie (1986) The C Programming Language, (Prentice Hall of India Pvt. Ltd.)
4. K. V. Krishnamurthy and S. K. Saxena Computer based numerical algorithms (East West Press)
5. John F. Rice (1988) Matrix Computation and Mathematical Software, McGraw Hill
6. Schaual Series Programming in C

मेम. डिप. आंदोलनानुं वेतने ३० नुननुं हरियाणु अलेते.

M.A. Part-I Examination (New Course)

(In force from June, 1998)

Sociological Theories

1. Sociological Theory-Meaning, characteristics and its structure- Functions of Theory- Major theoretical Perspectives-School approach
2. Functionalism: Introduction and intellectual roots Talcot parsons views-structure of society and social change grand theory, Robert Merton Postulates of Functional theory and their outcome-middle range theories
3. Conflict theory: Introduction and intellectual roots-Two traditions of conflict theory and their differences--Critical Tradition - The Frankfurt School its introduction and development, views of Adorno, Marcuse, and Erick Fromm, C. Wright Mills, Analytical tradition - Intellectual roots, views of Ralf Dahrendorf and Lewis Coser
4. Social exchange theory: Introduction and intellectual roots George Homans and Peter Blau
5. Symbolic Interactionism: Introduction and intellectual roots George H. Mead and Herbert Blumer
6. Ethnomethodology: Introduction and intellectual roots Harold Garfinkel
7. Sociology in India
(a) Historical development of the discipline, Bombay and Lucknow Schools- Development of the discipline after independence
(b) The controversy of Indian Sociology Views of Duménil, Pocock, Bailey- Yogendra singh

Reference for topics 1 to 6

1. Wallace Ruth and Alison wolf 1980 Contemporary sociological Theory, Prentice Hall Inc. Englewood cliffs, N. J. Topics 1 to 6
2. Turner Jonathan H. (Revised edition) The Dorsey Press Homewood Illinois
3. Ritzer George (Revised edition) Sociological theory Alfred A Knopf, New York
4. For topic 7
(a) Srivastava and Panini "The Development of Sociology and social anthropology in India" Sociological Bulletin Vol. 22 No. 2 Sept., 1973
(b) Joshi P. C. "Lucknow school of Economics and sociology and its relevance to-day" Sociological Bulletin Vol. 35 No. 1 March, 1986
(c) Chandra and Elder "Sociology in India: A study in the sociology of knowledge" American Sociological Review 30, Aug. 4 1965
(d) Sharma Surendra "Sociology in India" Rawat Pub. 1985
(e) Yogendra Singh "Indian Sociology" 1986 vistar Publications, New Delhi
(f) "For a sociology in India" "Contributions to Indian Sociology" Delhi Vikas Publications

Sociology Paper II--Women and Society

1. Nature, scope and subject-matter of women studies Their importance and relevance
2. Major Theoretical approaches Feminism (1) Sociological-Functional and critical. (2) Psychological
3. Women's Movements (1) Radical and Feminist movement in the west (2) Social reform movement of 19th & 20th Century of India-Women's role in independence struggle-Post independence era
4. Women and education Demographic facts--literacy, rural-urban differences etc. Women and different levels of education-Dropouts-- Factors affecting women's education

- Women and institutions of Marriage and Family. Single women; Male selection, Dowry and Divorce in major religious groups of India--Structure of Family--its impact on States of Women Socializations process--Domestic violence, wid whood Old age problems.
- Women and employment. Paid and unpaid work--Employment in organized and unorganized sectors and their problems--problems of working women--women entrepreneurship current issues in women's employment.
- Women and development. Participation of Women in Politics, Programmes and schemes for women's development.
- Women in Gujarat. Education, Employment, Domestic life and Politics.

References

Recommended Readings

- Dr. Neera Desai (ed) : A decade of Women's movements in India (1988).
- Giri Raj Shah : The Encyclopedia of Women's Studies (In two volumes) 1955.
- Govt. of India-Department of Social Welfare : Towards equaling Report of the Committee on the status of women in India (1974).
- Devaki Rani : Indian women, Publication division, Ministry of information and Publicizing Govt. of India, 1975.
- Maria Mies : Indian women and patriarchy concept pub. New Delhi, 1980.
- Mathewy Krishna Raj : Women's studies in India some perspective (1986).
- Nanda B. R. : Indian Women from purdah to modernity, New Delhi vikas publishing House, 1976.
- Kapoor Premilla : Marriage and working women in India Vikas publication Delhi, 1970.
- Widley Susam & Jacobson : Women in India, South Asia Books, 1977.
- Desai Neera & Mathewy Krishna Raj : Women and society in India, Ajanta Publication, 1987.
- Desai Neera and Vibhuti Patel : Indian Women Change and Challenge.
- Shorana B. K. : Nationalism, Social Reforms and Indian women, A study of the interaction between our National Movement and the movement of social reform among Indian women.
- Manjula Rahue : Unmarried working women Marriage and cancer, Rediant Publisher New Delhi, 1990.
- Widows, abandoned and Destitute women in India : Randient Pub., New Delhi.
- Chaudhari Marriage : Indian Women's movement, Randient Pub. New Delhi.
- Alupa Ram : Social Problems in India Rawat publications, Jaipur, 1992. સર્વિસ : સમાજ સમસ્યા-સોશિયલ પ્રોબ્લમ્સ, રાવત પબ્લિકેશન્સ, જાપુર, ૧૯૯૨.
- Feminism and Sociological Theory by Rath A wallace sage Publication New Delhi, 1989.

Paper III : Research Methods

- Theory and Research, Pure and applied research, Methodological issues in Social Sciences Sources for identifying a research problem, Factors influencing selection of a research problem formulation of a research problem.
- Research Design criteria for good research Design, Broad aspects of research designs in social research Laboratory/Field experiment, Descriptive/Analytical study Historical study, Case study, Survey, One-time cross-sectional, longitudinal and trend studies, Evaluative/non-evaluative, Primary/Secondary Sources of data.
- Surveys : Background and development of contemporary surveys in social research, Census and sample surveys; Nsua, use and importance of sample survey's National Sample Surveys.
- Sampling techniques : Economics and logic of sampling Probability and non-probability sampling procedures Random sampling with and without replacement Stratified random sampling, Multi-Stage area probability sampling Preparation of sampling frames, error control.
- Selection, definition and measurement of variables, Variable relevant to the Hypotheses of the study, Operationalization of these variable (dewising of meaningful indicators) Reliability and validity of measurements.

- Data Collection : Observation, Interview, Questionnaire. Translation of the data collection instrument, when necessary pre-testing and revision. Selection and training of field workers, Field problems in data collection.
- Statistical Procedures : Introduction to statistical inference Basic elements of the theory of probability, the Addition Rule, the Multiplication Rule Testing Hypothesis : Type I and Type II errors Measures of association for nominal level data, The chi-square test Measures of association for ordinal & metric data, Rank-order Correlation (Spearman's and Kendall's tau) The Pearson product-Moment Correlation Coefficient. ... 10 Marks
- Reporting research : Table construction Graphic presentation of data Interpretation & generalization of findings Implications of findings, Limitations of the study and suggestions for further research.

Suggested Reference Books

- Blalock, Hubert M. Jr. Social Statistics, New York, McGraw-Hill Book Company, Inc. 1960, Chapters 7-13, 15, 17, 18, pp. 76-186, 212-241, 273-325.
- Festinger, Leon & Daniel Katz (eds) Research Methods in the Behavioural Sciences, New York, Wolt Rinehart and Winston, 1966.
- Goode, William J. & Paul K. Hatt, Methods in Social Research, New York, McGraw-Hill Book company, Inc., 1952.
- Kish, Leslie, Survey Sampling, New York, Wiley, 1965.
- Merton, R. K., 'Notes on Problem-finding in Sociology' in Merton, P. K. and others (eds), Sociology of Today-Problems & Products, New York, Basic Books, Inc., 1959, pp. XIV.
- Moser, C. A. & G. Katton, Survey Methods in Social Investigation, London, The English Language Book Society, Heinemann Educational Book Ltd., 1973.
- Muller, John H. & Karl F. Schuessler, Statistical Reasoning Sociology, Boston Houghton, Mifflin, 1961.
- Selitz, Claire, Maie Jahoda, Merton Douth & Stuart W. Cook 'Research Methods in Social Relations, New York, Holt, Rinehart and Winston, 1962.
- Shah, Vimal P., Research Design, Ahmedabad, Rachana Prakashan (Revised), 1977.
- Shah Vimal P. Reporting Research, Ahmedabad, Rachana Prakashan, 1977 (revised).
- Siegal, Sidney, Non-parametric Statistics for the Behavioural Sciences, New York, McGraw-Hill Book Company, Inc, 1956 (Chapters 1-3 pp. 1-34).
- Stauffer, S. A. "Some observations on study design", The American Journal of Sociology, 55 (January, 1950), pp. 355-361 (Also Hobbs-Merrill Reprint Series No. S. 436).
- Voiss, Robert, S. Statistics in Social Research, An introduction, New York, John Wiley & Sons, Inc., 1958.
- Zaisel, Hons. Say it with Figures, New York, Harper & Raw, 1957.

Social Problems — Paper IV

Note : The problems suggested are to be discussed in Indian Context.

Scientific study of Deviant behaviour--Culture and Social norms-- Social Conformity and its causes--Social differentiation and subcultural norms--Deviant Behaviour--Concept, Causes and types of deviance--Social Stratification and Deviant behaviour Societal reaction to deviant behaviour & Social visibility of it--Controversial theories of deviant behaviour--Reduction of deviant behaviour-- general programmes and use of institutions--group approach for reintegration. Problem of Child Labour. The concept of child labour--Nature and extent of problem causes of child labour--The magnitude of the problem in organized and unorganised sectors--paid and unpaid work of the child impact of child labour on children, economy and society at large-- problems of children engaged in child labour--preventive and remedial measures. Programmes and policies--government and non-governmental agencies--Rehabilitation, education etc.

Problem of Aging : Concept of aging--nature and extent of this problem--demographic facts--characteristics of aging--biophysical, natural etc --Importance of its study--Factors affecting the problem--cultural, social economic, hygienic, dietary etc. problems of aged people in familial and Organizational set up. impact and adjustments--Remedial Measures--programmes, policies and evaluation.

Problem of HIV/AIDS : The concept of HIV infection and AIDS-- Characteristics and extent of the problem--epidemiological features--AIDS in India and developing countries--causes Mode

of transmission and its Social implications-High risk groups or segment of society (Commercial Sex workers, Homosexuality, Eunuchs, Slum population, Truck drivers etc.) Prevention and control techniques-Research methodology for its study-Evaluation

References

1. Cohen Albert Deviance and control. Prentice Hall of India Pvt. New Delhi, 1970.
2. Horton and Hunt Sociology Metrow Hill Book Company New York, 1964 P. 126-156.
3. Marshall Chard Sociology of Deviant behaviour Holt, Rinehart & Winston inc. New York, 1963.
4. Merion Robert K. "Social Theory and Social Structure" (Revised the free press of glencoe) New York, 1962.

Child Labour

1. Pandhe M. K. (ed) "Child labour in India", India Book Exchange, Calcutta, 1979.
2. Visaria Pravin & Paul Jacobi "Child Labour in India" Gujarat Institute of Development Research, Ahmedabad-1995.
3. Neel K. Sharda: "The Legal, Economic and Social Status of The Indian Child" National Book Organization, New Delhi, 1988.
4. બેરોલ પટ્ટણ : (૧) "બાળશ્રમી આજ પૃથ્વી" પ્રવિણ દુહા, મુંબઈ, ૧૯૮૬, (૨) "આશ્વપટ્ટણોની સમસ્યા" જગદીશ પ્રસાદભાઈ, અમદાવાદ, ૧૯૮૫, (૩) "સંજીવ પુરુષોત્તમના પ્રવિરોધોની સિમિતિ" [આજ પૃથ્વીના સરભમો, પ્રવિરોધના અભ્યાસ] જગદીશ પ્રસાદભાઈ, અમદાવાદ, ૧૯૮૫.
5. નર્મદા પુરુષોત્તમની સિમિતિ નેરવર ટ્રસ્ટ સંપ્રિયના નાગરજી એન્ડ એસાઈ, અમદાવાદ, ૧૯૮૭.

Ageing

1. Ward Russell "Ageing experience-An introduction to gerontology", 1979, J. B. Lippincott Company, U.S.A.
2. Kart Carr S. "The realities of ageing 1981" Allyn & Bacon Inc. Boston Massachusetts.
3. Atchley Robert "The Sociology of retirement", 1976, Schenkman Pub. House Cambridge Massachusetts.
4. Dendekar Kaumodini "The elderly in India, 1996" Sage Publication, New Delhi.
5. Randhava Manuvel Singh "The rural and Urban aged 1991" National Book Org., New Delhi.
6. Mishra Saraswati "Problems and Social Adjustment in Old Age" Gian Pub. House, 1989.
7. Alfred de Souza & Fernandes "Ageing in South Asia" Indian Social Instit., New Delhi, 1982.
8. Sharma M. L. "Ageing in India", Challenge for the Society.
9. Sati P. N. "Retired and Aging People" Mittal Publication, Delhi, 1988.
10. Gogo M. S. "Studying problems of Aging" Sociological Bulletin Vol. 46, No. 1 March, 1967.
11. Yogendra Singh "Changing trends in the Indian Family and the adjustment of Aged" Research and development Journal Vol. 2 No. 2 Help Age India, New Delhi Feb. 1997.
12. Shali Vimal P. "The Elderly in Gujarat (Monograph)
13. Rimanuriti A. V. "The Psycho-Social Scenario of the elderly" problems, priorities and perspectives. Research and development, Journal Vol. 3 No. 1 Help Age India, New Delhi, Oct. 1996.
14. Reddy K. N. "Social security for the elderly in India Need for reform. Research and development journal Vol. 3 No. 1 Help Age India, New Delhi, Oct. 1996.
15. Havighurst R. J. "Flexibility and the Social roles of the retired", From "Principles of Sociology" Young and Mack, Eurasia Publishing Household, New Delhi.
16. Indira Jai Prakash "Hindu world view and well being of Aging Women" Research and Development Journals, Vol. 3 No. 2 Help Age India, New Delhi, Feb. 1998.

HH AIDS

1. Pflak Micheal Arts "A problem for Sociological Research" Sage Publication, New Delhi, 1992.

સર્વોચ્ચ શિક્ષણ : ડી. ૪-૪-૧૯૯૯

2. Gracious Thomas-AIDS in India. Rawat Publication, 1994.
3. Carbine M. E. & P. Lee: AIDS into the 90's Strategies for an integrated Response to the AIDS epidemic Washington D.C. National AIDS, New York, 1988.
4. Aggelton Peter "Social aspects of AIDS and Hilary Thoms London Falmer 1988.
5. Park J. E. & Park K.: Textbook of preventive and Social medicine M/S. Hanarsadas Bhanot, Jabalpur, 1989.
6. Pachuri Saroj "The problem "Seminar" NO. 396 Aug., 1992.
7. Sharma Manoj "Sexuality Transmitted Diseases An over view Health for Millions" XV No 2 April, 1989.
8. "અમારો પત્ર નામે : એલડીએ, ફેરફાર જાણી ફેરફાર પાડો" ૧૦૦ સહાયક સંસ્થા આરોગ્ય સુરક્ષા ૨, ૩, ૪, ૫, ૬, ૭, ૮, ૯, ૧૦, ૧૧, ૧૨, ૧૩, ૧૪, ૧૫, ૧૬, ૧૭, ૧૮, ૧૯, ૨૦, ૨૧, ૨૨, ૨૩, ૨૪, ૨૫, ૨૬, ૨૭, ૨૮, ૨૯, ૩૦, ૩૧, ૩૨, ૩૩, ૩૪, ૩૫, ૩૬, ૩૭, ૩૮, ૩૯, ૪૦, ૪૧, ૪૨, ૪૩, ૪૪, ૪૫, ૪૬, ૪૭, ૪૮, ૪૯, ૫૦, ૫૧, ૫૨, ૫૩, ૫૪, ૫૫, ૫૬, ૫૭, ૫૮, ૫૯, ૬૦, ૬૧, ૬૨, ૬૩, ૬૪, ૬૫, ૬૬, ૬૭, ૬૮, ૬૯, ૭૦, ૭૧, ૭૨, ૭૩, ૭૪, ૭૫, ૭૬, ૭૭, ૭૮, ૭૯, ૮૦, ૮૧, ૮૨, ૮૩, ૮૪, ૮૫, ૮૬, ૮૭, ૮૮, ૮૯, ૯૦, ૯૧, ૯૨, ૯૩, ૯૪, ૯૫, ૯૬, ૯૭, ૯૮, ૯૯, ૧૦૦.

M.Phil Sociology

New Course in force from June, 1998

Paper I-Research Methods in Sociology

Section - I : Survey Research

1. Science and society-Social research and development its application and problems Problem of research ethics.
2. Social Survey's : Brief history, settings, nature, types and coverage Planning of survey.
3. Social surveys : problems of sampling-data collection- techniques-survey data and analysis.
4. Use of Secondary data in Social research.
5. Use of descriptive and inferential statistics.
 - (a) Mean, Median, mode, standard deviation.
 - (b) Chi-Square Test.
 - (c) Chi-Square Test.
 - (d) probability-its elements & Use.

Section II : Qualitative Research Methods

1. Anthropological Methods and Field research-its problems.
2. Data Collection Techniques-especially participant observation.
3. Action and evaluative research.
4. Qualitative data analysis-procedures & problems.

Paper II-1998-99 Examination

Sociological Theory 1997-99

Selection I :

Durkheim, Robert Nisbet, 1965 Englewood Cliffs, New Jersey.

Section II :

"The Street Corner Society", William Whyte.

Paper III : Monograph Studies

Section I :

Peasant Movement in India, 1920-1950, Dhnanage Oxford Publication

Section II :

Unmarried working Women Marriage and Career Rathaur Manjula, 1990 Radhant Publishers, New Delhi

ਪਰਿਸ਼ਦ "੪"

੧੯੯੯-੧੯੯੯

ਨਿਮਨ ਪ੍ਰਸ਼ਨ

1. The following statements are contradictory with the facts of the case. Discuss the reasons for the same.
2. The following statements are contradictory with the facts of the case. Discuss the reasons for the same.
3. The following statements are contradictory with the facts of the case. Discuss the reasons for the same.

ਨਿਮਨ ਪ੍ਰਸ਼ਨ

1. The following statements are contradictory with the facts of the case. Discuss the reasons for the same.
2. The following statements are contradictory with the facts of the case. Discuss the reasons for the same.

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3. The following statements are contradictory with the facts of the case. Discuss the reasons for the same.

ਪਰਿਸ਼ਦ "੫"

੧੯੯੯-੧੯੯੯

1. The following statements are contradictory with the facts of the case. Discuss the reasons for the same.
2. The following statements are contradictory with the facts of the case. Discuss the reasons for the same.
3. The following statements are contradictory with the facts of the case. Discuss the reasons for the same.

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ

ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪਰਿਸ਼ਦ "੬"

੧੯੯੯-੧੯੯੯

Third B.Com. Examination, April, 1999

List of Topics for Dissertation Advanced Business Management Paper V

1. Financial structure of the P.T.C. Limited.
2. Working Capital management of the trading concerns of Punjab, S.S.
3. Finance of Wholesalers & Merchants.
4. International Finance of the Punjab, India.
5. Finance of Agriculture in Punjab, India.
6. Finance of Small & Medium Enterprises in Punjab, India.
7. Finance of Large & Medium Enterprises in Punjab, India.
8. Finance of Small & Medium Enterprises in Punjab, India.
9. Finance of Large & Medium Enterprises in Punjab, India.
10. Finance of Small & Medium Enterprises in Punjab, India.
11. Finance of Large & Medium Enterprises in Punjab, India.
12. Finance of Small & Medium Enterprises in Punjab, India.
13. Finance of Large & Medium Enterprises in Punjab, India.
14. Finance of Small & Medium Enterprises in Punjab, India.
15. Finance of Large & Medium Enterprises in Punjab, India.
16. Finance of Small & Medium Enterprises in Punjab, India.
17. Finance of Large & Medium Enterprises in Punjab, India.
18. Finance of Small & Medium Enterprises in Punjab, India.
19. Finance of Large & Medium Enterprises in Punjab, India.
20. Finance of Small & Medium Enterprises in Punjab, India.

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰਾਂ ਦੀ ਸਹੂਲਤ ਦਿਓ

परिचय "९"

संशोधन संशोधन : अ. ४-४-१९९९

B.PHARM. FIRST YEAR
(New Syllabus)

Sr No	Subjects	Code No	Marks		Hours/week	
			Theory	Practical	Theory	Practical
1	Pharmaceutical Engineering (Unit Operations I)	231	100	100	3	3
2	General Chemistry (Inorganic + Physical)	114	100	100	3	3
3	Anatomy Physiology & Health Education	125	100	100	3	3
4	Pharmacognosy-I	112	100	100	3	3
5	Basic Biostatistics & Computer Applications	115	100	100	3	3
6	Advanced Mathematics	122	100	--	3	--
			600	500	18	15

1. Pharmaceutical Engineering
(Unit Operations I)

3 Hours/Week

2.1 Theory

- Unit Operation: Introduction, Basic Laws
- Stoichiometry: Unit processes material and energy balance, molecular units mole fraction, tie substance, gas laws, mole volume, primary and secondary quantities, equilibrium state, rate process, steady and unsteady states, dimensionless equations, dimensionless formulae, dimensionless groups, different types of graphic representation, mathematical problem.
- Fluid Flow: Types of flow, Reynold's number, viscosity, concept of boundary layer, basic equations of fluid flow, valves, flow meters, manometers and measurement of flow and pressure.
- Filtration and centrifugation theory of filtration, filter aids, filter media, industrial filters including filter press, rotary filter, edge filter etc. factors effecting filtration, mathematical problems on filtration, platinum cleaning cycle in batch filters. Principles of centrifugation industrial centrifugal filters and centrifugal sedimenters.
- Heat Transfer: Source and heat, heat transfer, steam and electricity as heating media, determination of requirement of amount of steam/electrical energy, steam pressure, boiler capacity, Mathematical problems on heat transfer, Mode and Laws of Heat transfer.
- Dehumidification and Humidity Control: Basic concept and definition, wet bulb and adiabatic saturation temperatures, psychrometric chart and measurement of humidity, operation of humidity measurement in pharmacy, equipments for dehumidification operations.
- Refrigeration and air conditioning: Principles and applications of refrigeration and air conditioning.
- Material of construction: General study of composition, corrosion resistance, Properties and applications of the materials of construction with special reference to stainless steel and glass.
- Industrial hazards and safety precautions: Mechanical Hazards, Electrical fire and dust hazards, Industrial dermatitis, Accident records etc.
- Material handling system: (a) Liquid handling: Different types of pumps, (b) Gas handling: various types of fans, blowers and compressors (c) Solid handling: Fans, Bunkers, Conveyors, Air Transport.

2.3.1 Practical

4 Hours/Week

- Measurement of flow of fluid and their pressure, determination of Reynold's number and calculation of frictional losses.
- Evaluation of filter media, determination of rate of filtration and study of factors effecting filtration.
- Experiments to demonstrate applications of centrifugation, thermometers and Psychrometric charts.
- Determination of humidity-use of Dry Bulb and wet Bulb.
- Elementary knowledge of engineering drawing—concept of orthographic and isometric views of elevation and third angle projection. Notation and abbreviation used in engineering drawing.
- Heat transfer co-efficient, determination.
- Other practicals of topic covered under theory.

2. General Chemistry

3 hrs/week

Theory

- An outline of methods of preparation, uses, sources of impurities, tests for purity and identity, including limit tests for iron, arsenic, lead heavy metals, chloride, sulphate and special tests if any, of the following class of inorganic pharmaceutical included in the current Indian Pharmacopoeia.
 - Acids and Bases: Buffers, Water
 - Gastrointestinal agents: Acidifying agents, Antacids, Protective and Adsorbents, Cathartics
 - Major intra and extra-cellular electrolytes: Physiological ions, Electrolytes used for replacement therapy, acids-base balance and combination therapies
 - Essential and trace elements: Transition elements and their compounds of pharmaceutical importance: Iron and haematinics, mineral supplements
 - Topical agents: Protectives, Astringents and Anti infectives
 - Gases and Vapours: Oxygen, Anesthetics and Respiratory Stimulants
 - Dental products: Dentifrices, anti-caries agents
 - Complexing and chelating agents used in therapy
 - Miscellaneous agents: Sclerosing agents, expectorants, emetics, poisons and antidotes, sedatives etc pharmaceutical Aids used in pharmaceutical industry: Anti-oxidants, preservatives, filter aids, Adsorbents, diluents, excipients, suspending agents, colourants etc.
 - Inorganic Radio pharmaceuticals: Nuclear radiopharmaceuticals: reactions, Nomenclature, Methods of obtaining their standards and units of activity, measurement of activity, clinical applications and dosage, hazards and precautions.
- The liquid state: Physical properties surface tension, parachor, viscosity, refractive index, optical rotation, dipole moments and chemical constituents.
- Solutions: Ideal and real solutions, solutions of gases in liquids, colligative properties, partition coefficient, conductance and its measurement, Debye Huckel theory.
- Thermodynamics: First, Second and Third laws, Zeroth law, absolute temperature, state, thermochemical equations, phase equilibria and phase rule, One and two component systems.
- Adsorption: Freundlich and Gibbs adsorption isotherms, Langmuir theory of adsorption.
- Photochemistry: Consequences of light absorption, Jablonski diagram, Lambert-Beer Law, Quantum efficiency.
- Chemical Kinetics: Zero, First and Second order reactions, complex reactions, theories of reaction Kinetics, characteristics of homogeneous and heterogeneous catalysts and base enzyme catalysis.
- Radioactivity: Basic principles of Radioactivity, Radioactivity Rays, Measurement of Radioactivity, Applications.

Practicals

3 hrs/week

- The background and Systematic qualitative analysis of inorganic mixture of up to 4 radicals. Six Mixture to be analyzed, preferably by semi-micro methods.

2. Limit Tests for Cl , SO_4 , As. Heavy metals and Lead along with a few modifications.
3. All identification tests for pharmacopoeial inorganic pharmaceuticals and qualitative tests for cations and anions should be covered
4. Volumetric Analysis of few important compounds covered in theory
5. Experiments on surface tension and viscosity, partition coefficients, adsorption, order of reaction (First and Second), refractive index and molar refraction

Books recommended

1. Inorganic Medicinal and Pharmaceutical Chemistry : J. H. Block, E. B. Roene, T. O. Soini, C. O. Wilson, Varghese Publishing House, First Indian Reprint, 1986.
2. Bentley and Driver's Textbook of Pharmaceutical Chemistry : Revised by L. M. Atherden, Oxford University Press, 8th Ed., 1969.
3. The Indian Pharmacopoeia, Latest Edition, Controller of Publications.
4. Practical Pharmaceutical Chemistry, edited by A. H. Backett, J. B. Stenlake, CBS Publishers, First Indian edition, 1987.
5. Semimicro Qualitative Analysis : V. V. Nadkarni, A. N. Kothare, P. S. Fernandes, Poular Prakashan, 2nd Ed., 1997.
6. Vogel's Qualitative Inorganic Analysis Revised by G. Svehla, Orient Longman, 6th Ed., 1994.
7. Textbook of Physical Chemistry : Samuel Glasstone, Macmillan India Limited, 2nd Ed., 1995.
8. Advanced Physical Chemistry : Gurdeep Raj, Goe Publishing House, 1st Ed., 1980.
9. Advanced Practical Physical Chemistry : J. B. Yadav, Goe Publishing House, 15th Ed., 1997.

3. Anatomy, Physiology & Health Education (APHE)

Theory

3 hrs/week

1. Scope of anatomy and physiology and their basic terminology used in these subjects
2. Structure of cell, its components and their functions
3. Elementary tissues of the human body : Epithelial, connective, muscular and nervous tissues, their sub-types and characteristics
4. Osseous system : Structure, composition and functions of skeleton, classification of joints, types of movements at joints, Disorders of bones and joints
5. Skeletal muscles : Their gross anatomy, physiology of muscle contraction, physiological properties of skeletal muscle and their disorders
6. Haemopoietic System : Composition and functions of blood and its elements, their disorders, blood groups and their significance, mechanism of coagulation, disorder of platelets and encephalation
7. Lymph and lymphatic system : Composition, formulation and circulation of lymph, disorders of lymph and lymphatic system, Basic physiology and functions of spleen
8. Cardiovascular system : Basic anatomy of the heart, Physiology of heart, blood vessels and circulation, Basic understanding of Cardiac cycle, heart sounds and electrocardiogram, Blood pressure and its regulation, Brief outline of cardiovascular disorders like hypertension, hypotension, arteriosclerosis, angina, myocardial infarction, congestive heart failure and cardiac arrhythmias.
9. Digestive system : Gross anatomy of the gastro-intestinal tract, functions of its different parts including those of liver, pancreas and gall bladder, various gastrointestinal secretions and their role in the absorption and digestion of food, Disorders of digestive system.
10. Respiratory system : Anatomy of respiratory organs, functions of respiration, mechanism and regulation of respiration, respiratory volumes and vital capacity.
11. Central Nervous System : Functions of different parts of brain and spinal cord, Neurohumoral transmission in the central nervous system, reflex action, electroencephalogram, specialized functions of the brain, cranial nerves and their functions.
12. Autonomic Nervous System : Physiology and functions of the autonomic nervous system, Mechanism of the neurohumoral transmission in the A.N.S.
13. Urinary System : Various parts, structures and functions of the kidney and urinary tract, Physiology of urine formulation and acid base balance, Diseases of urinary system.

14. Reproductive System : Male and female reproductive systems and their hormones, physiology of menstruation, coitus and fertilization, Sex differentiation, spermatogenesis and oogenesis, Pregnancy, its maintenance and parturition.
15. Endocrine System : Basic anatomy and physiology of Pituitary, Thyroid, Pancreas, Adrenal, Adrenal, Pancreas Testes and ovary, their hormones and functions.
16. Local Hormones : Histamine, 5-HT, Prostaglandins, Thromboxanes, leukotrienes, PAF and Peptides, their functions and importance.
17. Sense Organs : Basic anatomy and physiology of the eye (vision), ear (hearing), taste buds, nose (smell) and skin (superficial receptors).
18. (a) Concepts of health and disease, causing agent and prevention of disease
(b) Classification of food requirements, balanced diet, nutritional deficiencies disorders, their treatment and prevention, specifications for drinking water.
(c) Demography and family planning : Medical termination of pregnancy.
(d) Brief outline of communicable diseases, their causative agents, modes of transmission and prevention (Chicken pox, measles, influenza, diphtheria, whooping cough, tuberculosis, poliomyelitis, helminthiasis, malaria, filariasis, rabies, trachoma, tetanus, leprosy, syphilis, gonorrhea and AIDS)
(e) First Aid : Emergency treatment of shock, snake bites, burns, poisoning, fractures and resuscitation methods.

Practicals :

- (a) Osteology : Study of human skeleton
- (b) Hematology : Determination of hemoglobin content in blood, H.B.C. Count, W.B.C. Count, Differential leucocyte count, Erythrocyte sedimentation rate, Bleeding time, Clotting time, Blood group and osmotic fragility of R.B.C's.
- (c) Cardiovascular System : Determination of body temperature, Pulse rate, blood pressure, Listening to heart sounds, Demonstration and understanding of electro diagram, PQRST waves and their significance.
- (d) Respiratory System : Determination vital capacity, experiments on spirometry.
- (e) Urine analysis : Simple experiments involved in the analysis of normal and abnormal urine : Collection of specimen, appearance, determination of pH, sugars, protein, urea and creatinine.
- (f) Histology : Microscopic study of different types of tissues and organs from permanent slides.
- (g) Physiological experiments on nerve-muscle preparation and demonstration of the working of the Student Physograph.
- (h) Study of various museum specimen, chart, models, contraceptives and first aid measures.

Books recommended

1. Martini, F. : Fundamentals of Anatomy and Physiology, (Prentice Hall, 2nd Ed., 1992)
2. Seeley, R. R. et al. : Anatomy and Physiology (Mosby), 3rd Ed., 1995.
3. Guyton, A. C. and Hall, J. E. : Text-book of Medical Physiology (W. B. Saunders Co. Philadelphia) 8th ed., 1991.
4. West J. B. Best and Taylor's Physiological Basis of Medical Practice (Williams and Wilkins, Baltimore), 12th ed., 1989.
5. Tortora G. J. and Anagnostikos, N. P. Principles of Anatomy and Physiology (Harper and Colling Publishers, New York), 1993, 7th ed.
6. Gandhi, T. P. et al. : Human Anatomy, Physiology & Health Education (B. S. Shah Prakashan, Ahmedabad), 1998, 9th ed.
7. Joshi, Vijaya D. : Preparation Manual for Undergraduates Physiology (B. I. Churchill Livingstone), 1995.
8. Chatterjee, C. C. : Human Physiology (Medical Allied Agency Calcutta), 10th ed., 1985.
9. Clancy, John and McVicer, A. J. : Physiology and Anatomy (Edward Arnold), 1995.
10. Subhash Shalva : Human Physiology (C. B. S. Publishers, New Delhi), 1st ed., 1994.
11. Chaurasia, B. D. : Human Anatomy (3 Volumes) C. B. S. Publishers (New Delhi), 3rd ed., 1995.

12. Ross and Wilson's Anatomy and Physiology in Health and Illness (Churchill Livingstone), 8th ed., 1995
13. Parmar, N. S. Health Education and Community Pharmacy (C.B.S. Publishers, New Delhi), 1995
14. Goyal, R. K. et al. Practical Anatomy Physiology and Biochemistry (B. S. Shah Prakashan, Ahmedabad, 1994)
15. Gang, K. et al. A Text-book of Histology (C.B.S. Publishers, New Delhi), 2nd ed., 1991
16. Lesson, C. R. et al. Text-book of Histology (W. B. Saunders Company), 5th ed.
17. Agur, Anne M. R. Atlas of Anatomy (Williams and Wilkins) 9th ed., 1991
18. Van de Graaff and Crowley, J. L. A Photographic Atlas for the Anatomy and Physiology Laboratory (Mortan Publishing Company) 1996, 3rd ed.
19. Ghai, C. L. A Text-book of practical Physiology (Jaypee Brothers Medical Publisher (P.) Ltd., 4th ed., 1998.

4. Pharmacognosy - I

3 hours/week

Theory

1. Method of classification of plants
2. Plant Cell - Its structure and non living inclusion, mitosis and meiosis, different types of plant tissues and their functions
3. Morphology and Histology of root stem bark wood leaf flower, fruit and seed Modification of Root and Stem
4. General survey of Animal Kingdom - Structure and life history of parasites as illustrated by amoeba, entamoeba, trichomonas, plasmodium, taenia, Ascaris
5. Definition history, scope and development of pharmacognosy
6. Sources of drugs - Plant biological, marine and mineral. Tissue culture as source of drugs
7. Classification of drugs - Alphabetical Morphological Taxonomical Chemical and Pharmacological
8. Plant Taxonomy - Study of following families with special reference to medicinally important plants: Apocynaceae, Solanaceae, Rutaceae, Umbelliferae, Leguminosae, Rubiaceae, Liliaceae, Gramineae, Labiatae, Cruciferae, Papaveraceae
9. Cultivation, collection, processing and storage of crude drugs. Factors influencing cultivation of medicinal plants. Types of soils and fertilizers of common use. Plant hormones and their applications. Polyploidy, mutation and Hybridization with reference to medicinal plants
10. Quality control of crude drugs. Adulteration of crude drugs and their detection by organoleptic, microscopic, physical chemical, biological and other method of evaluation
11. An introduction to active constituents of drugs and their classification and properties
12. Systemic pharmacognostic study of the following
 - (a) Carbohydrates and derived products - Agar, Guggulum, Acacia, Honey, Isabgol, Pectin, Starch, Sterculia, Tragacanth and Sodium alginate
 - (b) Lipids - Beeswax, Castor oil, Cocoa Butter, Cold liver oil, Hydrocarpus oil, Sesame oil and Wool fat, Kokum Butter, lard, linseed oil, Rice bran oil, Shark liver oil

Practicals

1. Morphology of plant parts indicated in theory
2. Care, use and types of microscope
3. Gross identification of slides of structure and life cycle of lower plants and animals mentioned in theory
4. Preparation microscopic examination of stem, root and leaf of monocot and dicot leaves
5. Structure of human parasites mentioned in theory with the help of specimens
6. Morphological characteristics of plant families mentioned in theory
7. Microscopic measurements of cell and cell contents - Starch, tissue culture, etc. 1st crystals and phloem fibres

3 hours/week

8. Determination of leaf constants such as stomatal index, Vein-islet number, Vein termination number Palisade ratio and schlerenchyma number.
9. Identification of crude drugs belonging to carbohydrates and lipids
10. Preparation of herbarium sheets

Books recommended

1. A Text-book of Zoology - R. D. Vidyarthi S. Chand and Company Ltd., New Delhi, 15th ed., Reprint 1995
2. Botany for degree students - A. C. Dutta, Calcutta Oxford University Press, Delhi, 15th Impression, 1994
3. Pharmacognosy - C. K. Kokate, A. P. Purohit, S. B. Gokhale, Nirali Prakashan, 7th ed., 1996
4. Pharmacognosy - V. E. Tyler, L. R. Brady, J. E. Habbers, Lea and Febiger Philadelphia, 8th ed., 1981
5. A Text-book of Pharmacognosy - C. S. Shah, J. S. Qadri, B. S. Shah Prakashan, Ahmedabad, 8th ed., 1990
6. Pharmacognosy of Powdered Crude Drugs - M. A. Tyenger, Manipal Power Press, 1st ed., 1974
7. Trease and Evan's Pharmacognosy - W. C. Evans, W. B. Saunders Company, Singapore, 14th ed., 1997

Practical Book

1. Practical Pharmacognosy by C. K. Kokate, Vallabh Prakashan, Delhi, 4th ed., 1997
2. Practical Pharmacognosy - Technique and Experiment by C. K. Kokate and S. B. Gokhale, Nirali Prakashan, Pune, 3rd ed., 1996

First B.Pharm.

5. Basic Biostatistics and Computer Applications in Pharmacy

Theory :

(Total Hours 75)

- Biostatistics** - Basic concepts of Statistics - Data Data Graphic, frequency distribution measures of central tendency (mean, Median, Mode, Harmonic mean, Geometric mean) applications in LAL test and scattering of data (Range, Mean, deviation, Standard deviation, RSD and S.E.M etc.) Applications in Pharmaceutical Validation
- Introduction to probabilities** - Binomial and Normal probabilities distribution
- Sample and sampling method** - sample-size and its significance Sampling techniques and their application in pharmacy
- Hypothesis testing [t-statistics application in dissolution testing of solid dosage forms, chi square test]**

Correlation analysis, Correlation coefficient, Spearman's rank correlation coefficient

- Linear regression analysis** applications in Beer's Lambert's Curve (stability study) Introduction to curve fitting techniques

Analysis of Variance - Introduction and application of the test in the pharmacokinetic study. (15 Hours)

Computer - Introduction to computers-introduction to its devices binary conversion computer classification-applications of computers in pharmacy (15 hours)

Introduction basic DOS commands such as creating directory, copying creating files, backup restore, autoexec bat file, config sys file etc. (5 hours)

Calculations in EXCEL-preparation of templates for application in pharmaceutical chemistry pharmaceutical technology pharmacology and pharmacognosy for example statistical treatment of data for Beers Lambert's curve, solution of problems based on physical chemistry, pharmaceutical engineering, stability study, area under the curve, bio-assay, bioequivalence study, extraction, RF value and other elementary problems of pharmaceutical importance. Special attention must be given to arithmetic expressions

Hierarchy of operation, library functions such as logarithm, squareroot, standard deviation, sum, average, t-test, ANOVA etc. Drawing graphs in EXCEL-line graph, histogram, pie-chart. At least one graph for each discipline of chemistry, pharmaceutical technology, pharmacology and pharmacognosy-Editing chart features such as- annotation, labelling of axis, changing legends, etc. (19 hours for EXCEL)

MS WORD Typing of text with stress on the following features. Typing of text with different fonts and different sizes, indentation, superscript, subscript, Greek terms such as alpha, beta, etc. spell checking, use of thesaurus, cut/paste and other features of edit. Preparation of tables for practical of pharmaceutical chemistry. Pharmaceutical technology, pharmacology and pharmacognosy. (7 hours)

Types of languages elementary programming in BASIC language algorithm flow chart solution of problems based on biostatistics and other simple problems of pharmaceutical interest	(16 hours)
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Introduction to E-mail and internet-demonstration of sites of pharmaceutical interest such as (5 hours)

Books Manuals provided with the license version of the softwares S. Bolton-
Pharmaceutical statistics

Practical (Total 75 hours)

Practicals based on the topics covered in theory-MS-EXCEL. Stress must be given to topics of pharmaceutical interest only (e.g. statistical analysis of pharmaceutical data, stability study, area under the curve, calculation of molecular weight, calculation of solubility, buffers, filtration, acid base titration, oxidation reduction, physical pharmaceuticals, pharmaceutical engineering, etc.) The equations will be provided at the time of examinations.

Practicals based on Biometrics: Pharmaceutical applications of students and paired t-test, SD-SEM, Chi-square test-ANOVA regression analysis (application to stability testing) ANOVA (application in pharmacokinetics)

Assignment: Computerization of any two practicals taught in first B Pharm. (text, tables, figures, calculation steps, etc.)

Text Books
 Martin et al. Physical pharmaceutics
 S. Bolton, Pharmaceutical Statistics

6. Advanced Mathematics

1. **Differential Equations:** Revision of integral Calculus, definition and formation of differential equations, equations of first order and first degree variable, separable, homogeneous and linear differential equations, applications reducible to such types, linear differential equation of n^{th} order, exact differential equations with constant coefficients, complementary function and particular integral simultaneous linear differential equations, pharmaceutical applications.
2. **Laplace Transform:** Definition, transform of elementary functions, properties of linearity and shifting, inverse Laplace transform, transform of derivatives, solution of ordinary and simultaneous differential equations.
3. **Differential of rational, trigonometric, exponential and logarithmic functions, tangents and normal maxima and minima.** Graphs of an elementary function (Simple curve tracing), definite integration of rational, trigonometric exponential and logarithmic functions.
4. **Relies theorems, Integrands and calculus mean value theorems and Taylor's Hospital rule, advanced statistical illustrations.**
5. **Mathematical modelling, mathematical models in biology, medicine and pharmacy.**

Books recommended

1. Elements of Probability and Statistics. M. J. Basu and M. Jais 1963. Tata McGraw Hill Publishing Co.
2. Theory and problems of Advanced Calculus (SR metrical edition). Murray R. Spiegel. Schaum's outline series. McGraw Hill Book Co.
3. Differential equations Frank Ayres Jr. First edition. Schaum's outline series. McGraw Hill Book Co.
4. Differential equation - a first course. Gurtman and Nanto's. Second Edition. Saunders College Publishing.
5. A text-book of Matrices. Shanti Narayan, 1994. S. Chand & Co.
6. Differential Calculus - Shanti Narayan, 1997. Shyam Lal Charitable Trust.
7. Integral Calculus - Shanti Narayan, 1997. S. Chand & Co.

परिशिष्ट "८"

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કોમકાજ ક્રમાંક ૩
 નેશનલ કમિટી ઓફ પ્રક્રિયવેલેન્સ ઓફ એગ્રાપિનિંગરાસની એક સભા શ્રી એસ. બી. ધોરા, કુલપતિશ્રી
 અધ્યક્ષસ્થાને તા. ૩-૭-૧૯૮૮ના રોજ અધોરે ૩-૭૦ ક્લાક યુનિવર્સિટી કાંપોસમાં મળેલ હતી, તેમાં નીચેના
 સભ્યો હાજર હતા :

- | | |
|--|---------|
| १. प्रो. डा. क. ओम, शास्त्री, उपकुलपतिप्रश्नी | |
| २. प्रो. नरहरिप्रिया प्रदीप, टीनसी आदर्श विद्याशाखा | १९७८ |
| ३. प्रो. वाघ, क. अम्बाला, टीनसी, विमान विद्याशाखा | १९८०/८१ |
| ४. प्रो. इरौ-मिजिम अम. टीनसी, टीनसी, कोमल विद्याशाखा | १९८२ |
| ५. श्री मुकुन्दराज अम. देसाई, टीनसी, को विद्याशाखा | १९८२ |
| ६. प्रो. बी. ओम. भाटी, टीनसी, विमान विद्याशाखा | १९८२/८३ |
| ७. श्री सी. ओ. देसाई, टीनसी, भिक्षु विद्याशाखा | १९८३/८४ |
| ८. श्री नरहरिप्रिया अम. देसाई, टीनसी, कानून विद्याशाखा | १९८४ |
| ९. श्री प्रदीपप्रभा, उपकुलपति | |

नं. ३०७-३-१९८८-ना रोज करेन सुकम अन्यथे विचारणा करवा पावत.

ગુજરાત યુનિવર્સિટીમાં એલ.એચ.બી.માં પ્રવેશ માટે ગુજરાત યુનિવર્સિટીની અંચલત્રે દિશી અવધ તની તમામ
સાપકાત કરવાના હોવા જોઈએ, ગુજરાત યુનિવર્સિટીની અંચલત્રે દિશીમાં પ્રવેશ માટે પો. ૧૮૦ ૨ ૨ નું
અનં.સં.સી. ૧ એચ.એસ.સી.) પાસ કરેલ હોવી જરૂરી છે. તો એવા વિદ્યાર્થીની ગુજરાત યુનિવર્સિટીના તમામ
અનં.સં.સી. દિશી કોલેમાં પ્રવેશ મેળવવાપાત્ર નહાયમાં આવ છે. બાકીયા યુનિવર્સિટી, ચંદ્રવનની બી.એ.
(એલ.સં.સી.) કોલેમાં One-Off નું ફોર્મ ભરીને આપવું.

[illegible][illegible][illegible][illegible][illegible]

3. કોમ્યુનિસ્ટ અંગ્રિજિયરિયમ રિજિમમાં અવધારા તરીકે ડાયક્ટેટરિયલ એન્ડ કોમ્યુનિકેશનના રિજિમમાં પણ અવધારા રાખીએ છીએ. (આઈ.ટી.) બીજા વર્ષમાં પ્રવર અંગેની માન્યતા પ્રાપ્ત.

ખા.કે. (ડી.કે.મરના ટકનોસાજક)ના કાર્યમાં ખીજા વર્ષમાં નીચા પ્રવેશ માટે રી.સી.ટી. ૩ રી.કે.આર.કે. પાસ ના વિદ્યાર્થીનિર્માને પ્રવેશ માટે પાસ મળી રાકાય નથી.

5. $\frac{1}{2} \ln(2) = \ln(2^{1/2}) = \ln(\sqrt{2})$

પરિશિષ્ટ "૯"

કામકાજ ક્રમાંક ૪

સ્ટેન્ડિંગ કમિટી ઓન ઇસ્ક્રિવેલેન્સ ઓફ એકઝામિનેશન્સની એક સભા તા. ૧૪-૧૦-૧૯૯૮ના રોજ બપોરના ૪:૦૦ કલાકે યુનિવર્સિટી કાર્યાલયમાં મળેલ હતી. તેમાં નીચેના સભ્યો હાજર રહ્યા હતા :

૧. શ્રી નરહરિભાઈ એચ. પરીખ	ગેરહાજર
૨. ડૉ. વાય. કે. અગ્રવાલ	ગેરહાજર
૩. પ્રિ. દર્શનસિંગ એમ. શીખ	હાજર
૪. શ્રી મુકુન્દભાઈ એમ. દેસાઈ	હાજર
૫. શ્રી બી. એમ. મોદી	હાજર
૬. ડૉ. સી. એ. દેસાઈ	ગેરહાજર
૭. ડૉ. હર્ષદભાઈ એમ. દેસાઈ	ગેરહાજર.

૧. વિદ્યાર્થી શ્રી સંજય પી. ઠાકરે ડૉ. બાબાસાહેબ આંબેડકર ઓપન યુનિવર્સિટીમાંથી બી.એડ.ની પરીક્ષા પસંદ કરવાના આધારે એસ. ડી. શેડિયા કોલેજ ઓફ એજ્યુકેશનમાં એમ.એડ.ના વર્ગમાં પ્રવેશ લીધેલ છે. તે પ્રત્યેના ડૉ. બાબાસાહેબ આંબેડકર ઓપન યુનિવર્સિટી તરફથી આવેલ તા. ૧૪-૯-૧૯૯૮ના પત્ર પર વિચારણા કરવા બાબત.

વિદ્યાર્થીનો એમ.એડ.ના વર્ગમાં લીધેલ પ્રવેશ રદ કરવો અને આચાર્યશ્રીનો એલિ. સર્ટિ. વગર પ્રવેશ કેમ મળાવો તેનું અંગે દપકાનો પત્ર લખવો તેવી ભલામણ કરવામાં આવેલ છે.

૨. જી વિદ્યાર્થીઓએ એમ.એ., એમ.એસસી., એમ.કોમ. ટિગ્રી (One Sitting)માં પસાર કરી હોય તેવા વિદ્યાર્થીઓના ટિગ્રીને આપણી યુનિવર્સિટી સમક્ષ માન્ય કરવા યુનિવર્સિટી ગ્રાન્ટ્સ કમિશન તરફથી આવેલ એક. નં. ૬૭૭૯૬ (મીપીપી-૨) તા. ૬-૧૦-૧૯૯૮ના પત્ર પર વિચારણા કરવા બાબત.

શ્રી વાય. કે. અગ્રવાલનો અભિપ્રાય : "It should be as per our University as 10 + 2 + 3 + 2".

શ્રી વાય. કે. અગ્રવાલ સહોદયના અભિપ્રાયની નોંધ લીધી અને આ પ્રશ્ન ચાલુ રાખવી તેવી ભલામણ કરવામાં આવેલ છે.

૩. પંજાબ યુનિવર્સિટી, ચંદીગઢ તરફથી લેવામાં આવતી મેટ્રિકલ, ટ્રેન્ટલ અને એલએલ.બી. પરીક્ષાઓને નવેમ્બર યુનિવર્સિટીની જે ન પરીક્ષાઓ સમક્ષ માન્ય કરવા અંગે તે યુનિવર્સિટી તરફથી આવેલ નં. એસટી-૬૭૬૫૩ ૬૭૫૬૭ તા. ૨૩-૯-૧૯૯૭ના પત્ર પર વિચારણા કરવા બાબત.

ટેન્ટલ, મેટ્રિકલ અને ડો કેકલ્ટીના ટિનશ્રીના અભિપ્રાય મંગાવ્યા બાદ ફરી કમિટી સમક્ષ મુકવું.

૪. વિનાયક દેવેન્દ્રકુમાર મોહિનંદરપાલે પંજાબ ટેકનિકલ યુનિવર્સિટીમાંથી (જલંધરમાંથી) બી.ઈ. સિવિલની પસંદ કરવા અને આપણી યુનિવર્સિટીમાં એમ.ઈ.ના વર્ગમાં પ્રવેશપાત્રતા ગણવા અંગે વિચારણા કરવા બાબત.

ટિનશ્રીનો અભિપ્રાય ઇસ્ક્રિવેલેન્સ કમિટી સમક્ષ મુકવું.

વિદ્યાર્થીને એમ.ઈ.ના વર્ગ માટે પ્રવેશપાત્ર ગણાવો.

કુલસચિવ વતી

ગુજરાત યુનિવર્સિટી



ગુજરાત યુનિવર્સિટીની ઐકેડેમિક કાઉન્સિલની સભા રવિવાર, તા. ૪-૭-૧૯૯૯ના રોજ સવારે ૯-૦૦ વાગ્યે યુનિવર્સિટી કાર્યાલયમાં યજ્ઞી હતી. સભાનું પ્રમુખસ્થાન કુલપતિશ્રી એસ. બી. વોરાએ સંભાળ્યું હતું. સભામાં હાજરી નીચે પ્રમાણે હતી :

ક્રમ	સભ્યનું નામ	તા. ૪-૭-૧૯૯૯
૧.	પ્રો. એસ. બી. વોરા, કુલપતિશ્રી	હાજર
૨.	પ્રો. કે. એસ. શાસ્ત્રી, ઉપકુલપતિશ્રી	હાજર
૩.	પ્રો. એન. એમ. પરીખ	ગેરહાજર
૪.	ડૉ. વાય. કે. અગ્રવાલ	હાજર
૫.	પ્રિ. ડી. એમ. શોખ	હાજર
૬.	પ્રિ. બી. એમ. મોદી	હાજર
૭.	ડૉ. સી. એ. દેસાઈ	ગેરહાજર
૮.	પ્રો. એસ. એમ. દેસાઈ	ગેરહાજર
૯.	પ્રો. વી. પી. ભારદ્વાજ	હાજર
૧૦.	પ્રો. વાય. ડી. વાસ	હાજર
૧૧.	પ્રો. આર. ડી. ધૂળિયા	ગેરહાજર
૧૨.	પ્રો. યુ. એમ. રાવલ	હાજર
૧૩.	ડૉ. એસ. આર. દવે	ગેરહાજર
૧૪.	ડૉ. સુમન જી. શાહ	હાજર
૧૫.	ડૉ. આલોક ગુપ્તા	હાજર
૧૬.	પ્રો. એ. આર. શુક્લ	હાજર
૧૭.	પ્રો. વી. વી. પાઠક	ગેરહાજર
૧૮.	પ્રો. એન. એમ. અન્સારી	હાજર
૧૯.	પ્રો. વાય. એસ. શાસ્ત્રી	હાજર
૨૦.	શ્રીમતી એન. એન. શાહ	હાજર
૨૧.	પ્રો. આર. જી. ભટ્ટ	હાજર
૨૨.	પ્રિ. એમ. એમ. દેસાઈ	ગેરહાજર
૨૩.	ડૉ. કેતન દેસાઈ	ગેરહાજર
૨૪.	શ્રી. બી. બી. જાની	હાજર
૨૫.	શ્રી. એ. આર. શાહ	હાજર
૨૬.	પ્રિ. એ. એલ. પાઠક	હાજર
૨૭.	પ્રિ. કે. જે. પટેલ	હાજર
૨૮.	શ્રી. સી. પી. જોશી	હાજર
૨૯.	પ્રિ. આર. એચ. વ્યાસ	હાજર
૩૦.	પ્રો. જે. સી. ત્રિવેદી	હાજર
૩૧.	પ્રિ. કે. જે. પરમાર	હાજર
૩૨.	ડૉ. આર. પી. મહેતા	ગેરહાજર
૩૩.	શ્રીમતી મીરાબહેન ડી. મેનન	હાજર
૩૪.	પ્રો. બી. એન. સુહાગિયા	હાજર

એકેડેમિક કાઉન્સિલ : તા. ૪-૭-૧૯૯૯

૧. તા. ૪-૪-૧૯૯૯, તા. ૨૩-૫-૧૯૯૯ અને તા. ૯-૬-૧૯૯૯ની સભાની મંજૂર કરવા બાબત.

તા. ૪-૪-૧૯૯૯, તા. ૨૩-૫-૧૯૯૯ અને તા. ૯-૬-૧૯૯૯ના રોજ મળેલ એકેડેમિક કાઉન્સિલની સભાના નોંધ મંજૂર કરવામાં આવી તથા તે પર પ્રમુખશ્રીએ સહી કરી.

૨. કુલપતિશ્રીએ મંજૂર કરેલા નીચેનાં કાર્યો (જાણ સારું) :

૨ (૧). નીચેનાં કોલેજોમાં વિષયો માટેની જોડાણ અરજી પરત્વે નિયુક્ત કરેલ સ્થાનિક તપાસસમિતિના તૈયાર આચાર્ય હોઈ તે પરત્વે એકેડેમિક કાઉન્સિલની આ સાથે સામેલ બાબતમાં એકેડેમિક કાઉન્સિલ પત્રી મંજૂર કર્યાં.

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| ૧. શ્રી આર. કે. પ્રદીપ આર્ટ્સ એન્ડ સાયન્સ કોલેજ, પેટલાદ, જિ. પેલા | બી.એ. (પોલીસ) એમ્પ્લુયેડ મેન્યુઅલ. |
| ૨. સરકારી હજીરદારી કોલેજ, ગાંધીનગર | બી.એસસી. (ફિઝિકી) એમ્પ્લુયેડ મેન્યુઅલ. ફર્સ્ટ, સેકન્ડ યીર. ડિપ્લોમા ઈન બિઝનેસ. બી.ટી. ઇન્ફર્મેશન ટેકનોલોજી અને બિઝનેસ. |
| ૩. ગુજરાત લો સોસાયટી સંચાલિત વાણિજ્ય વિદ્યાભાવની કોલેજ, અમદાવાદ | બી.કોમ. (સેલ કાનૂન) કોલેજ, ૧૯૯૯ |
| ૪. અમદાવાદ એમ્પ્લુયેડ સોસાયટી સંચાલિત વાણિજ્ય વિદ્યાભાવની કોલેજ | બી.કોમ. (સેલ કાનૂન) કોલેજ, ૧૯૯૯ |
| ૫. સાંપ્રતિત એમ્પ્લુયેડ એન્ડ રિસર્ચ કાઉન્સિલ, અમદાવાદ | બી.કોમ. (સેલ કાનૂન) કોલેજ, ૧૯૯૯ |

૨ (૨). ડી.આર્ટી.સી., નરિયાદ ખાતે બી.બી.એ.ની અભ્યાસક્રમ શીખવવા માટેની જોડાણ અરજી પરત્વે નિયુક્ત કરેલ સ્થાનિક તપાસસમિતિનો હવાલો આચાર્ય હોઈ તે પરત્વે એકેડેમિક કાઉન્સિલની બાબતમાં એકેડેમિક કાઉન્સિલ પત્રી મંજૂર કર્યાં.

૨ (૩). મધ્યારથી ચારી ટ્રસ્ટ, અમદાવાદ ખાતે બી.બી.એ.ની અભ્યાસક્રમ શીખવવા માટેની જોડાણ અરજી પરત્વે નિયુક્ત કરેલ સ્થાનિક તપાસસમિતિનો હવાલો આચાર્ય હોઈ તે પરત્વે એકેડેમિક કાઉન્સિલની બાબતમાં એકેડેમિક કાઉન્સિલ પત્રી મંજૂર કર્યાં.

૨ (૪). વિમનનાર્ડ પટેલ ઇન્સ્ટિટ્યૂટ ઓફ વિજનસ એડમિનિસ્ટ્રેશન, અમદાવાદની જૂન, ૧૯૯૯વી પ્રથમ વર્ષ બી.બી.એ., ડિપ્લોમા ઈન બી.બી.એ., તુર્તીય વર્ષ બી.બી.એ., શીખવવા ચાલુ તથા નવા જોડાણ માટેની અરજી પરત્વે નિયુક્ત કરેલ સ્થાનિક તપાસસમિતિનો હવાલો આચાર્ય હોઈ તે પરત્વે એકેડેમિક કાઉન્સિલની બાબતમાં એકેડેમિક કાઉન્સિલ પત્રી મંજૂર કર્યાં.

૨ (૫). જી.આર.એસ. ઇન્સ્ટિટ્યૂટ ઓફ વિજનસ એડમિનિસ્ટ્રેશનની જૂન, ૧૯૯૯વી પ્રથમ વર્ષ બી.બી.એ., ડિપ્લોમા ઈન બી.બી.એ. તથા તુર્તીય વર્ષ બી.બી.એ. શીખવવા ચાલુ તથા નવા જોડાણ માટેની અરજી પરત્વે નિયુક્ત કરેલ સ્થાનિક તપાસસમિતિનો હવાલો આચાર્ય હોઈ તે પરત્વે એકેડેમિક કાઉન્સિલની બાબતમાં એકેડેમિક કાઉન્સિલ પત્રી મંજૂર કર્યાં.

૨ (૬). સંપ્રતિત ઇન્સ્ટિટ્યૂટ ઓફ વિજનસ એડમિનિસ્ટ્રેશનની જૂન, ૧૯૯૯વી પ્રથમ વર્ષ બી.બી.એ. તથા તુર્તીય વર્ષ બી.બી.એ. શીખવવા માટેની ચાલુ તથા જોડાણ માટેની અરજી પરત્વે નિયુક્ત કરેલ સ્થાનિક તપાસસમિતિનો હવાલો આચાર્ય હોઈ તે પરત્વે એકેડેમિક કાઉન્સિલની બાબતમાં એકેડેમિક કાઉન્સિલ પત્રી મંજૂર કર્યાં.

૨ (૭). ગુજરાત લો સોસાયટી, અમદાવાદની જૂન, ૧૯૯૯વી ઇન્ફર્મેશન ટેકનોલોજી વિષય, માટેની માન્ય સંભાની જોડાણ અરજી પરત્વે નિયુક્ત કરેલ સ્થાનિક તપાસસમિતિનો હવાલો આચાર્ય હોઈ તે પરત્વે એકેડેમિક કાઉન્સિલની બાબતમાં એકેડેમિક કાઉન્સિલ પત્રી મંજૂર કર્યાં.

આથી કરાવવામાં આવે છે કે કુલપતિશ્રીએ મંજૂર કરેલા ઉપરોક્ત ક્રમાંક ૨ (૧) થી ૨ (૭)ના કરાવવામાં આવેલા નોંધ લેવામાં આવી.

(બાબત ક્રમાંક ૨ (૧) થી ૨ (૭)માં વિદ્યાર્થી એનુંકમ પરિશિષ્ટ "૧"થી ૭" તરીકે સામેલ છે.)

એકેડેમિક કાઉન્સિલ : તા. ૪-૭-૧૯૯૯

૩. યોગદાનથી ટ્રસ્ટ દ્વારા રાજ મંજૂર સેલ કાઉન્સિલ કોલેજ, અમદાવાદની સ્થાનિક તપાસસમિતિના નવા પદ વિચારણા કરવા બાબત.

ઉપરોક્ત બાબતે સરકારી ટ્રસ્ટ તરફથી મળેલ પત્ર સમાવેશ સમગ્ર રજૂ કરવામાં આવ્યા અને તદનુસાર જૂન, ૧૯૯૯ અને જૂન, ૨૦૦૦થી સેલ કાઉન્સિલ કોલેજ રાજ કરવા અંગેની બે અરજીઓ ટ્રસ્ટ પત્રી પાસે અંગેની બાબતની નોંધ લેવામાં આવી.

૪. એલ. ડી. કોલેજ ઓફ એજિનિયરિંગમાં ટ્રાન્સપોર્ટ એજિનિયરિંગમાં અનુનામક અભ્યાસક્રમ શરૂ કરવા બાબત.

કુલપતિશ્રીના આદેશનુસાર નિમાલ્ય સ્થાનિક તપાસસમિતિનો હવાલો અને વિચારણા કરવા બાબત.

આથી કરાવવામાં આવે છે કે ઉપરોક્ત સ્થાનિક તપાસસમિતિનો હવાલો સ્વીકારવા.

(સ્થાનિક તપાસસમિતિનો હવાલો પરિશિષ્ટ "૮" તરીકે સામેલ છે.)

૫. જૂન, ૧૯૯૯થી નિરમા એમ્પ્લુયેડ એન્ડ રિસર્ચ કાઉન્સિલ, અમદાવાદ તરફથી આવેલ એમ.બી.એ.ના જોડાણ અને નવા પદ અરજી માટે નિયુક્ત કરેલ સ્થાનિક તપાસસમિતિનો હવાલો અને વિચારણા કરવા બાબત.

આથી કરાવવામાં આવે છે કે ઉપરોક્ત સ્થાનિક તપાસસમિતિનો હવાલો સ્વીકારવા અને તદનુસાર જૂન, ૧૯૯૯થી નિરમા એમ્પ્લુયેડ એન્ડ રિસર્ચ કાઉન્સિલ, અમદાવાદને એમ.બી.એ.નું અનુનામક પદ અમદાવાદ એકેડેમિક કાઉન્સિલને બાબતમાં કરવી.

(સ્થાનિક તપાસસમિતિનો હવાલો નકલ પરિશિષ્ટ "૯" તરીકે સામેલ છે.)

૬. જૂન, ૧૯૯૯થી નેસલ ઇન્સ્ટિટ્યૂટ ઓફ કો-ઓ. મેનેજમેન્ટ, ગાંધીનગર તરફથી આવેલ એમ.બી.એ.ના જોડાણ અને નવા પદ અરજી માટે નિયુક્ત કરેલ સ્થાનિક તપાસસમિતિનો હવાલો અને વિચારણા કરવા બાબત.

આથી કરાવવામાં આવે છે કે ઉપરોક્ત સ્થાનિક તપાસસમિતિનો હવાલો સ્વીકારવા અને તદનુસાર જૂન, ૧૯૯૯થી નેસલ ઇન્સ્ટિટ્યૂટ ઓફ કો-ઓ. મેનેજમેન્ટ, ગાંધીનગરને એમ.બી.એ.નું અનુનામક પદ અમદાવાદ એકેડેમિક કાઉન્સિલને બાબતમાં કરવી.

(સ્થાનિક તપાસસમિતિનો હવાલો નકલ પરિશિષ્ટ "૧૦" તરીકે સામેલ છે.)

૭. પુનિર્વાહિત પદોથી વિભાગમાં એમ.એસસી. બાયોમેડિકલ ટેકનોલોજીનો એ વર્ષનો અભ્યાસક્રમ સ્થાનિક (સેલ કાઉન્સિલ) પોરેલ જૂન, ૧૯૯૯થી શરૂ કરવા અને કુલપતિશ્રીએ નિયુક્ત કરેલ સમિતિની તા. ૧૭-૪-૧૯૯૯ના રોજ મળેલી પ્રતિષ્ઠા પરત્વે વિચારણા કરવા બાબત.

આથી કરાવવામાં આવે છે કે ઉપરોક્ત સમિતિની બાબતમાં સ્વીકારવી અને તદનુસાર પુનિર્વાહિત પદો પ્રાપ્તિ પર વિભાગમાં એમ.એસસી. બાયોમેડિકલ ટેકનોલોજીનો એ વર્ષનો અભ્યાસક્રમ સ્થાનિક (સેલ કાઉન્સિલ) પોરેલ જૂન, ૧૯૯૯થી શરૂ કરવા માટે એકેડેમિક કાઉન્સિલને બાબતમાં કરવી.

(સરકારી સમિતિની બાબતમાં પરિશિષ્ટ "૧૧" તરીકે સામેલ છે.)

૮. નવા પદ પ્રમુખશ્રીએ નીચેની બાબત રજૂ કરવામાં આવી :

૧. રોકવાલા કોમ્પ્યુટર સેન્ટરના ડાયરેક્ટર તેમજ કોમ્પ્યુટર સાયન્સ, સંશોધન અને વ્યવસાય સાથે સંકળાયેલા નામાંકિત વિષયોમાં—બી.આર.એસ., સેલ (સરકારી), એલ. ડી. એજિનિયરિંગ કોલેજ વગેરેના સિનિયર સાયન્સિસો તેમ જ સિનિયર પ્રોફેસરોને બી.સી.એ.નો અભ્યાસક્રમ અને માધ્યમ રજૂ કરવાની અરજી અને વિચારણા કરવા બાબત.

ઉપરોક્ત રજૂઆત સમાવેશ સમગ્ર રજૂ કરવામાં આવી અને આ અભ્યાસક્રમ શરૂ કરવાની કોલેજો/સંસ્થાઓની માગણી કરવામાં આવી રહી છે.

૨. સમિતિની વ્યવસાયિકી માંગને આધારે ચર્ચા-વિચારણા કરવામાં આવી અને ત્યાર બાદ કરાવવામાં આવ્યું કે સરકાર અભ્યાસક્રમ તેમ જ માધ્યમ જૂન, ૧૯૯૯થી શરૂ કરવું.

આ અભ્યાસક્રમના પ્રવેશના પોરેલ, નીતિ નિયમો અને તેને આધુનિક તમામ બાબતોમાં નવા પદો અને શરૂ કરવાની કોલેજો/સંસ્થાઓની માગણી અને તેમાં કાર્યવાહી કરવા કુલપતિશ્રીને સત્તા આપવામાં આવે છે.

(સરકાર રજૂઆત પરિશિષ્ટ "૧૨" તરીકે સામેલ છે.)

૩. નવા પદ સમાનું કાર્યકાર પૂરું થયું હતું.

એકેડેમિક કાઉન્સિલ : ૧૭-૧૧-૧૯૯૯

ગુજરાત પુનિર્વાહિત કમિશન,

નરસંદગપુરા, અમદાવાદ-૩૮૦ ૦૦૯.

તા. ૧૬-૧૧-૧૯૯૯.

એમ. પી. ડિવા

કુલપતિશ્રી

परिशिष्ट "१/१"

સામગ્રી ક્રમાંક ૨ (૧)(૧)

અંકેડેમિક કાઉન્સિલની ભલામણ

આથી ફરિયાદમાં આવેલ જ ૬, શ્રી આર. કે. પરીખ આદર્શ એન્ડ સાયન્સ કોલેજ, પેટલાદ નીચે જણાવેલ શરતોનું પાલન એકિફ્યુટિવ કૌન્સિલને સંતોષ થાય તે રીતે તા. ૩૦-૫-૧૯૯૯ સુધીમાં કરે તો તેને બી.એ. (ગોળા)માં કોમ્પ્યુટર બેચમાં અને બી.એસસી. (ગોળા)માં કોમ્પ્યુટર સાયન્સના અભ્યાસક્રમો શીખવવા માટે તા. ૧૬-૬-૧૯૯૮થી તા. ૧૪-૬-૧૯૯૯ સુધીનું કામચી જોગવાઈ આપવા માટે એકિફ્યુટિવ કૌન્સિલને ભલામણ કરવી.

૭. ઓક્ટો, ૧૯૭૦ અમર્યાદા કાર્યવાહીના સંબંધમાં નિમણૂક કરવામાં આવે.
૮. કોમ્યુનિસ્ટ પ્રવચાનકારોના મશીનોને અવરોધ કરાવી એક સરવર, પાંચ નોની સવલત ઊભી કરવામાં આવે અને નાના પથળી વાળાના મુકાબમાં આવે જેથી વિગતગત અનિત અગ્ર સાહસોવરુનું નિરંતરિત જોરબાંધ કરવા દેવાનું પ્રમાણ થઈ શકે.
૯. પ્રાથમિક સ્તરનાં માર્કે અવિશ્વાસ પ્રતિભાવો એક વિચારણાની બેસ રાખવામાં આવે.
૧૦. કોમ્યુનિસ્ટ રાજક સમર્થના પ્રવચાનક એક આંદોલન વહીવટ સિમ્પલ રીસીમ્પલ કાર્ય માટે જ કરવામાં આવે.
૧૧. કોમ્યુનિસ્ટ માર્કે અગ્રવા નુબી વાળાના પુકડી મશીનોના મોનોમાં કોમ્યુનિસ્ટ પાળના ભવિષ્યવાણી કમ્પ કમ્પ પેપરનો એકલક આપવામાં આવે અને અનાવર મુશીની મશીનોના સંતર્ભમાં અગ્ર કરવામાં હિસાબ રાખી જણાવ તો તરફી રકમનાં પુલકમાં પતરીની કરીને તેને અગ્ર કરવામાં આવે.
૧૨. કોમ્યુનિસ્ટ વિચારોનાં પુનઃકે માટે જ. ૧૦,૦૦,૦૦૦ (દસ લાખરોનો) તારાફકલ અગ્રવાઈક પર્વ કરવામાં આવે.
૧૩. પુનઃકે માટે સામયિક માટે અગ્રક વિચારણાના કીક પ્રતિપત્તિ ઓછામાં ઓછા જ. ૧,૦૦,૦૦૦નો અગ્રવાઈક પર્વ કરવામાં આવે.
૧૪. કોમ્યુનિસ્ટ વિચારોનાં પુનઃકે માટે પ્રતિપત્તિ જ. ૨,૦૦,૦૦૦ના અગ્રવાઈક પર્વ કરવામાં આવે અને શાર સમાયિક વિચારણા રાખવામાં આવે.
૧૫. પુનઃકે માટેનાં અગ્રક વિચારણા કાર્યવાહીને અગ્રક ત જાય ને કીક જ. ૩૦ વિચારોનાંક પ્રવચ આપવામાં આવે.
૧૬. કોમ્યુનિસ્ટ વિચાર કાર્યવાહી માટે જ. ૩૦૦ કી સતરફી રાખવામાં આવે.
૧૭. સામયિક સર્વ પ્રતિપત્તિ અગ્રક વિચારોની બેસ રાખવામાં આવે.
૧૮. પુનઃકે માટેનાં પારાધોરણ મુજબ શિક્ષકગણના જ. ૧૫ વિનાશિકકરવાનાં કમ્પવાઈકના પદાધિકારવાઈક, માધારીક વગેરે, માધારીક. ૨૮. કમ્યુનિસ્ટ એક પદધારીના મુજબ આપવામાં આવે તમામ તેમજ કુટુંબ શિક્ષકગણના મુજબ શિક્ષકગણનાં કમ્પવાઈકનાં અગ્રવાઈકનાં તમામ, વધારક કે અગ્રવાઈક તેમજ કુટુંબવાઈકનાં આપવામાં આવે ની, તેવું આપવાનું આપવામાં આવે, અને જો કોઈ તેવું કુટુંબવાઈક માંથી હોય તો તે કુટુંબી આપવામાં આવે અગ્રક વિચારોની સંભાળને લઈને તેમજ કોઈ મોડક એવો પુનઃકે માટેનાં પારાધોરણ મુજબ વિનાશિકકરવાનાં પદાધિકાર કમ્પવાઈકનાં અગ્રવાઈકનાં અગ્રવાઈક કરવામાં આવે અને મોડકમાં સંતર્ભમાં કોઈ નિમણૂક આપવામાં આવે ની. તેવું આપવાનું આપવામાં આવે.
૧૯. પુનઃકે માટેનાં, આગત રકમનાં અગ્રક એક મુકાબીને આપવાની પ્રવચ શિક્ષક-વિનાશિકકરવાનાં કમ્પવાઈકનાં નિમણૂક, પર્વનાં, પર્વનાં કમ્પવાઈક અને અગ્રવાઈકનાં જાતે, અગ્રવાઈક જ-જાતેનાં અગ્રવાઈકનાં અગ્રવાઈક રાખવાઈક અને તેમજ કીકનાં કીકનાં અગ્રવાઈકનાં પદધારીનાં અગ્રવાઈકનાં અગ્રવાઈકનાં કમ્પવાઈકનાં કમ્પવાઈકનાં નિમણૂક કરવામાં આવે અને મોડકમાં સંતર્ભમાં કોઈ નિમણૂક આપવામાં આવે ની. તેવું આપવાનું આપવામાં આવે.

શ્રી આર. કે. પરીખ આર્ટ્સ એન્ડ સાયન્સ કોલેજ, પેટલાદમાં વિનયન અને વિજ્ઞાન વિદ્યાશાળામાં અનુક્રમે કોમ્પ્યુટર મેથર્સ (ગોપા) અને કોમ્પ્યુટર પ્રોગ્રમિંગ (મરજિયાત) વિષયનું કાયમી જાડાણ આપવા અંગે

સ્થાનિક તપાસસમિતિનો હેવાલ

નમે સ્થાનિક તપાસનામિતિના સભ્યો તરીકે શ્રી આર. કે. પરીખ આદર્શ એન્ડ સાયન્સ કોલેજ, પેટલાદની તા. ૨૩-૨-૧૯૮૯ના રોજ મુલાકાત લીધી હતી. મુલાકાત દરમિયાન આચાર્યશ્રીએ બાઈર રાની સમાજ માહિતી પૂરી પાડી હતી તે નીચે પ્રમાણે છે :

- સેવા પાત્ર કોમ્પ્યુટર પર પ્રથમ સ્થાપનામાં એ પ્રિન્ટિયમ, એક 805, ત્રણ 365, ત્રણ 265 અને 55 ના મશીનના LAN નાનાવચમાં આવી છે, વધુમાં ત્રણ પ્રિન્ટરો પણ જોડવામાં આવ્યાં છે.
- સાથુ વર્ષ ૧૯૯૮-૯૯ સ્થિતિમાં એક લાય. બી.એમ.સી. પર અને એક લાય. બી.એમ.સી. પર ૨૫ વિદ્યાર્થીના વિષયમાં પ્રવેશ આપવામાં આવ્યો છે, તે જ રીતે એક લાય. બી.એમ.સી. પર અને એક ન. ૨૬૫ બી.એમ.સી.માં ૩ વિદ્યાર્થીઓએ પ્રવેશ મેળવેલ છે.

એકેડેમિક કાઉન્સિલ : તા. ૪-૭-૧૯૯૯

2. 1944-1945 ମସିହା (1944-45) ମଧ୍ୟ 1945-46 ମସିହା ପ୍ରଥମ ଭାଗ : 1944-45 ମସିହା ମଧ୍ୟ 1945-46 ମସିହା ପ୍ରଥମ ଭାଗ

- [illegible]

શ્રી આર. પી. સોની

૬. એચ. આલ. દીક્ષિત

परिशिष्ट "१/२"

કામદાજી કમિશનર ૨(૧)(૨)

અંકુડેધિક કાઉન્સિલની ભલામણ

०. नीचे मजबूत प्रश्नोत्तरांनी नमूद केलेले ताल. १५-६-१९८८ सुमारे परीक्षेच्या आले :

- | | |
|--------------------|----|
| (અ) પ્રોફેસર | ૨ |
| (બ) વ્યાખ્યાતા | ૧૧ |
| (ક) આસિ. પ્રોફેસરો | ૫ |

- [illegible]

१. राज. ड. नवरात्र
 २. राज. विजय
 ३. राज. शिव
 ४. राज. शिव
 ५. राज. शिव
 ६. राज. शिव

પરિશિષ્ટ "૧/૪"

કામદાજ ક્રમાંક ૨(૧૪)૪

અંગ્રેજિક કાઉન્સિલની ભલામણ

આથી કરાવવામાં આવે છે કે અમદાવાદ એજ્યુકેશન સોસાયટી સંચાલિત સેલ્ફ કાઉન્સિલિંગ કોર્સમાં લોજિક, અમદાવાદ તરફથી શિક્ષકશક્તિની નિમણૂકો એનીયો સારત સહિતના નીચે જણાવેલા શરતોનું પરિપાલન એકિઝિયુટિવ કાઉન્સિલને સંતોષ થાય તે રીતે તા. ૩૦-૬-૧૯૯૮ સુધીમાં અને કારત ૧૯૯૮ પછીના પરિપાલન નિમત સમયમર્યાદામાં કરે તો તેને પ્રથમ વર્ષ લાક્ષણિકમાં સેલ્ફ કાઉન્સિલિંગ ધોરણે ૩ અંગ્રેજિક માધ્યમના અને ૧ ગુજરાતી માધ્યમના મળી કુલ ૪ વર્ષોનું તા. ૧૫-૬-૧૯૯૮થી તા. ૧૪-૬-૨૦૦૦ સુધીનું નું જોડાયેલ અંગ્રેજિક એકિઝિયુટિવ કાઉન્સિલને ભલામણ કરશે:

- (૧) ઓરિ. ૧૨૦એ અનુસાર જરૂરી શિક્ષકશક્તિ અને આચાર્યશક્તિની નિમણૂક કરવામાં આવે;
- (૨) વિનિશ્ચિત કમ્પાઈઝમેન્ટની નિમણૂક કરવામાં આવે;
- (૩) આચાર્ય જે વિષયના અભ્યાસ હોય તે વિષયમાં અન્ય અભ્યાસકર્તા નિમણૂક કરવામાં આવે અથવા જરૂરની કોરોઝે;
- (૪) કોલેજના પદાધિકારીઓમાં ઓછા નીચે પ્રમાણમાં જોડાયેલ પુનિર્વાહિતમાં પ્રવૃત્તિ પારાધિકારી પ્રમાણ કરવામાં આવે :

 ૧. વિદ્યાર્થીક ૮ થી ૬૦ લેખે જરૂરી સંખ્યામાં શૈક્ષિક દરિયે માધ્યમ તથા અભ્યાસપત્રો;
 ૨. વર્ગખંડ અને ટ્યુટોરિયલ માટે જરૂરી ખંડો;
 ૩. શિક્ષક માટેનો પાઠ-એટલેટ ટોચકેટની વ્યવસ્થા સાંભળે;
 ૪. આ તમામ ખંડોમાં જરૂરી પાઠશીઓ, પુસ્તકો, રેકર્ડ, એલ. ઓ. કાર્ડ, પોનાની પ્રશ્ન સુવિધા ઉપલબ્ધ કરવામાં આવે;
 ૫. કોલેજના કુલ વિદ્યાર્થીઓની સંખ્યાના આઠમાં ઓછા ૧૦ ટકા જેના વિદ્યાર્થીઓ ભેટી શકે તેવી ખંડ;
 ૬. વિદ્યાર્થીઓની સંખ્યાના આઠમાં ઓછા ૧૦ ટકા પુનર્વાહિતમાં માટેનો પાઠ-એટલેટ શૈક્ષણિક, વાર્ષિક સુવિધા સહિતનો;
 ૭. પ્રત્યેક વિદ્યાર્થીના આઠમાં ઓછા ૧૦ ટકા વિદ્યાર્થીઓ ન્યૂનતાવે પગલાં વાંચી શકે તેટલી સગવડતાવાળી સુસજ્જ વાચન ખંડ સહિત સંચાલન;
 ૮. આચાર્ય માટેનો પાઠ (એટલેટ ટોચકેટની વ્યવસ્થા સાંભળે)
 ૯. કોલેજના કાર્યાલય માટેનો ખંડ;
 ૧૦. પીવાના પાણી માટેનો ખંડ;
 ૧૧. શૈક્ષણિક વગેરેની યોગ્ય વ્યવસ્થા;

- (૫) સંસ્થાએ દર વર્ષે આઠમાં ઓછા ૨૦, એક લાખ પુસ્તકો અને સામગ્રી માટે ખર્ચવાના રહેશે;
- (૬) પુનિર્વાહિતમાં ધારાધોરણ મુજબ આચાર્ય માટે કોલેજ નજીક ભારાકુન સંવહારનાની વ્યવસ્થા કરવામાં આવે;
- (૭) આચાર્યને હોદ્દાની રૂએ વ્યવસ્થાપક સમિતિના સભ્ય બનાવવામાં આવે;
- (૮) પુનિર્વાહિતમાં ધારાધોરણ મુજબ શિક્ષકોને તેમજ વિનિર્વાહકર્તાને પદારોહન, માંચવારી ભણ્યું, પદચાલ ભણ્યું તથા કોન્ટ્રીબ્યુટરી એકિઝિટ કંડનો લાભ આપવામાં આવે તથા શિક્ષકના વાર્ષિક મૂળ પગારના ૨૫ (અઢી) ટકાના દરે એમ્પ્લોયી ૬૬ ધિનું કરવામાં આવે;
- (૯) કોલેજના સંચાલનમાં જે માધ્યમ થાય તે પુરી કરવાની સંભાલ મેળવે તરફથી જોવાયેલી આપવામાં આવે;
- (૧૦) આ પુનિર્વાહિતની સ્થાનિક તપાસસમિતિ સાથે અરજકર્તા મેળવના નોંધકાર સાથે થયેલી સ્પષ્ટતા અન્યથે પ્રથમ વર્ષ સુધી (૧) આચાર્યશક્તિ (૨) શૈક્ષિક તથા વિનિર્વાહકર્તાના કમ્પાઈઝમેન્ટની નિમણૂક માટેનાં આપન ઉપરનું પુનિર્વાહિત કાર્યાલયમાં રાખવામાં આવે;
- (૧૦) પુનિર્વાહિતના નિમણા-નુસારની વરણીસમિતિ ઉપરાંતના સત્તા વહીવટીસમિતિ ઉપર કુલપતિશ્રી નિમુક્ત કરશે, કુલપતિશ્રી દ્વારા નિમુક્ત આવા સભ્યોનાં નામ સંસ્થાએ પુનિર્વાહિત પાલકો મળ્યાં લેવામાં રહેશે;
- (૧૧) ગુજરાત પુનિર્વાહિતના રજિસ્ટ્રારના નામે રૂ. ૧૦,૦૦,૦૦૦ (એક લાખ પુરા)ની ડિપોઝિટ મુકવા માટેની રકમ પુનિર્વાહિતમાં જમા કરવામાં આવે. આ રકમ તા. ૧-૬-૧૯૯૮ સુધીમાં પુનિર્વાહિતમાં ભરવાની રહેશે, ત્યાર બાદ શરતોને આધીન જોડાયેલ આવામાં આવશે. ડિપોઝિટ પરત કરવા અંગેની સમીક્ષા ત્રણ વર્ષ પાદ કરવામાં આવશે;
- (૧૨) અંગ્રેજિક માધ્યમની ટ્યુશન ફી વાર્ષિક રૂ. ૮,૫૦૦ અને ગુજરાતી માધ્યમની ટ્યુશન ફી રૂ. ૪,૦૦૦ રાખવાની રહેશે. જે ફી અંગેની સમીક્ષા ત્રણ વર્ષ બાદ મેનેજમન્ટ સાથે વિવાદોપચાર કમિટી સર્જાનુસાર કરવામાં રહેશે.
- (૧૩) કોમ્પ્યુટર અંગે તથા અન્ય તમામ પ્રકારની ફી મળીને વાર્ષિક રૂ. ૧,૦૦૦ રાખવાની રહેશે.
- (૧૪) વિદ્યાર્થીક ૬, ૧,૦૦૦ લાખશ્રેટી ડિપોઝિટ રીકેપ્ચર લવાની રહેશે;
- (૧૫) ઉપરોક્ત શરતો ઉપરાંત સ્થાનિક તપાસસમિતિના રૂલાઓ અન્ય કોઈ નોંધકરણનો હોય તો તે નાને ના, તાકીદે થતાં પગલાં લેવામાં રહેશે.

સ્થાનિક તપાસસમિતિનો નેતૃત્વ

તા. ૯-૬-૧૯૯૮ના રોજ અમારી સમિતિએ સ્થળ ઉપર જઈ રૂમર મુલાકાત લીધી ત્યારે, સત્તાવહનના નકરતો થી એ. કે. દલે તેમજ અન્ય લોકોદારો આ પ્રસંગે લાજર રહ્યા તથા તમારે અમાને જરૂરી માહિતી અને વિદ્યા પુરી પાટી તપાસી. કમિટીના એક સભ્ય શ્રી વિહારીલાલ કન્યાલાલની તપાસ સારી ન લાગવાથી તરત જ રૂમર ન લાગે. અમદાવાદમાં કોમર્સ વિદ્યાભ્યાસમાં અંગ્રેજિક તેમજ ગુજરાતી માધ્યમના અનેક વિદ્યાર્થીઓની સંખ્યા તથા આથી કોલેજમાં જવાના અભ્યાસ પ્રવેશ આથી શકતા નથી, તેમજ કોમર્સ વિદ્યાર્થીઓનાં સ્વેચ્છા માધ્યમ તમજ ગુજરાતી માધ્યમની સેલ્ફ કાઉન્સિલિંગમાં કોલેજોની જરૂરિયાત અંગ્રેજિક કાઉન્સિલ તેમજ આઈસીસીસી કાઉન્સિલ સ્વેચ્છાકારીને કુલપતિશ્રીએ આ દિશામાં યોગ્ય ધ્યાનકર્તા કરવા સતા આવી છે, તેના નતનપરવાનો આ કમિટીના ન કોલેજનો મુલાકાત લીધી છે.

અમદાવાદ એજ્યુકેશન સોસાયટી કલ્કત્તા થતાં વર્ષોથી પ્રાથમિકથી મીડીના અનુનુલનના તમારે સ્થાનિક કાર્યે ચલાવતી પત્ની શૈક્ષિક સંસ્થાઓ ચલાવે છે. સંચાલકોએ અમને જણાવ્યું છે કે હાલમાં એચ. એલ. કોમર્સ કોલેજના સમય પગારના ૭ નેતરે નવાનવા તમામમાં આ સેલ્ફ કાઉન્સિલિંગ કોલેજ તેઓ ચલાવે છે. આ નવી કોલેજ ચલાવના માટે તેમની પાતે પેટાઈ નવાનવા છે. તેમણે અંગ્રેજિક માધ્યમના તમારે વળે અને ગુજરાતી માધ્યમના એક વર્ષ સેલ્ફ કાઉન્સિલિંગના કલ્કત્તા ચલાવવા અમારી સમજ રજુઆત કરી છે.

અન્ય પુનિર્વાહિતમાંની સેલ્ફ કાઉન્સિલિંગ સંસ્થાઓમાં લેવાની ફીને અનુસૂચીને કમિટી શ્રી પ્રગણની ફી કુલ ૪૦ : અંગ્રેજિક માધ્યમ : રૂ. ૮,૫૦૦ ટ્યુશન ફી
રૂ. ૧,૦૦૦ કોમ્પ્યુટર તેમજ અન્ય ફી
રૂ. ૧,૦૦૦ લાખશ્રેટી ડિપોઝિટ રીકેપ્ચર
ગુજરાતી માધ્યમ : રૂ. ૪,૦૦૦ ટ્યુશન ફી
રૂ. ૧,૦૦૦ કોમ્પ્યુટર તેમજ અન્ય ફી
રૂ. ૧,૦૦૦ લાખશ્રેટી ડિપોઝિટ રીકેપ્ચર

ગતના :

- (૧) સંસ્થાએ દર વર્ષે આઠમાં ઓછા રૂ. ૧ (લાખ) પુસ્તકો અને સામગ્રી માટે ખર્ચવાના રહેશે.
- (૨) સંસ્થાએ પહેલે વર્ષે ૭ પૂર્ણ સમયના આચાર્યશક્તિની પુનિર્વાહિતમાં ધારાધોરણ અનુસાર નિમણૂક કરવાની રહેશે, બીજા વર્ષે વધારાના ૬ (એટલેટ કે કુલ ૧૩ અભ્યાસકર્તા) અને ત્રીજા વર્ષે વધારાના ૫ (એટલેટ કે કુલ ૧૮ અભ્યાસકર્તા)ની નિમણૂક કરવાની રહેશે.
- (૩) સંસ્થાએ યોગ્ય લાભકાર ધારવાતા પૂર્ણ સમયના લાખશ્રેટિય તેમજ પૂર્ણ સમયના કોલેજના તરફકર પદ નીચવામાં રહેશે.
- (૪) સંસ્થાએ પુનિર્વાહિતમાં રૂ. ૧૮ લાખની ડિપોઝિટ મુકવાની રહેશે.
- (૫) પુનિર્વાહિતમાં ધારાધોરણ અનુસાર સંસ્થાએ અન્ય સુવિધાઓ પૂર્ણ પૂરી પાડવાની રહેશે.
- (૬) સંસ્થાએ પુનિર્વાહિતના માર્ગદર્શન તેમજ પ્રવેશ આપવાનો રહેશે તેમજ અભ્યાસ કરાના વિદ્યાર્થીઓના પુનિર્વાહિતના કાર્યાલયોની જોડાયેલ પ્રમુખો આપવામાં રહેશે.
- (૭) પુનિર્વાહિતના હાલના તેમજ પુનિર્વાહિત આ કોર્સ અને ચલાવનારના જ નિયમો નહીં ફર તપું સંસ્થા ચાલન કરશે તેથી આપવાની સંસ્થાએ પુનિર્વાહિતની આપવાની રહેશે.

ઉપરની રાજાઓ અમે આ કોલેજને શૈક્ષિક વર્ષ ૧૯૯૮-૨૦૦૦ માટે જોડાયેલ આપના આવામાં કરીને રાખીને.

સંસ્થા :

કલ્કત્તા લોખ
સંસ્થાઓને અનુનુલન

(૪) પ્રથમ સંઘથી કોઈ વિવાદ હશે, તો તે અને ગુજરાત યુનિવર્સિટીના કુલપતિશ્રીનો નિર્ણય આપશે તથા તે અને સૌને બંધનકર્તા રહેશે.

(૫) આ નિયમો બીજા કોઈ કુદમો ન થાય ત્યાં સુધી અપવાદમાં રહેશે.

ડી. ડી. આઈ. સી., બી.એડ. બી.એ.ના અભ્યાસક્રમો શીખવવા માટે નીચેના સ્થાનિક તથાસહચિનિતોને લેવામાં આવશે. આ અભ્યાસક્રમ રોજિતી વર્ષ ૧૯૯૯-૨૦૦૦થી શરૂ કરવા માટે ડી. ડી. આઈ. સી., નરિયાદની આવેલ અરજીના અનુસંધાનમાં ગુજરાત યુનિવર્સિટીએ નિમુષ્ણ કરેલ સ્થાનિક તથાસહચિનિતોના સભ્યો સમક્ષ તા. ૨૫-૫-૧૯૯૯ના રોજ પુસ્તાક લેખી હતી. સંસ્થાના પદાધિકારીઓએ જરૂરી સમગ્રી માહિતી પૂરી પાડી હતી. આ અભ્યાસક્રમ શરૂઆત માટે આ સંસ્થા પાસે નીચેની નોંધક સંખ્યાના નામક ઉપચયમાં છે :

- (૧) સંસ્થામાં કોમ્પ્યુટર કોલેજ (સવારની) શરૂઆતમાં આવે છે અને તે કોલેજનું મહત્તમ ખર્ચવાના સમયે સંતુષ્ટિપૂર્ણ ઉપચયમાં છે અને તે મકાનમાં વર્ગોનો, કાર્યાલય તથા જરૂરિયાતો માટેનો પૈસી ખર્ચાલ રીતે ઉપચયમાં છે ;
- (૨) સંસ્થા પાસે ગ્રંથાલયની સગવડ ઉપચયમાં છે, પરંતુ સંસ્થાએ આ અભ્યાસક્રમ માટેના ગ્રંથાલયમાં જરૂરી પૈસી અને ગુજરાત યુનિવર્સિટી જે સત્તા પૂર્કે તે અનુભાર પર્ચ કરવાનો નમુનો કરાવેલ છે ;
- (૩) સંસ્થાએ કોમ્પ્યુટર સેન્ટર માટે પૂરતી સુવિધા ઉપચયમાં કરવાની રહેતી જરૂર પડેલી વધારાનો પર્ચ કરવાની પસંદગીએ તૈયારી રાખવાની રહેશે.

અને નીચેની સરતોને આધીન આ સંસ્થાને બી.બી.એ.ના અભ્યાસક્રમ ચલાવવા માટેનું જાણના હાલ પૂરતું એક વર્ષ માટે પ્રથમ વર્ષ બી.બી.એ. (એક વા.પ. બી.બી.એ.)ના બે રિજિસ્ટર (રિજિસ્ટર નંબર ૧૯૯૯-૨૦૦૦) માટે આપવા તૈયારગણ કરીએ છીએ :

૧. સ્વનિર્ણય પોરોસ સમક્ષ સ્વતંત્ર એકમ તરીકે રહેશે (કોઈ કોલેજના બાકાત કે વિભાગ તરીકે નહીં) તેમજ પુસ્તાક સમગ્રની બંધનની રહેશે.
૨. કાર્યકાર મુજબ યુનિવર્સિટીએ નિષ્પત્ત કરેલ લાપકાત કરવાના કિલકામાં નિમુષ્ણક કરવામાં આવે.
૩. લાપકાત કરવાના ડાયરેક્ટરની નિમુષ્ણક કરવામાં આવે.
૪. જરૂર મુજબ વિનરોલોજિક સ્ટાફની નિમુષ્ણક કરવામાં આવે.
૫. અભ્યાસક્રમને લગતાં પુસ્તાકો, જર્નલ્સ, કોમ્પ્યુટર્સ, ઓવરહેડ પ્રોજેક્ટર, વીડીઓ, ટી.વી. તથા પ્રવચનક કોમ્પ્યુટરની સગવડના સંકલમાં સંસ્થા પાસે ૨૦ મીનિસ્ટર્સ સિસ્ટમને તરત ઉપચયમાં લાગુ કરાશે.
૬. સંસ્થાના મકાનમાં યુનિવર્સિટીના પારામોરલ મુજબ ભૌતિક સુવિધાઓની જાગવગતે કરવામાં આવે.
૭. પ્રક્રિયક સ્ટીડી માટે જુદા જુદા સારા ઓશાનિક એકતા, મારા વ્યાપારી એકતા, લાકાદારી એકતા વગરનાં સર્પક સાથી વ્યવસ્થા ગોઠવવાની જવાબદારી સંસ્થાએ બદલ કરવાની રહેશે અને તેની બાદી યુનિવર્સિટીને મોકલવાની રહેશે.
૮. અભ્યાસક્રમના શિક્ષણનું માધ્યમ અંગ્રેજી રાખવામાં આવે.
૯. આ અભ્યાસક્રમ માટે સિવાયના કોઈ જ કોઈ પર્ચ કરવા પડે તે પર્ચની લાપધરની સંસ્થાએ આપવાની રહેશે. તેમ જ તેના પ્રવચનના નીતિનિયમમાં હવે પછી જે કોઈ કેરફાર થાય તેનું પાલન કરવાની લાપધર આપવાની રહેશે.

૧૦. યુનિવર્સિટી સુધયે તે રીતે પંખાન, પ્રોવિડન્ટ ફંડ તથા એક્સીડન્ટ માટે જોગવાઈ કરવાની રહેશે.

વિશેષ નોંધ. બી.બી.એ.ના અભ્યાસક્રમ માટે નીચે પ્રમાણે લઘુત્તમ વ્યવસ્થા કરવાની રહેશે.

(રોજિતી સ્કોલ ત્રણ વર્ષ માટે)

ક્રમ	તારીખ	જગ્યા	રકમ
૧.	ડાયરેક્ટર	૧	લઘુત્તમ કુલ વેતન (માનક)
			દેડ મીસે રૂ. ૨૧,૯૦૦
૨.	લેક્ચરર	પ્રથમ વર્ષ ૨	પારામોરલ અનુભાર આપવાના માધ્યમ પદારથપરક
		બીજા વર્ષ કુલ ૩ (૨+૧)	
		ત્રીજા વર્ષ કુલ ૪ (૩+૧)	

૩. વિઝિટિંગ ફેકલ્ટી

૪. ટી.એ., ડી.એ. વિઝિટિંગ ફેકલ્ટી

૧૧. સંસ્થાએ રૂપિયા બાર લાખની રિપોઝિટ યુનિવર્સિટીમાં તા. ૩૧-૫-૧૯૯૯ સુધીમાં જેમાં કરાવવાની રહેશે. રિપોઝિટની રકમ પરત કરવા અને કોલેજ માટે થયે પડતી ત્રણ વર્ષ બાદ સમીક્ષા કરવામાં આવશે.

સહી

એમ. એન. દેસાઈ

પ્રો. સરલા અમ્યુન-

પરિશદ "૩"

કામકાજ ક્રમમાં ૨ (૨)

અંકેશિક કાઉન્સિલની બંધનગણ

બાવી કરાવવામાં આવે છે કે લાપધરની વાટી ડ્રેટ, અમદાવાદ તરફથી નિમુષ્ણક બેઠકોના નામક સંકલના નીચેના કરવાના રહેતોનું પાલન એકિસક્રિય કરીશિલને સંભાળ થાય તે રીતે તા. ૧૯-૬-૧૯૯૯ સુધીમાં જેમાં કામકાજ (૧૧)નું નિષ્કાસ સમયપરોમાં પાડવા કરે, તો તેને બી.બી.એ.ના અભ્યાસક્રમ શીખવવા માટે આ સંસ્થાને તા. ૧૯-૬-૧૯૯૯ સુધીનું પ્રથમ વર્ષ બી.બી.એ.નું તરુ જાણના આપવા માટે એકકલકોને નોંધાવવા તૈયારગણ કરશે.

બી.બી.એ.ના શીખવવાની સરતો

૧. સંસ્થા સ્વતંત્ર એકમ તરીકે રહેશે, (કોઈ કોલેજના બાકાત કે વિભાગ તરીકે નહીં) તેમજ પુસ્તાક સમગ્રની બંધનની રહેશે.
૨. કાર્યકાર મુજબ યુનિવર્સિટીએ નિષ્પત્ત કરેલ લાપકાત કરવાના કિલકામાં નિમુષ્ણક કરવામાં આવે.
૩. લાપકાત કરવાના ડાયરેક્ટરની નિમુષ્ણક કરવામાં આવે.
૪. જરૂર મુજબ વિનરોલોજિક સ્ટાફની નિમુષ્ણક કરવામાં આવે.
૫. અભ્યાસક્રમને લગતાં પુસ્તાકો, જર્નલ્સ, કોમ્પ્યુટર્સ, ઓવરહેડ પ્રોજેક્ટર, વીડીઓ, ટી.વી. તથા પ્રવચનક કોમ્પ્યુટરની સગવડના સંકલમાં સંસ્થા પાસે ૨૦ મીનિસ્ટર્સ સિસ્ટમને તરત ઉપચયમાં લાગુ કરાશે.
૬. સંસ્થાના મકાનમાં યુનિવર્સિટીના પારામોરલ મુજબ ભૌતિક સુવિધાઓની જાગવગતે કરવામાં આવે.
૭. પ્રક્રિયક સ્ટીડી માટે જુદા જુદા સારા ઓશાનિક એકતા, મારા વ્યાપારી એકતા, લાકાદારી એકતા વગરનાં સર્પક સાથી વ્યવસ્થા ગોઠવવાની જવાબદારી સંસ્થાએ બદલ કરવાની રહેશે અને તેની બાદી યુનિવર્સિટીને મોકલવાની રહેશે.
૮. અભ્યાસક્રમના શિક્ષણનું માધ્યમ અંગ્રેજી રાખવામાં આવે.
૯. આ અભ્યાસક્રમ માટે સિવાયના કોઈ જ કોઈ પર્ચ કરવા પડે તે પર્ચની લાપધરની સંસ્થાએ આપવાની રહેશે. તેમ જ તેના પ્રવચનના નીતિનિયમમાં હવે પછી જે કોઈ કેરફાર થાય તેનું પાલન કરવાની લાપધર આપવાની રહેશે.
૧૦. યુનિવર્સિટી સુધયે તે રીતે પંખાન, પ્રોવિડન્ટ ફંડ તથા એક્સીડન્ટ માટે જોગવાઈ કરવાની રહેશે.

વિશેષ નોંધ. બી.બી.એ.ના અભ્યાસક્રમ માટે નીચે પ્રમાણે લઘુત્તમ વ્યવસ્થા કરવાની રહેશે.

(રોજિતી સ્કોલ ત્રણ વર્ષ માટે)

ક્રમ	તારીખ	જગ્યા	રકમ
૧.	ડાયરેક્ટર	૧	લઘુત્તમ કુલ વેતન (માનક)
			દેડ મીસે રૂ. ૨૧,૯૦૦
૨.	લેક્ચરર	પ્રથમ વર્ષ ૨	પારામોરલ અનુભાર આપવાના માધ્યમ પદારથપરક
		બીજા વર્ષ કુલ ૩ (૨+૧)	
		ત્રીજા વર્ષ કુલ ૪ (૩+૧)	

૩. વિઝિટિંગ ફેકલ્ટી
૪. ટી.એ., ડી.એ. વિઝિટિંગ ફેકલ્ટી
૫. સંસ્થાએ રૂપિયા બાર લાખની રિપોઝિટ યુનિવર્સિટીમાં તા. ૩૧-૫-૧૯૯૯ સુધીમાં જેમાં કરાવવાની રહેશે. રિપોઝિટની રકમ પરત કરવા અને કોલેજ માટે થયે પડતી ત્રણ વર્ષ બાદ સમીક્ષા કરવામાં આવશે.
૬. સંસ્થાએ રૂપિયા બાર લાખની રિપોઝિટ યુનિવર્સિટીમાં તા. ૩૧-૫-૧૯૯૯ સુધીમાં જેમાં કરાવવાની રહેશે. રિપોઝિટની રકમ પરત કરવા અને કોલેજ માટે થયે પડતી ત્રણ વર્ષ બાદ સમીક્ષા કરવામાં આવશે.
૭. સંસ્થાએ રૂપિયા બાર લાખની રિપોઝિટ યુનિવર્સિટીમાં તા. ૩૧-૫-૧૯૯૯ સુધીમાં જેમાં કરાવવાની રહેશે. રિપોઝિટની રકમ પરત કરવા અને કોલેજ માટે થયે પડતી ત્રણ વર્ષ બાદ સમીક્ષા કરવામાં આવશે.

પ્રસ્થાપનાના આધાર :

બી.બી.એ.ના પ્રથમ વર્ષમાં પ્રવેશ માટે ગુજરાત માધ્યમિક શિક્ષણ બોર્ડના નિયમનુસાર આપવામાં આવેલા પરીક્ષા સમાપ્ત કે વિશાન પ્રણાલમાં (૧) અંગ્રેજી અને (૨) મધ્યમિકીના નામક સ્ટોરીટેસ્ટના નામક એકાઉન્ટની (પુસ્તકપ્રકીરણ અને એકાઉન્ટની) વિષયો સાથે દ્વિતીય વર્ષના પરીક્ષાના આધારે અનુસૂચિત જગ્યાએ અને એસ.ઈ.બી.સી.ના ઉપકરણો માટે ૪૦ ટકા પુસ્તક પ્રથમ પ્રથમના પાલન કરવામાં આવેલો જઈએ. (વિશાન પ્રણાલના વિધાર્થીઓના પ્રક્રિયકલના પુસ્તક પ્રક્રિયકલના ઉપકરણો માટે સંકલનની બંધનગણ રહેશે.)

ઓરિજિન કાઉન્સિલ : તા. ૪-૭-૧૯૯૮

૨૨

ક. એમ. એસ. ઇન્સ્ટિટ્યુટ ઓફ બિઝનેસ એડમિનિસ્ટ્રેશન, અમદાવાદને બી.બી.એ.ના અભ્યાસક્રમો શીખવવા માટે

નોંધક સ્થાનિક તપાસકમિટીને સેવા

અમે સ્થાનિક તપાસકમિટીના સભ્યો તરીકે ક. એમ. એસ. ઇન્સ્ટિટ્યુટ ઓફ બિઝનેસ એડમિનિસ્ટ્રેશન, અમદાવાદની રૂબરૂ મુલાકાત તા. ૧૧-૫-૧૯૯૮ના રોજ લીધી હતી. ઇન્સ્ટિટ્યુટના ડિરેક્ટર શ્રી જે. સી. ત્રિવેદીએ રૂબરૂ ઉપસ્થિત રહી જરૂરી સમગ્ર માહિતી પૂરી પાડી હતી.

ઇન્સ્ટિટ્યુટ એલ.વાય. બી.બી.એ. અને એસ.વાય. બી.બી.એ.નું સાયુ જોડણા લંબાવી આપવા માટે અને ટી.વાય. બી.બી.એ.નું વધારાનું જોડણા આપવા અરજ કરશે છે.

(૧) ઇન્સ્ટિટ્યુટ હાલમાં ક. એમ. એસ. કોલેજ કોમ્પ્યુટરમાં અણધાર પદાનામાં ચાલે છે અને વર્ગખંડો, ટ્યુટોરિયલ ખંડો, કાર્યાલય, ડિરેક્ટરની ઓફિસ, ગ્રંથાલય વગેરેની પૂરતી ભોતિક સુવિધા છે.

(૨) ગ્રંથાલયમાં બુનિયાદિતિએ મુકે શરતો અનુસાર રૂ. ૫૦,૦૦૦ કરતાં વધુ કિંમતનાં પુસ્તકો વસાવવામાં આવે છે અને જનસં વગેરે મંગાવવામાં આવે છે.

(૩) ઇન્સ્ટિટ્યુટ પાસે સુસજ્જ કોમ્પ્યુટર લેખની વ્યવસ્થા છે.

(૪) ઇન્સ્ટિટ્યુટ પાસે ઓવરસેક્ર પ્રોજેક્ટર, ટી.વી., વિડિયો, વિડિયો કેસેટ વગેરેની સુવિધા પણ ઉપલબ્ધ છે.

(૫) ઇન્સ્ટિટ્યુટમાં ડિરેક્ટર ઉપરાંત ત્રણ પૂર્ણ સમયના કોષ્ય લાયકાત ધરાવતા વ્યાખ્યાતા નોંધવામાં આવ્યા છે.

(૬) ઇન્સ્ટિટ્યુટમાં જરૂરી બિનશૈક્ષણિક સરકારી પણ નિમણૂક કરવામાં આવે છે.

અમ નોંધતે, શરતોએ આ સંસ્થાને એલ.વાય. બી.બી.એ. અને એસ.વાય. બી.બી.એ.નું સાયુ જોડણા લંબાવિક વર્ષ ૧૯૯૮-૨૦૦૦ માટે લંબાવી આપવાની અને ટી.વાય. બી.બી.એ.નું વધારાનું જોડણા આપવાની ભલામણ કરીએ તોફાન એક વાચ બી.બી.એ.ના શૈક્ષણિક વર્ષ ૧૯૯૮-૯૯માં બે વર્ગો (બે ડિવિઝન) અને એસ.વાય. બી.બી.એ.ના બે વર્ગો (ટિવિઝન) હતા ત. જોનાં એક વાચ. બી.બી.એ. અને એસ.વાય. બી.બી.એ. અને ટી.વાય. બી.બી.એ.ના બે બે વર્ગોની ડિવિઝન ને મુદ્દી આપવા ભલામણ કરીએ છીએ :

(૧) બી.બી.એ. પ્રોગ્રામના જોડણીની શરતો અનુસાર (નં. ૧૦) એ વધારાના વ્યાખ્યાતા જરૂરી વિષય માટેના નોંધવામાં રહેશે.

(૨) ગ્રંથાલય માટે રૂ. ૫૦,૦૦૦નાં વધારાનો આવકર્ષ ખર્ચ પુલકો વગેરે માટે કરવાનો રહેશે.

(૩) બી.બી.એ. પ્રોગ્રામના મુજ જોડણીની શરતો અનુસારની અન્ય વ્યવસ્થા ગોઠવવાની રહેશે.

ડો. વાચ. કે અગ્રવાલ

સિ. કે. જે. પટેલ

પરિશિષ્ટ "ક"

કામકાજ ક્રમાંક ૨ (ક)

ઓરિજિન કાઉન્સિલનો ભલામણ

આમી કરાવવામાં આવે છે કે સોમ-લલિત ઇન્સ્ટિટ્યુટ ઓફ બિઝનેસ એડમિનિસ્ટ્રેશન, અમદાવાદને બી.બી.એ.ના અભ્યાસક્રમો શીખવવા માટે તા. ૧૧-૫-૧૯૯૮ની તા. ૧૪-૬-૨૦૦૦ સુધીનું નિમણૂકો મંગેલી શરત સ્થિતિની નીચે ગણાવેલ શરતોનું પાલન ઓરિજિનકાઉન્સિલ કાઉન્સિલને સંતોષ થાય તે રીતે તા. ૧૦-૬-૧૯૯૮ સુધીમાં કરે તો તેને પ્રથમ વર્ષ બી.બી.એ.નું સાયુ જોડણા અને દ્વિતીય વર્ષ બી.બી.એ.નું સાયુ જોડણા અને ત્રીતીય વર્ષનાં સાતત્યમાં તુલ્યી વર્ષ બી.બી.એ.નું નવું જોડણા આપવા માટે ઓરિજિનકાઉન્સિલ કાઉન્સિલને ભલામણ કરવી :

બી.બી.એ.ના જોડણીની શરતો

પાર્ટ-૧ શરતો :

૧. સંસ્થા સ્વતંત્ર એકમ તરીકે રહેશે, કોઈ કોલેજના ભાગ કે સિમાય તરીકે નહીં તેમજ પૂરા સમયની આધારની રહેશે.
૨. કાર્યાલય મુજબ બુનિયાદિતિએ નિયત કરેલ લાયકાત ધરાવતા શિક્ષકોની નિમણૂક કરવામાં આવે.
૩. અભ્યાસક્રમને લગતાં પુલકો, જનસં, કોમ્પ્યુટર, ઓવરસેક્ર પ્રોજેક્ટર, ટી.વી.આર., ટી.વી. તથા લૈભલિક કસેટ જવા સમયનો વસાવવામાં આવે. કસેટ-જનસં માટે રૂ. ૫૦,૦૦૦નો આવકર્ષ ખર્ચ ૧૯૯૮-૨૦૦૦ના વર્ષ માટે કરવામાં રહેશે.
૪. સંસ્થાના પદાનામાં બુનિયાદિતિમાં ધારાધોરા મુજબ ભોતિક સુવિધાઓની જોગવાઈ કરવામાં આવે.
૫. પ્રક્રિયકર સરકારી માટે જુદા જુદા સારા ઓશોલિક એકમો, મોટા વ્યાપારી એકમો, સરકારી એકમો વગેરેનાં સેક્ટર સાથી વ્યવસ્થા ગોઠવવાની જવાબદારી સંસ્થાએ અદા કરવાની રહેશે અને તેની યાદી બુનિયાદિતિ માં ગણાવવાની રહેશે.

ઓરિજિન કાઉન્સિલ : તા. ૪-૭-૧૯૯૮

ક. બી.બી.એ.ના અભ્યાસક્રમના અંગતીના જોડણીમાં મંગના ક્રમાંક (૧૬) નાનુસાર અદા કરવા માટે નોંધવામાં

જરૂરી વિષય માટે નિમણૂક કરી જણા કરવામાં આવે.

૭. બી.બી.એ. પ્રોગ્રામના મુજ જોડણીની શરતો અનુસાર અન્ય વ્યવસ્થા ગોઠવવાની રહેશે.

૮. અભ્યાસક્રમના શિક્ષણમાં માધ્યમ એંગ્રેક રાખવામાં આવે.

૯. તમા અભ્યાસક્રમ માટે સિસાયનો કોઈ જે કોઈ ખર્ચ કરવા પડે તે ખર્ચની બાબતની મંગાને નોંધવાની રહેશે.

૧૦. બુનિયાદિતિ સુધયે તે રીતે પેન્શન, પ્રોવિડન્ટ ફંડ તથા ગ્રેયુદ્ધીટી માટે જોડવાની વધારાની મંગાને.

વિશેષ નોંધ:-બી.બી.એ.ના અભ્યાસક્રમ માટે નીચે પ્રમાણે લક્ષુના વ્યવસ્થા કરવા માટે નોંધવાની

(શૈક્ષણિક સરકાર તથા વર્ષ માટે)

ક્રમ	નામ	જગ્યા	રકમ
૧.	ગાયરેક્ટર	૧	લક્ષુમુક મુક પેન્શન (પાનક)
			કુલ માત્ર રૂ. ૩,૦૦,૦૦૦
૨.	સંસ્કર	પ્રથમ વર્ષ ૨	ધારાધોરાલ અનુસાર નોંધવામાં
		બીજા વર્ષ કુલ રૂ. (૨+૧)	માત્રા ધારાધોરાલ
		ત્રીજા વર્ષ કુલ રૂ. (૩+૧)	
૩.	વિજિટિય કોઈટી		રૂ. ૧,૫૦૦ (વ્યાખ્યાતા, તરસદારીક)
૪.	ટી.વી., ટી.એ. વિજિટિય કોઈટી		નિયમ પ્રમાણ

૧૧. સંસ્થાએ રૂપિયા મુજ લાખોની ડિપોઝિટ બુનિયાદિતિમાં તા. ૩૧-૫-૧૯૯૮ સુધીમાં જમા કરાવવાની રહેશે.

૧૨. પહેલપાત્રકા અપનાવ :

બી.બી.એ.ના પ્રથમ વર્ષમાં પ્રવેશ માટે ગુજરાત માધ્યમિક શિક્ષણ બોર્ડ હાલ તથાવા પાનક ૧૨ માં પરીક્ષા સામાન્ય કે વિભાગ પ્રવાલમાં (૧) એંગ્રેક અને (૨) મેમેરીકેસિસ અથવા સીમેન્ટિસ અથવા એંગ્રેક-સી (બુકપ્રીય અને એંગ્રેક-સી) વિષયો સાથે દ્વિતીય વર્ગમાં (બિન-સામાન્ય સ્થિતિમાં) જરૂરી તથા અનુમુખિત જાત અને અનુમુખિત જનજાત અને એસ.ટી.બી.સી.ના ઉમેલવા માટે ૬૦-૬૫ નાં સાથે પ્રથમ પ્રવર્તન પાસ કરેલ હાલો જોઈએ (વિભાગ પ્રવાલમાં વિદ્યાર્થીઓના પ્રક્રિયકરના લક્ષુમુક લક્ષુમુક કરવા માટે ગણાવવામાં લવાયે નહીં).

૧૩. નેતારીક વર્ષ ૧૯૯૮-૧૯૯૯માં પ્રથમ વર્ષમાં બે ડિવિઝન અને બીજા વર્ષમાં પણ બે (વિવેકના હાલ, તો તુલ્યી) વર્ષ બી.બી.એ. માટે પણ બે ડિવિઝન રાખવા ભલામણ કરે છે. બી.બી.એ.ના વર્ગમાં મારામત રૂ. (વિચાર) અને (વિચાર) ક્રીક વિદ્યાર્થીઓને પ્રવેશ આપી શકાશે તેમજ તેમ જ વિદ્યાર્થીક વાર્ષિક રજીસ્ટ્રાશન ફી રૂ. ૨૦૦ તથા રીપનલ કરવામાં આવે છે. કલમ (૪)માં જણાવેલ ગાયરેક્ટરશ્રીની બદલી પર અને અનુસાર. અને અને આર.આર. સ્પોન્સર્સ વિદ્યાર્થીઓની રૂ. ૩,૦૦૦ (ત્રણ હજાર) ડીવર અથવા તેની સમકક્ષ થમાર રકમ જરૂરી રાખવાની રહેશે.

સોમ-લલિત ઇન્સ્ટિટ્યુટ ઓફ બિઝનેસ એડમિનિસ્ટ્રેશન, અમદાવાદને બી.બી.એ.ના અભ્યાસક્રમો શીખવવા માટે નોંધક સ્થાનિક તપાસકમિટીને સેવા

અમે સ્થાનિક તપાસકમિટીના સભ્યો તરીકે સોમ-લલિત ઇન્સ્ટિટ્યુટ ઓફ બિઝનેસ એડમિનિસ્ટ્રેશન, અમદાવાદની રૂબરૂ મુલાકાત તા. ૧૧-૫-૧૯૯૮ના રોજ લીધી હતી. ઇન્સ્ટિટ્યુટના ડિરેક્ટર શ્રી આર. - ૬. વ્યક્ત અને ડ્રુસ્ટના ટ્રસ્ટી શ્રી પ્રદેશભાઈ શાસ્ત્રીએ રૂબરૂ ઉપસ્થિત રહી જરૂરી સમગ્ર માહિતી પૂરી પાડી હતી. તા. ૧૧-૫-૧૯૯૮ના રોજ લીધેલ પાનક ૧૨માં જણાવેલ શરતોનું પાલન ઓરિજિનકાઉન્સિલ કાઉન્સિલને સંતોષ થાય તે રીતે તા. ૧૦-૬-૧૯૯૮ સુધીમાં કરે તો તેને પ્રથમ વર્ષ બી.બી.એ.નું સાયુ જોડણા અને દ્વિતીય વર્ષ બી.બી.એ.નું સાયુ જોડણા અને ત્રીતીય વર્ષનાં સાતત્યમાં તુલ્યી વર્ષ બી.બી.એ.નું નવું જોડણા આપવા માટે ઓરિજિનકાઉન્સિલ કાઉન્સિલને ભલામણ કરવી :

બી.બી.એ.ના જોડણીની શરતો

- (૧) ઇન્સ્ટિટ્યુટ હાલમાં ક. એમ. એસ. વાચ. બી.બી.એ. અને એસ.વાય. બી.બી.એ.નું સાયુ જોડણા લંબાવી આપવા માટે નાનું ટી.વાય. બી.બી.એ.નું વધારાનું જોડણા આપવા અરજ કરેલ છે.
- (૨) ઇન્સ્ટિટ્યુટ હાલમાં ક. એમ. એસ. કોલેજ કોમ્પ્યુટરમાં અણધાર પદાનામાં ચાલે છે અને વર્ગખંડો, ટ્યુટોરિયલ ખંડો, કાર્યાલય, ડિરેક્ટરની ઓફિસ, ગ્રંથાલય વગેરેની પૂરતી ભોતિક સુવિધા છે.
- (૩) ગ્રંથાલયમાં બુનિયાદિતિએ મુકે શરતો અનુસાર રૂ. ૫૦,૦૦૦ કરતાં વધુ કિંમતનાં પુસ્તકો વસાવવામાં આવે છે અને જનસં વગેરે મંગાવવામાં આવે છે.
- (૪) ઇન્સ્ટિટ્યુટ પાસે સુસજ્જ કોમ્પ્યુટર લેખની વ્યવસ્થા છે.
- (૫) ઇન્સ્ટિટ્યુટ પાસે ઓવરસેક્ર પ્રોજેક્ટર, ટી.વી., વિડિયો, વિડિયો કેસેટ વગેરેની સુવિધા પણ ઉપલબ્ધ છે.
- (૬) ઇન્સ્ટિટ્યુટમાં ડિરેક્ટર ઉપરાંત ત્રણ પૂર્ણ સમયના કોષ્ય લાયકાત ધરાવતા વ્યાખ્યાતા નોંધવામાં આવ્યા છે.
- (૭) ઇન્સ્ટિટ્યુટમાં જરૂરી બિનશૈક્ષણિક સરકારી પણ નિમણૂક કરવામાં આવેલ છે.

અને નીચેની શરતોએ આ સંજ્ઞાને એક વાપ. બી.બી.એ. અને એસ.વાય. બી.બી.એ.નું ચારુ જોડણ રીએક્શન વર્ષ ૧૯૯૮-૨૦૦૦ માટે લંબાવી આપવાની અને દીવાય. બી.બી.એ.નું વધારાનું જોડણ આપવાની ભલામણ કરીએ કરીએ. એક વાપ. બી.બી.એ.ના રીએક્શન વર્ષ ૧૯૯૮-૯૯માં બે વર્ગો (બે ડિવિઝન) અને એસ.વાય. બી.બી.એ.ના બે વર્ગો (બે ડિવિઝન) હતા તે જાતો એક વાપ. બી.બી.એ. એસ.વાય. બી.બી.એ. અને દીવાય. બી.બી.એ.ના બે બે વર્ગોની (ડિવિઝન) મુદ્દી આપવા ભલામણ કરીએ કરીએ :

(૧) બી.બી.એ. પ્રોગ્રામના જોડણની શરતો અનુસાર (નં. ૧૦) એક વધારાના વ્યાખ્યાના જરૂરી વિષય માટેના નીમવાના રહેશે.

(૨) સંજ્ઞાએ માટે રૂ. ૧૦,૦૦૦ના વધારાનો આવકર્ષ ખર્ચ પુરાશે વગેરે માટે કરવાની રહેશે.

(૩) બી.બી.એ. પ્રોગ્રામના પૂર્ણ જોડણની શરતો અનુસારની અન્ય વ્યવસ્થા ચોક્કસવાની રહેશે.

ડૉ. વા. કે. અગ્રવાલ
ચિ. જે. પટેલ

પરિશિષ્ટ "૭"

ક્રમકાજ ક્રમાંક ૨ (૭)

એડિટિંગ કમિશનની ભલામણ

બાબી કરાવવામાં આવે છે કે પૂજારનાં જો સોનાપટ્ટી, અમદાવાદ તરફથી નિમણૂકી એજેન્સી શરત સંતોષાતી નથી જણાવેલ શરતોના પાલન અંગ્રિકિસ્ટીટી કમિશનના સંજ્ઞા થાય તે રીતે તા. ૨૮-૬-૧૯૯૯ સુધીમાં કરે તો તેને ઈન્કમેટેક્સ ટેનાગ્રાજમાં અનુમાનિત અવધાનમાં સોંપાવા સંભવિત તા. ૧૫-૬-૧૯૯૯થી તા. ૧૪-૬-૨૦૦૦ સુધી ઈન્કમેટેક્સ ટેનાગ્રાજ તરફ માત્ર સંજ્ઞાની નવી માન્યતા આપવા માટે અંગ્રિકિસ્ટીટી કમિશનને બલામણ કરવી :

૧. માકેનર, રીડર અને ઈન્કમેટેક્સ પુનિવર્તિના પારાવોરના અનુસાર પગારધોરણ અને ભવ્યો આપવામાં આવે;
૨. રિસર્ચ કક્ષા સ્થળથી ચારની જરૂરી સંખ્યામાં ફિક્સ પારામાં પુનિવર્તિની વખતોચખત પગારમાં કંઈકાદ કર તો ના માત્ર રાખવાની માત્ર નિમણૂક કરવામાં આવે;
૩. જરૂરી સુવિધા સાધવા પ્રકારની વ્યવસ્થા કરવામાં આવે;
૪. ગ્રંથાલયના પુસ્તકો અને જર્નલ માટે રૂ. બે લાખના ખર્ચ કરવામાં આવે;
૫. જો કદમ પ્રથાનિક વિષય લાગે તો મુનરજી વગેરેની બી.એચવા અનુમાનિક રીતિના અને સંજ્ઞાપત્ર માટે મુનરજીની અવધાનમાં લાવી જાઉંએ;
૬. રૂ. ૫ લાખની કિમતના સોફ્ટવેર પરીકરમાં આવે;
૭. વિદ્યાર્થીઓને આત્મજાન ઈન્કમેટેક્સ સુવિધા આપવામાં આવે;
૮. ઈન્કમેટેક્સની વિદ્યાર્થી સંખ્યામાં પ્રચલ આપવાના રહેશે અને આ અવધાનમાં અનુમાનિક કરવાના નીમવાને રહેશે. જો એને પુનિવર્તિના પાત્ર નીમવિવધાનમાં આવેલ કરવાની રહેશે.
૯. નવા સ્થાની સંજ્ઞાપત્ર પ્રવૃત્તિઓના ભારરૂપ પુરતી સંખ્યામાં પ્રકાશના જેવાં કે સંજ્ઞાપત્ર પાપટી, વખત, નવામાં વગેરે સોજા જાઉંએ.

Report on the application for the recognition of Gujarat Law Society Institute of Information Technology

The Committee members (Prof. Y. K. Agrawal, Prof. Sarla Achutan, Prof. Y. D. Vyas and Shri R. P. Soni) have visited the Institute and met Honorary Secretaries of the Gujarat Law Society and the Executive Director of the Institute Shri Dushyant Joshi. The Committee saw the new building at the above Institute which is nearing completion. The members discussed with the above persons about the Academic plans and about the staff. They will have sufficient space in the new building and also they have planned every requirement meticulously. The committee recommends an intake of Sixty students. They have provided separate rooms for teaching staff. They have a provision of library and reading rooms. They have sufficient books and periodicals. They have a number of computers and have placed orders for additional 200 computers. They are to provide in the ratio of 2:1 and 1:1 computers to the students.

The management appointed Mr. P. K. De as Professor, Miss Anita Hiranandani as Head and Mr. Kamal T. Desai as Lecturer. The biodata of the above persons was given. They are experienced and well qualified persons.

Taking into the account what the committee has seen and the discussions with the management and the Executive Director of the Institute, the committee recommends the Law Society Institute of Information Technology be considered as recognised Institute.

The following conditions should be strictly implemented

1. The Professor, Reader and Lecturer should be given the pay scale allowances as per the Gujarat University rules.
2. The Institute should spent Rs. 2 Lacs towards books and Journals etc.
3. The softwares worth of Rs. 5 Lacs should be purchased.
4. The on-line internet facilities should be provided to the students.
5. The Research Assistants (3-4) should be appointed as per U.C.T. norms.
6. The course should be of the level of Post-graduate.

તરી

પ્રો. યા. કે. અગ્રવાલ
પ્રો. વા. કે. અગ્રવાલ
પ્રો. સરલા અચુતાન
પ્રો. અનિતા હિરનંદની

પરિશિષ્ટ "૮"

ક્રમકાજ ક્રમાંક ૨

Prof. G. N. Gandhi
Professor & Head
Dept. of Civil Engg.
I. I. Institute of Technology
Gujarat Engineering University

સંસ્કાર
Gujarat Engineering University
Ahmedabad-380 009

Sub: L.C. report on starting PG course in Transportation Engineering at I. I. College of Engineering (LDCE), Ahmedabad

Sir,

Please refer to our LHC report on the subject dated 26-11-1998 mailed to you last week. I enclose pl. find additional details received from LDCE after the LHC report was mailed to you.

Though the registered PG Teachers are reported as mentioned in our earlier report, after studying the additional details provided by LDCE, we recommend that the LDCE may be considered for conditional approval to start the course. The conditions should be that they must arrange for financial cooperation with the University of their teachers mentioned on the enclosed list of staff as PG Teacher/Asst. PG Teachers and procure the additional equipment and books/journals to be provided by them within a stipulated time, say, three months. The final approval may be accorded upon fulfillment of the above mentioned conditions.

Thanking you,

Yours truly,

1. Lists of available Staff, Books and Equipments received from LDCE.

LDCE mentioned that adequate financial assistance will be available from the State Government to procure new equipments and to upgrade the existing ones, and to buy books and subscribed to the journals. The remunerations to the teachers will be provided in the form of salary by the State Government.

In view of the above finding, the following recommendations are offered:

(1) Adequate number of recognised PG teachers and/or as per U.C.T. teachers as per U.C.T. ordinance O. 65-Pte) can be appointed before starting the proposed course. This decision, however, can be postponed if LDCE gets recognition from Gujarat PG Teacher for their staff teaching transportation engineering electives at B.E. level at present.

परिशिष्ट: ...
सामयिक ...

પુનિર્વસિતીના જીલ્લાજી વિભાગમાં એમ.એસસી. બાયોમેડિકલ ટેકનોલોજીનો બે વર્ષનો અભ્યાસક્રમ ચાલી રહ્યો છે.
(એલ્ડ કાર્ડનાન્સ ધોરણ) ચાલુ રહ્યા બાબતે.

Sd/-
(Dr. A. V. Shroff).

(૧) આ અવ્યયાર્થક અને બીજે દર્શાવેલ સંખ્યોની અવ્યાસ સમિતિની બેઠક તા. ૨૬. ૧. ૨૦૧૦ ના રોજ બનેલી છે. અવ્યાસ સમિતિમાં આને અવ્યાયાર્થકો દ્વારા સહી કરી, જેમાં ઉપર દર્શાવેલ સંખ્યો મુજબ સહી કરવામાં આવી છે.

2. 已知 $\vec{a} = (1, 2, 3)$, $\vec{b} = (2, 3, 4)$, 求 $\vec{a} \cdot \vec{b}$ 及 $|\vec{a}|$.

[illegible]

$\delta_1 = \beta_1, \gamma_1, \gamma_2, \alpha $	(178)
$\gamma_1 = \beta_1, \alpha, \beta_2, \beta_3, \beta_4$	(179)

[illegible]

2.	$\frac{1}{x^2} = x^{-2}$	$\frac{d}{dx} x^{-2} = -2x^{-3}$	$= -\frac{2}{x^3}$
6.	$\frac{d}{dx} \sin(x) = \cos(x)$	$\frac{d}{dx} \cos(x) = -\sin(x)$	$= -\sin(x)$

५. श्री. महेश देसाई	७२५४२
६. श्री. राजेश भास्कर	७३४२

22. 11. 001. 2019

$\mathcal{C}_1 = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836,$
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[illegible][illegible]

(૨) આ અવગણનામાં પ્રવેશ કરીને તમારું માન્યકર્તા (સાક્ષિમંત્ર આદિ કુલાઈલ કરીને) તમારું નામ, પત્રાકા, ફોન નંબર, ઈમેલ આદિ, ૧૯૮૦ રજીસ્ટ્રેશન નંબરો, કિંમત ૩.૦૦ રૂબાઈ.

(2) આ અવ્યયોદયમાં પ્રવર મંદિર ગુપ્તવા માટે બી.અંતર્ગતી.ના ઉપયોગ માટેની ફરિયાદો ગુપ્તવાની માટેની ફરિયાદોની સાથે મળેલી રહેશે અને આવાવાળા રાખવા.

[illegible]

(ਅ) ੨੦ ਅੰਕਾਂ (ਦੋ-ਅੰਕੀ ਸ਼ੀਟ) ਦੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਹਰ ਸ਼ੀਟ ਅਤੇ ਵਿਸ਼ੇਸ਼ ਸ਼ੀਟਾਂ ਦੇ
(ਅ) ੪ ਅੰਕਾਂ (ਦੋ-ਅੰਕੀ ਸ਼ੀਟ) ਦੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਹਰ ਸ਼ੀਟ ਅਤੇ ਵਿਸ਼ੇਸ਼ ਸ਼ੀਟਾਂ ਦੇ

2. இவ் வகையான அமைப்புகள் மிகவும் சிறப்பாக இருக்கின்றன. இவ் வகையான அமைப்புகள் மிகவும் சிறப்பாக இருக்கின்றன.

(2) અહીં 12 સબકોનો 24મો સબ-પાર્ટ બદલે ગણે સહન Appendix 'A'નો 20મો પાર્ટ

સરકારી.
અંગ્રેજી પ્રાપ્ત વિગતો Appendix 'B' નીચે આ સાથે સામવ ૩૭.

સા. જ. ચિન્મય

પાલ, કે, અંગ્રાવલ

**M.Sc. IN BIOMEDICAL TECHNOLOGY COURSE (M.Sc.-BMTC)
DEPARTMENT OF ZOOLOGY
UNIVERSITY SCHOOL OF SCIENCES**

In the recent developments of science, the study of biomedical technology is considered to be the most advanced of today. Most of the latest scientific applications for improvement of life are based on biomedical technology.

In view of the increasing demand for specialized trained personnel in Biomedical Technology, Gujarat University, Ahmedabad had taken a first step in introducing a one year Post Graduate Advanced Diploma Course in Biomedical Technology from November 17th, 1997 to date. Two hundred and six students of 25-35 students have been trained. Out of them a large number have secured employment as scientific employees. The course has already gained popularity.

The success of the University of Zoology has left the need to extend the course for 2 years and to make it a full-fledged two year **M.Sc. Course in Biomedical Technology**. This will benefit the students by making an in-depth training in the subject and will have better job prospects. It will also be a step forward for those interested in obtaining jobs, opening avenues for self employment and carrying out research in the field.

The highlights of this M.Sc. course are :

The students will be imparted in usage of highly sophisticated instruments viz. Electron Microscope, UV-Visible Spectrophotometer, HPLC, Gamma counter and techniques of various hormone assays, immunoassays, and immunochemical, Tissue culture, Serology, etc. Simultaneously, the routine clinical chemistry, haematology, histology, Microbiological and Immunological studies, etc. will also be imparted.

The students will be opening avenues for those seeking training in the field of human, clinical and animal physiology, embryology, histology and related subjects. Such trained personnel will be in demand in the above mentioned fields in India and abroad.

The students will be pursuing academic year of 1999 in the Department of Zoology, Gujarat University, Ahmedabad in collaboration with the University Health Centre. Several specialized and experienced faculty and Post-Graduates will be associated with the Course.

The students of the Biotechnology course will have the following papers :

M.Sc. Part-I

1. Human Physiology and Microbiology
2. Human Embryology and Histology
3. Human Biochemistry and Immunology

M.Sc. Part-II

4. Human Physiology and Microbiology and Immunology
5. Human Embryology and Histology and Radiation diagnostics
6. Human Biochemistry and Immunology
7. Human Physiology and Microbiology and Immunology

The students will be pursuing academic year of 1999 in the Department of Zoology, Gujarat University, Ahmedabad in collaboration with the University Health Centre. Several specialized and experienced faculty and Post-Graduates will be associated with the Course.

The students will be pursuing academic year of 1999 in the Department of Zoology, Gujarat University, Ahmedabad in collaboration with the University Health Centre. Several specialized and experienced faculty and Post-Graduates will be associated with the Course.

8. Admission study to be entered. Reservation for SC, ST, SEBC will be as per University Rules. However, no concession in fees will be given.
9. Students must have secured first class or higher second class marks in the first attempt at B.Sc. Examination out of only the total B.Sc. marks.
10. Students who are eligible for admission the high payment seats must have a minimum of 50% marks in the B.Sc. Examination.
11. The medium of instruction will be English.
12. Duration of the course : Two years.

7. Mode of Training - The candidates will be given theoretical and practical instructions. Apart from this, field trips will be arranged to Diagnostic Centres and Laboratories. Practical training will be imparted in Medical Centre/Hospital. Regular training programme at Hospitals will be made including practicals.

8. Teaching Scheme	
At M.Sc. I - 3 papers of 75 marks each	225
3 practicals of 75 marks each	225
Total marks	450
At M.Sc. II - 3 papers of 75 marks each	225
3 practicals of 75 marks each	225
Total marks	450
Grand total of marks of M.Sc. I and II	900

No internal marks will be given

Passing standard

To pass the examination a candidate shall be required to obtain at least 70% in individual papers of the marks obtainable in theory papers and practicals as per University rules.

9. Award of class of M.Sc. Biomedical Technology. (As per University rules)
- (a) A successful candidate obtaining 70% or more of the combined theory and practical aggregate marks at the Final Examination shall be placed in the **FIRST CLASS WITH DISTINCTION** provided she passes in all the papers/practicals at one and the same sitting at the first attempt.
- (b) A successful candidate obtaining 60% or more but less than 70% of the combined aggregate marks shall be placed in **FIRST CLASS** provided she passes in all the papers/practicals at one and the same sitting at the first attempt.
- (c) A successful candidate obtaining 50% or more but less than 60% of the combined aggregate marks at the final Examination shall be placed in the **SECOND CLASS** provided she passes in all the papers/practicals at one and the same sitting at the first attempt.

10. Seats available
- 30 Regular seats
- 5 Payment seats

11. Fees - Rs. 15,000 per term per student for regular seat
Rs. 40,000 per term per student for payment seat

Fees will not be refundable.

12. Examination will be **Annual** at the end of each year.
13. Examination fees - Rs. 500 per student will be collected alongwith the examination form and 20% of total amount will be deposited in the University. The Examination form and mark-sheet fees will be extra as per University rules.
14. The Examination for M.Sc. II will be conducted from the 80% amount collected at each Examination. Payment of remuneration will be done to External and Internal Examiners, Supervisors, Experts, Field Collector, Office staff, attendants, etc. as per University rules. The TADA to External Examiners, Conveyance charges to Internal Examiners, will also be paid according to University rules.
15. An amount of 80% each out of total Examination fees for M.Sc. I and II will be used by the Department to conduct the Practical Examination and the fees mentioned under 14.

The Examination forms, Marksheet and Degree Certificates will be printed by the University as per details given by the Department of Zoology.

The Gujarat University shall award the Degree Certificate to the successful candidates at its Annual/supplementary convocation.

16. The convocation fees will be charged by the University according to existing rules.
17. The Annual Examination will be held in March/April/May each year alongwith the other examinations of the University.
18. The University will send the notification in this regard alongwith those of the other Examinations. The Department of Zoology will conduct the Theory and Practical Examination.

21. The Examination Committee for the Self Financed M.Sc. Biomedical Technology course will consist of
- Hon'ble Vice Chancellor-Chairman.
 - Dean, Science Faculty.
 - Course Director.
 - Co-ordinators.
- The University will convene the meeting of the members to appoint the panel of External and Internal Examiners and send letters of invitation.

Director of Course

Prof. Dr. N. J. Chinoy,

Head, Department of Zoology & Director, University School of Sciences,
Gujarat University, Ahmedabad-380 009.

Co-ordinators

- | | |
|--|---|
| Prof. Dr. U. M. Rawal,
Department of Zoology,
University School of Sciences,
Gujarat University, Ahmedabad-380 009. | 2. Dr. M. P. Bhatt,
Resident Medical Officer,
Gujarat University Health Centre,
Gujarat University, Ahmedabad-380 009. |
|--|---|

Co-ordinators

- | | |
|---|---|
| 1. Dr. S. V. Rao,
Department of Zoology,
University School of Sciences,
Gujarat University, Ahmedabad-380 009. | 3. Dr. Sudhahen H. Desai,
Lady Medical Officer,
Gujarat University Health Centre,
Gujarat University, Ahmedabad-380 009. |
| Dr. J. J. Verma,
Department of Zoology,
University School of Sciences,
Gujarat University, Ahmedabad-380 009. | 4. Programme Co-ordinator,
Dr. H. N. Highland,
Department of Zoology,
Gujarat University, Ahmedabad-380 009. |

Consultants

- | | |
|---|--|
| Prof. V. C. Saxena,
Entomology Scientist,
7/368 Sarvajaninagar, Nr. Humnadda Park,
Ahmedabad-380 015. | 6. Dr. Ashwin Patel,
222, Anil Kunj,
Nr. Paldi Char Rasta,
Ahmedabad-380 006. |
| 2. Dr. J. J. Trivedi, M.Sc., Ph.D.
(Hon'ble Prof. K. M. School of
P. C. Medicine & Research),
P. C. Research Society, Paldi,
Ahmedabad-380 007. | 7. Dr. Mahesh Desai,
Dhanlaxmi Urological Hospitals
Banglow No. 3, Panchal Society,
Besides Suryavani Complex,
Nava Vadaj Road, Ahmedabad-380 013. |
| 3. Dr. Gaurang Bhatkar,
Pneumatologist, 'Shahukutir', Shahibag,
Ahmedabad. | 8. Dr. Atul Marshi,
Marshi Hospital,
Paldi, Ahmedabad-380 007. |
| 4. Dr. G. H. Shah,
Gynaecologist,
55, Vasantkunj, New Sharda Mandir Road,
Paldi, Ahmedabad-380 007. | 9. Dr. S. R. Dave,
Department of Microbiology,
Gujarat University,
Ahmedabad-380 009. |
| 5. Dr. Bhaskar Vyas,
Ashish Pathology Laboratory,
1, Monalisa Building,
Ambhavadli Bazar, Ellisbridge,
Ahmedabad-380 006. | |

The course is conducted on a basis of examination schedule as follows

M.Sc. Part I		Marks	Examination Period (hours)
Paper No.	Title		
I	Instrumentation & Methodology	30	3
II	Chemical Biochemistry, Serology & Toxicology	50	3
III	Bacteriology and Parasitology	75	3
Practicals* :			
1	Based on P. I	75	4
2	Based on P. II	75	4
3	Based on P. III	75	4

* 4 hrs. each.

M.Sc. Part II

IV	Clinical Pathology, Microbiology and Immunology	75	3
	Clinical Endocrinology, Sematology and Radiation Diagnostics	75	3
V	Molecular and Clinical Genetics	75	3
	Computer Applications in Biology	75	3
	Statistics in Biology	75	3

* 4 hrs. each.

Every week the students will be required to spend their time for 4 hours in library and seminars.

APPENDIX 'A'

Maintenance of Accounts and Auditing :

- The M.Sc. BMTC will be a Self-Financed course.
- The separate Bank Account in the name of the Course Director will be opened in the State Bank of India, Gujarat University Branch, Ahmedabad-380009.
- The account will be jointly operated by
 - Course Director
 - Registrar/Pro-Vice-Chancellor/Chancellor depending on the amount.
- The above conditions for the operation of the account will be the same as for other similar courses of the University.
- The accounts will be maintained by the Department and audited by the External Accountant at the end of the year. The CA will be appointed by the University. **INTERNAL AUDIT WILL NOT BE REQUIRED.**
- The fees shall be Rs. 15,000 per term per student for regular course and Rs. 60,000 per term per student for payment seat. The fees per term per student will be deposited directly in the S.B.I. Gujarat University Branch, Bank Account of the Course.
- 30% of the total collection of fees will be paid to the University at the end of each term.
- FEES will not be refunded.
- The responsibility for purchase of day to day supplies, chemicals, glassware, animals, their maintenance, diagnostic kits, major and minor equipments, as well as all other supplies and infrastructural requirements will be done jointly by the Course Director, Co-ordinators and Co-ordinators upto the limit of Rs. 50,000. For supplies and equipments costing more than Rs. 50,000, The University sanction will be obtained.

M.Sc. Part I :

- I Instrumentation & Methodology
- II Clinical Biochemistry, Serology & Toxicology
- (II) Haematology and Parasitology

M.Sc. Part II :

- IV Clinical Pathology, Microbiology and Immunology
 - A Clinical Endocrinology, Semenology and Radiation diagnostics
 - VI Molecular and Clinical Genetics
- Practicals I to VI based on Theory papers.

Paper I : Instrumentation and Methodology :

Microscopy : General principles, Light microscopy, Electron microscopy, Phase contrast, Fluorescence, Polarized and Con-focal microscopy.

Electron microscopy : Types of microscopes, TEM, SEM, Tissue fixation, Processing, Embedding, Blockmaking, Sectioning, Staining, Observation under EM and interpretation.

Histology : Tissue fixation techniques, Processing of tissues; tissue embedding, Sectioning, Microtome types and their uses, histological staining techniques.

Study of animal tissues, histology of various organs

Study of Cell and its organelles, Cell cycle and Division, Squash, Smear techniques, Exfoliative techniques.

Cytochemical Staining Methods : DNA, RNA, Proteins, Lipids, Enzymes, Miscellaneous compounds.

Autoradiography, Tissue culture, Measurement of pH.

Staining techniques for microorganisms, Monochrome staining, Differential staining, Special stains.

Preparation of glassware for microbiological work

Introduction to few instruments: Incubator, Oven, Autoclave

Incubation techniques, Disinfection technique

Chromatography : Paper, Thin layer, Gas liquid, Column, High performance liquid chromatography (HPLC) and clinical applications

Electrophoresis : Gel Electrophoresis, Isoelectric focussing, 2 Dimensional, Ultra electrophoresis & applications

Photometry : Colorimetry, Visible and UV Spectrophotometry, fluorimetry, Flame photometry and applications, Atomic absorption spectrophotometry

Respirometry : Tissue respirations.

Centrifugation : Differential, Density gradient, ultra centrifugation, Infracentrifugation and their importance

Autoanalyser : Parts, Sampler, Proportionating Pumps, Dialyser, Constant temp bath, flow rate and colorimeter, recorder

Spectrophotometry, Encephalography, Myography, Gas Analyser, etc

Paper II : Clinical Biochemistry, Serology and Toxicology :

Clinical Biochemistry : Composition of food and diet, Energy metabolism, Variation of diet and disease

Blood sugar and Reducing substances in urine :

(1) Methods of Blood sugar determination - Glucose-Tolerance test Identification of reducing substances, Diabetes mellitus, Diabetic coma and ketosis

(2) **Urine Examination :** Chemical and microscopical and its implications

(3) **Chemical tests in Kidney disease :** Sp gr tests, urea clearance test, other clearance tests, Determination of plasma and urine Insulin and sodium thiosulphate, PS, P, creatinine, other tests as serum albumin and globulin, cholesterol, plasma bicarbonates, serum calcium, plasma chlorides. Renal diseases and chemical findings.

(4) **Non-Protein Nitrogen :** Urea, Uric acid, Creatinine Methods of analysis, interpretations, Determination of amino acids in urine, Phenylketonuria - and Screening tests for blood phenyl alanine, tests for 5-HIAA, indole excretion.

(5) **Plasma Proteins - A/G Ratio:** Determination of gamma globulin, Dye binding technique, Determination of fibrinogen, Electrophoretic separation and interpretations, Lipoprotein separation, interpretations, Ultracentrifugation separation of Immunoglobulins, Determination of mucoproteins

(6) **Enzymes :** Clinical importance of enzymes, quantitative estimation of enzymes, Enzymes in preparation of reagents SGPT, SGOT, LDH, CPK and Hydroxybutyrate dehydrogenase, Isocitrate dehydrogenase, analyse, glucose-6 phosphate dehydrogenase, Cholinesterases, Aldolase activity, Phosphatases

(7) **Lipids :** Cholesterol and types, Ester cholesterol, Phospholipids, Fatty acids in blood, Esterified fatty acids in blood, Triglycerides, Lipoproteins

(8) **Gastric Analysis**

(9) Tests in liver and biliary tract disease, Jaundice, Bilirubin estimation, Bile salts and pigments, Urobilinogen in urine, Haecoliation tests, Thymol turbidity tests, Cephalin cholesterol flocculation tests, Enzymes

(10) Estimation of inorganic materials, Na, K, Cl, Fe, Mg, Cu, Zn, Ca, P, Iodine, Sulphur & Interpretations, Iron and iron binding capacity

(11) Chemical Examination of CSF

(12) Chemical examination of kidney and gall bladder stones, examination of puncture fluids

(13) Methods for study of metabolism

(14) Biochemical evaluation and function tests, liver function tests, Gastric analysis, Renal function tests, Thyroid function tests, Pancreas function tests, Heart function tests

(15) Diseases and biochemical tests eg. Anaemia, hyper and hypo-thyroidism, Diabetes, obesity, nephritis, ketosis, cirrhosis of liver, jaundice, meningitis, myocardial infarction, hypertension, Atherosclerosis

Toxicology : General principles and terminology, Types of toxicity, Factors affecting toxicity, acute, subacute and chronic toxicity, classification of toxicants, Estimation of toxicity, LD₅₀, LD₀₁, LD₀₅, Toxicity testing, Route of administration, absorption, distribution, excretion, metabolism, biotransformation

Toxic agents and mode of action : Pesticides, metals, solvents & vapours, radiation and radioactive materials, venobiotics and toxins of animal and plant origin, teratogens, food additives and contaminants, air, water, soil pollutants

Toxicology of organs and organ systems : Toxicology of blood, cutaneous, development, endocrine, reproductive systems, immune system, digestive, excretory and nervous systems, sense organs, cardiovascular system

Genotoxicity : Toxins and toxic residues and analysis, clinical, occupational toxicology, reproductive, industrial toxicology and its importance in forensic science

Human toxicology and medical ethics

Paper III : Haematology and Parasitology :**Collection of Blood**

I Blood and its formed elements, RBC, WBC, Platelets

Haemoglobin and its types

Haematocrit, Differential count, ESR, PCV, MCV

--Blood cell abnormalities

Blood coagulation, Haemopoiesis and study of Bone marrow, erythropoietin, haemophilic and clinical application, C.T. Anticoagulants

--Blood Groups and subgroups

--Blood related disorders

Anaemias, Haemolytic anaemia (Thalassemia), Haemophilia, Aplastic anaemia, Polycythemia, sickle cell anaemia, Thrombosis, Leukemia, Importance of blood sugar, Calcium, Acetone

--Blood Donation

--Blood transfusion--Transfusion of RBC, Platelets, WBC, Haemopoietic Cells, Plasma components, Adverse effects of blood transfusion, Transfusion for the newborn --Blood Banks and their functioning Blood Storage

Haemagglutination Spectroscopic examination of blood. Determination of HbF. Osmotic fragility of blood cells. Preparation of lupus erythematosus (L.E) cells. Preparation of Heinz bodies. Electrophoresis of Hb

Parasitology

(a) General introduction to Medical Parasitology

1. Divisions of medical parasitology
2. Classes of parasites
 - (a) Protozoa
 - (b) Helminths
 - (c) Ectoparasites, arthropods
3. Parasitic adaptations
4. Sources of infection (a) Soil (b) Water (c) Food (d) insect vectors (e) Animals
5. Methods of transmission
 - (a) Oral transmission (b) Skin transmission (c) Vector transmission (d) Direct transmission

(b) General pathogenicity

1. Penetration of parasites into host
2. Examination of stools
3. Examination of blood
4. Examination of urine
5. Examination of sputum
6. Biopsy
7. Culture methods
8. Infective endocarditis

(c) General Pathology

1. Classification of protozoan parasites
 - (a) Ciliates
 - (b) Flagellates
 - (c) Sporozoa
 - (d) Microsporidia
2. Life cycle, mode of reproduction, pathogenesis, clinical features, epidemiology, diagnosis, treatment and prophylaxis of the following protozoan parasites: (a) *Trichomonas vaginalis* (b) *Giardia intestinalis* (c) *Isospora belli* (d) *Cryptosporidium parvum* (e) *Toxoplasma gondii* (f) *Leishmania tropica* (g) *Leishmania braziliensis* (h) *Trypanosoma brucei* (i) *Trypanosoma evansi* (j) *Plasmodium falciparum* (k) *Plasmodium vivax* (l) *Plasmodium malariae* (m) *Plasmodium knowlesi* (n) *Plasmodium falciparum* (o) *Plasmodium malariae* (p) *Plasmodium falciparum* (q) *Plasmodium malariae* (r) *Plasmodium falciparum* (s) *Plasmodium malariae* (t) *Plasmodium falciparum* (u) *Plasmodium malariae* (v) *Plasmodium falciparum* (w) *Plasmodium malariae* (x) *Plasmodium falciparum* (y) *Plasmodium malariae* (z) *Plasmodium falciparum*

(d) Helminthology

1. Classification of helminths: (a) Platyhelminthes (b) Tricladida (c) Cestoda (d) Nematoda (e) Trematoda (f) Monogenea (g) Polytrematoda (h) Polytrematoda (i) Polytrematoda (j) Polytrematoda (k) Polytrematoda (l) Polytrematoda (m) Polytrematoda (n) Polytrematoda (o) Polytrematoda (p) Polytrematoda (q) Polytrematoda (r) Polytrematoda (s) Polytrematoda (t) Polytrematoda (u) Polytrematoda (v) Polytrematoda (w) Polytrematoda (x) Polytrematoda (y) Polytrematoda (z) Polytrematoda
2. Life cycle, mode of reproduction, pathogenesis, clinical features, epidemiology, diagnosis, treatment and prophylaxis of the following platyhelminth parasites: (a) *Tricladida* (b) *Tricladida* (c) *Tricladida* (d) *Tricladida* (e) *Tricladida* (f) *Tricladida* (g) *Tricladida* (h) *Tricladida* (i) *Tricladida* (j) *Tricladida* (k) *Tricladida* (l) *Tricladida* (m) *Tricladida* (n) *Tricladida* (o) *Tricladida* (p) *Tricladida* (q) *Tricladida* (r) *Tricladida* (s) *Tricladida* (t) *Tricladida* (u) *Tricladida* (v) *Tricladida* (w) *Tricladida* (x) *Tricladida* (y) *Tricladida* (z) *Tricladida*
3. Life cycle, mode of reproduction, pathogenesis, clinical features, epidemiology, diagnosis, treatment and prophylaxis of the following nematode parasites: (a) *Tricladida* (b) *Tricladida* (c) *Tricladida* (d) *Tricladida* (e) *Tricladida* (f) *Tricladida* (g) *Tricladida* (h) *Tricladida* (i) *Tricladida* (j) *Tricladida* (k) *Tricladida* (l) *Tricladida* (m) *Tricladida* (n) *Tricladida* (o) *Tricladida* (p) *Tricladida* (q) *Tricladida* (r) *Tricladida* (s) *Tricladida* (t) *Tricladida* (u) *Tricladida* (v) *Tricladida* (w) *Tricladida* (x) *Tricladida* (y) *Tricladida* (z) *Tricladida*

(e) Morphology of vectors and their role in parasitology

1. Mosquitoes (a) *Culex* (b) *Anopheles*
2. Sandfly

3. Tsetse fly
4. Bugs
5. Lice
6. Fleas

(f) Microbial diseases: Bacterial disease, Viral disease, Fungal diseases

Paper IV - Clinical Pathology, Microbiology, Immunology

1. Clinical Pathology: General background
 - (a) Disorders of cells and tissues: Hypoplasia, hyperplasia, hypertrophy, metaplasia, dysplasia, neoplasia
 - (b) Cancer: Types, characteristics, Apoptosis
 - (c) Disorders of blood cells and heart: Embolism, heart diseases, heart failure, shock, (d) Disorders of respiratory tract: Emphysema, Asthma, Bronchitis, (e) Disorders of digestive tract: Gastritis, ulcers, diseases of pancreas, (f) Disorders of excretory systems: Nephritis, Anuria, Disorders of liver, (g) Disorders of nervous system: Sclerosis, Multiple Sclerosis, Depression, Schizophrenia, Neurosis, Epilepsy, Parkinsonism, Dementia, Alzheimer's Disease
 - (h) Disorders of Reproductive system: Impotency, Infertility, Abortion, Prostatitis, (i) Disorders of bones, joints and cartilages: Autoimmune disorders, Disorders of skin

Microbiology :

1. General principles and classification, classification of selected bacteria, fungi, viruses, protozoa, cultivation and identification of pathogens: Preparation of specimen, media, incubation, isolation, identification, sensitivity of pathogens, Staining of pathogens, Microbiology of human cell, Microbial properties and pathogenicity, Microbial interaction, (a) *Staphylococcus aureus* (b) *Staphylococcus aureus* (c) *Staphylococcus aureus* (d) *Staphylococcus aureus* (e) *Staphylococcus aureus* (f) *Staphylococcus aureus* (g) *Staphylococcus aureus* (h) *Staphylococcus aureus* (i) *Staphylococcus aureus* (j) *Staphylococcus aureus* (k) *Staphylococcus aureus* (l) *Staphylococcus aureus* (m) *Staphylococcus aureus* (n) *Staphylococcus aureus* (o) *Staphylococcus aureus* (p) *Staphylococcus aureus* (q) *Staphylococcus aureus* (r) *Staphylococcus aureus* (s) *Staphylococcus aureus* (t) *Staphylococcus aureus* (u) *Staphylococcus aureus* (v) *Staphylococcus aureus* (w) *Staphylococcus aureus* (x) *Staphylococcus aureus* (y) *Staphylococcus aureus* (z) *Staphylococcus aureus*
2. Microbiology and serological methods of identification: Interferon, (a) *Staphylococcus aureus* (b) *Staphylococcus aureus* (c) *Staphylococcus aureus* (d) *Staphylococcus aureus* (e) *Staphylococcus aureus* (f) *Staphylococcus aureus* (g) *Staphylococcus aureus* (h) *Staphylococcus aureus* (i) *Staphylococcus aureus* (j) *Staphylococcus aureus* (k) *Staphylococcus aureus* (l) *Staphylococcus aureus* (m) *Staphylococcus aureus* (n) *Staphylococcus aureus* (o) *Staphylococcus aureus* (p) *Staphylococcus aureus* (q) *Staphylococcus aureus* (r) *Staphylococcus aureus* (s) *Staphylococcus aureus* (t) *Staphylococcus aureus* (u) *Staphylococcus aureus* (v) *Staphylococcus aureus* (w) *Staphylococcus aureus* (x) *Staphylococcus aureus* (y) *Staphylococcus aureus* (z) *Staphylococcus aureus*
3. Microbial serological tests for identification of organisms: (a) *Staphylococcus aureus* (b) *Staphylococcus aureus* (c) *Staphylococcus aureus* (d) *Staphylococcus aureus* (e) *Staphylococcus aureus* (f) *Staphylococcus aureus* (g) *Staphylococcus aureus* (h) *Staphylococcus aureus* (i) *Staphylococcus aureus* (j) *Staphylococcus aureus* (k) *Staphylococcus aureus* (l) *Staphylococcus aureus* (m) *Staphylococcus aureus* (n) *Staphylococcus aureus* (o) *Staphylococcus aureus* (p) *Staphylococcus aureus* (q) *Staphylococcus aureus* (r) *Staphylococcus aureus* (s) *Staphylococcus aureus* (t) *Staphylococcus aureus* (u) *Staphylococcus aureus* (v) *Staphylococcus aureus* (w) *Staphylococcus aureus* (x) *Staphylococcus aureus* (y) *Staphylococcus aureus* (z) *Staphylococcus aureus*

4. Microbiology and serological tests for identification of organisms: (a) *Staphylococcus aureus* (b) *Staphylococcus aureus* (c) *Staphylococcus aureus* (d) *Staphylococcus aureus* (e) *Staphylococcus aureus* (f) *Staphylococcus aureus* (g) *Staphylococcus aureus* (h) *Staphylococcus aureus* (i) *Staphylococcus aureus* (j) *Staphylococcus aureus* (k) *Staphylococcus aureus* (l) *Staphylococcus aureus* (m) *Staphylococcus aureus* (n) *Staphylococcus aureus* (o) *Staphylococcus aureus* (p) *Staphylococcus aureus* (q) *Staphylococcus aureus* (r) *Staphylococcus aureus* (s) *Staphylococcus aureus* (t) *Staphylococcus aureus* (u) *Staphylococcus aureus* (v) *Staphylococcus aureus* (w) *Staphylococcus aureus* (x) *Staphylococcus aureus* (y) *Staphylococcus aureus* (z) *Staphylococcus aureus*

5. Microbiology and serological tests for identification of organisms: (a) *Staphylococcus aureus* (b) *Staphylococcus aureus* (c) *Staphylococcus aureus* (d) *Staphylococcus aureus* (e) *Staphylococcus aureus* (f) *Staphylococcus aureus* (g) *Staphylococcus aureus* (h) *Staphylococcus aureus* (i) *Staphylococcus aureus* (j) *Staphylococcus aureus* (k) *Staphylococcus aureus* (l) *Staphylococcus aureus* (m) *Staphylococcus aureus* (n) *Staphylococcus aureus* (o) *Staphylococcus aureus* (p) *Staphylococcus aureus* (q) *Staphylococcus aureus* (r) *Staphylococcus aureus* (s) *Staphylococcus aureus* (t) *Staphylococcus aureus* (u) *Staphylococcus aureus* (v) *Staphylococcus aureus* (w) *Staphylococcus aureus* (x) *Staphylococcus aureus* (y) *Staphylococcus aureus* (z) *Staphylococcus aureus*

6. Microbiology and serological tests for identification of organisms: (a) *Staphylococcus aureus* (b) *Staphylococcus aureus* (c) *Staphylococcus aureus* (d) *Staphylococcus aureus* (e) *Staphylococcus aureus* (f) *Staphylococcus aureus* (g) *Staphylococcus aureus* (h) *Staphylococcus aureus* (i) *Staphylococcus aureus* (j) *Staphylococcus aureus* (k) *Staphylococcus aureus* (l) *Staphylococcus aureus* (m) *Staphylococcus aureus* (n) *Staphylococcus aureus* (o) *Staphylococcus aureus* (p) *Staphylococcus aureus* (q) *Staphylococcus aureus* (r) *Staphylococcus aureus* (s) *Staphylococcus aureus* (t) *Staphylococcus aureus* (u) *Staphylococcus aureus* (v) *Staphylococcus aureus* (w) *Staphylococcus aureus* (x) *Staphylococcus aureus* (y) *Staphylococcus aureus* (z) *Staphylococcus aureus*

7. Microbiology and serological tests for identification of organisms: (a) *Staphylococcus aureus* (b) *Staphylococcus aureus* (c) *Staphylococcus aureus* (d) *Staphylococcus aureus* (e) *Staphylococcus aureus* (f) *Staphylococcus aureus* (g) *Staphylococcus aureus* (h) *Staphylococcus aureus* (i) *Staphylococcus aureus* (j) *Staphylococcus aureus* (k) *Staphylococcus aureus* (l) *Staphylococcus aureus* (m) *Staphylococcus aureus* (n) *Staphylococcus aureus* (o) *Staphylococcus aureus* (p) *Staphylococcus aureus* (q) *Staphylococcus aureus* (r) *Staphylococcus aureus* (s) *Staphylococcus aureus* (t) *Staphylococcus aureus* (u) *Staphylococcus aureus* (v) *Staphylococcus aureus* (w) *Staphylococcus aureus* (x) *Staphylococcus aureus* (y) *Staphylococcus aureus* (z) *Staphylococcus aureus*

8. Microbiology and serological tests for identification of organisms: (a) *Staphylococcus aureus* (b) *Staphylococcus aureus* (c) *Staphylococcus aureus* (d) *Staphylococcus aureus* (e) *Staphylococcus aureus* (f) *Staphylococcus aureus* (g) *Staphylococcus aureus* (h) *Staphylococcus aureus* (i) *Staphylococcus aureus* (j) *Staphylococcus aureus* (k) *Staphylococcus aureus* (l) *Staphylococcus aureus* (m) *Staphylococcus aureus* (n) *Staphylococcus aureus* (o) *Staphylococcus aureus* (p) *Staphylococcus aureus* (q) *Staphylococcus aureus* (r) *Staphylococcus aureus* (s) *Staphylococcus aureus* (t) *Staphylococcus aureus* (u) *Staphylococcus aureus* (v) *Staphylococcus aureus* (w) *Staphylococcus aureus* (x) *Staphylococcus aureus* (y) *Staphylococcus aureus* (z) *Staphylococcus aureus*

9. Microbiology and serological tests for identification of organisms: (a) *Staphylococcus aureus* (b) *Staphylococcus aureus* (c) *Staphylococcus aureus* (d) *Staphylococcus aureus* (e) *Staphylococcus aureus* (f) *Staphylococcus aureus* (g) *Staphylococcus aureus* (h) *Staphylococcus aureus* (i) *Staphylococcus aureus* (j) *Staphylococcus aureus* (k) *Staphylococcus aureus* (l) *Staphylococcus aureus* (m) *Staphylococcus aureus* (n) *Staphylococcus aureus* (o) *Staphylococcus aureus* (p) *Staphylococcus aureus* (q) *Staphylococcus aureus* (r) *Staphylococcus aureus* (s) *Staphylococcus aureus* (t) *Staphylococcus aureus* (u) *Staphylococcus aureus* (v) *Staphylococcus aureus* (w) *Staphylococcus aureus* (x) *Staphylococcus aureus* (y) *Staphylococcus aureus* (z) *Staphylococcus aureus*

10. Microbiology and serological tests for identification of organisms: (a) *Staphylococcus aureus* (b) *Staphylococcus aureus* (c) *Staphylococcus aureus* (d) *Staphylococcus aureus* (e) *Staphylococcus aureus* (f) *Staphylococcus aureus* (g) *Staphylococcus aureus* (h) *Staphylococcus aureus* (i) *Staphylococcus aureus* (j) *Staphylococcus aureus* (k) *Staphylococcus aureus* (l) *Staphylococcus aureus* (m) *Staphylococcus aureus* (n) *Staphylococcus aureus* (o) *Staphylococcus aureus* (p) *Staphylococcus aureus* (q) *Staphylococcus aureus* (r) *Staphylococcus aureus* (s) *Staphylococcus aureus* (t) *Staphylococcus aureus* (u) *Staphylococcus aureus* (v) *Staphylococcus aureus* (w) *Staphylococcus aureus* (x) *Staphylococcus aureus* (y) *Staphylococcus aureus* (z) *Staphylococcus aureus*

- 7 Autoimmune liver diseases-primary biliary cirrhosis and chronic active hepatitis
- 8 Glomerulonephritis
- 9 Skin diseases
- 10 AIDS

Alterations of immune response

- 1 Tolerance (i) Factors (ii) Natural vs acquired
- 2 Suppression (i) Drugs (ii) Radiation
- 3 Autoimmunity

Immunogenetics : Clonal selection-genetics of lymphocytes differentiation-Genes for antibodies ABO system-Blood groups Rh system - Other blood groups-MNSSS blood group system P blood group system Kell blood group system Lutheran Duffy Kidd

Paper V--Clinical Endocrinology, Semenology and Radiation Diagnostics

Clinical Endocrinology : General principles of endocrinology. Feedback control mechanisms

Hormones : Types, chemical nature, synthesis, metabolism, control and functions

Mechanism of hormone action : Different signalling molecules, ligands, Signal transduction, mechanism of action of protein hormones, steroid hormones, second messengers

Hormones and receptors : Types, location, classification, synthesis, metabolism and recycling. Hormones and biotechnology-synthesis of insulin, growth hormone, etc.

Hormone assays : Principles of radiation biology, radioimmunoassays, radioreceptor assay, IRMA, ELISA, radiation diagnostics, imaging & scanning techniques CAT Scan, PET-Scan, X-ray, Radiation therapy

Clinical aspects of hormones and endocrine glands : their hypo- and hyper function and related endocrine diseases

Hypothalamus and higher brain centres : Hypothalamus, Lesions

Pituitary : Cretinism, gigantism, acromegaly

Pineal : Pinealectomy

Thyroid : Hypothyroidism, hyperthyroidism, goitre, Parathyroid and calcium metabolism

Pancreas : Diabetes mellitus

Adrenal : Addison disease, relation to carbohydrate and mineral metabolism, stress

Testis : Sertoli cell only syndrome, cryptorchidism, pyrucomastria, infertility

Ovary : Polycystic ovary, hypogonadism, amenorrhoea, dysmenorrhoea, infertility, spinal uterus, blocked tubes, vaginal discharge and infection, cervical, vaginal, uterine cancers, PAP test, amniocentesis, ultrasound sonography, Mammography, placental cancer, intersex, pregnancy test

Kidney : ADH and diabetes mellitus, Cretinism, Angiotensin system, Gastrointestinal tract hormones and dysfunction-Vitamin D3 and its hormonal actions-Atrial natrial hormone and electrolyte balance

Semenology : Spermatoogenesis, maturation, fertilization, formation of zygote and its chromosomal value, fertility standards, ultrastructure of sperm, sperm maturation, sexual biochemistry, sperm metabolism, sperm count-norms, oligospermia, sperm abnormalities, sperm activation reaction, capacitation of sperm, functional tests of sperm, sperm banks

Fertilization : In-vitro fertilization, assisted reproductive technology (IVF, ZIFT, GIFT, SUZI, ICSI) etc. Test tube baby. Sperm preparative techniques, fertility control in male and female

Paper VI--Molecular and Clinical Genetics

Cell nucleus, nucleic acids : types, different species, structure, organization, replication, transcription, translation, synthesis, DNA damage and repair, DNA isolation, sequencing, applications. Replication, transcription, translation

Chromosomes : Chromosome structure, types of chromosomes, heterochromatin, euchromatin, sex chromatin and its importance, bar bodies, characteristics of human

chromosome : Chromosome banding techniques, centromere, chromosome, R banding, Q banding, high resolution banding, study of nucleolar organizer region (NOR) of chromosomes and importance

Late replication of chromosomes, study of sister chromatid exchange

Human chromosomal abnormalities-numerical, structural and sex chromosomal

Identification of chromosomes and karyotyping

Principles of cytogenetics

Laws of inheritance

Epistasis : Linkage, multiple allelism, mutation, Hybrid vigour

Sex determination and sex-linked inheritance : related diseases

Colour blindness, haemophilia : inheritance, examples, pedigree analysis, sex linkage

Prenatal diagnostic techniques, amniocentesis, Chorion biopsy, Fetal surgery

Molecular biology techniques : Flow cytometry, fluorescence in-situ hybridization (FISH), DNA, H-H technique, Genetic engineering and recombinant DNA technique, cloning, Southern blotting, western blotting and dot blot techniques, polymerase chain reaction (PCR), RAPD analysis, DNA finger printing and its importance, DNA test primers, restriction endonuclease applications

Immunogenetics : Hybridoma technology

Chromosomes and Cancer : Chromosomal aberrations, chromosomal

પરિશિષ્ટ "૧૨"
અધિકૃત કૃતિ

અધિકૃત કૃતિ : તા. ૪-૭-૧૯૯૮

Rollwala Computer Centre,
17th June, 1999

Sub : Introduction of Bachelor of Computer Applications (BCA) Course in the affiliated Colleges.

Sr.

Genl. M.

The Government of India has committed itself to adopt the Information Technology on wider scale within its administration and also has been advocating its greater user in different segments of the society such as business, industry, administration, education etc. as evident through recently formulated national IT task force recommendations. The software export from India has jumped from 6500 crores in 1997-98 to 12500 crores in 1998-99. The IT policy expects to generate about 100 lac new jobs in next few years. The Government of Gujarat too has become very serious in this area. The Infocity is coming up in Gandhinagar and very soon there will be several national as well as international companies operating from Ahmedabad-Gandhinagar belt. All these developments will generate increased skilled manpower requirement in the area of Computer applications and Information Technology.

We do have certain courses at postgraduate level in affiliated colleges and also the integrated M.Sc. (IT) on the campus. However, we have not been able to initiate any undergraduate programme in Computer Applications & Software Development. Initiating such bachelor level courses now is very necessary in view of the following compelling reasons.

Recently Saurashtra University has granted BCA Course (Bachelor of Computer Applications) to almost 14 different affiliated colleges.

S.P. University has opened two such centres in affiliated colleges, which will offer BCA course from current academic year under self-financing scheme.

Process is under way in granting BCA course to atleast two colleges affiliated to North Gujarat University under self-financing scheme.

Ahmedabad city and its surrounding area currently do not have such facility available to the students for graduating in Computer Applications.

The manpower requirement generated by the new IT policy may not give any opportunity to local students for employment.

Although there are number of private institutions offering variety of computer courses, these are always skill oriented but do not have any statutory recognition.

The IT policy of Government of Gujarat lays emphasis on starting new employment oriented courses.

The national IT task force predicts that the ratio of computer to human population will jump from 2 machines per 1000 to 50 per 1000 in next 10 years. This will generate more employment opportunities at various levels.

The States like Karnataka and Andhra Pradesh had initiated a number of such IT courses at various levels several years back and as a result these states has been flourishing with concentration of hardware and software industries offering more and more opportunities to the locals. Gujarat too needs to synchronize itself with them in this area quickly.

I have discussed these issues with some of the prominent professionals of the premier institutions such as Physical Research Laboratory, Space Applications Centre, business consultants, computer science academic and Computer Society of India and in consultation with them a draft of the frame work of BCA course has been prepared. I am enclosing the same for your kind perusal and if possible immediate adoption.

(R. P. Soni)
Director

અધિકૃત કૃતિ : તા. ૪-૭-૧૯૯૮

Endorsed by :

1. Sh. P. S. Shah,
Sr. Scientist, PRL & Chairman CSI, Ahmedabad
2. Sh. B. B. Mehta,
Computer Consultant & Member, Infocity Advisory Committee
3. Sh. G. F. Vohra,
Sr. Scientist, SAC
4. Prof. J. S. Shah,
Head, Computer Engg. Department, LDCE
5. Sh. H. M. Patel,
Sr. Lecturer Computer Science, Rollwala Computer Centre
6. Dr. K. S. Dasgupta,

A detail discussion regarding carriers prospect and safe for BCA students in with to MCA shared in examined and clearly identified this calls for discussion. How ever this course can store k.

PROPOSED DEGREE OF BACHELOR OF COMPUTER APPLICATIONS (B.C.A. : 3 Year Degree Course)

R. B.C.A. 1 :

Candidates for admission to three year Bachelor of Computer Application (BCA) course must have passed Gujarat H.S.C. Examination with (i) English (ii) Mathematics or Business Mathematics or Mathematics and Statistics or equivalent examination under general business science stream securing at least 60% aggregate marks.

R. B.C.A. 2 :

A candidate who has passed an equivalent examination from any other stream and body, can not be admitted without producing an eligibility certificate from the Gujarat University.

R. B.C.A. 3 :

Candidates desirous of appearing at any year-end examination of the B.C.A. course must forward their applications in the prescribed form to the Registrar through the designated authority on or before the prescribed date.

R. B.C.A. 4 :

No candidate will be admitted to any year-end examination of Bachelor of Computer Applications unless it is certified by the designated authority which is the Head of the University, Department or Principal of an affiliated college of the University.

- (1) That he has attended the course of study to the satisfaction of the designated authority.
- (2) That he has maintained a good conduct and character during the studies.

R. B.C.A. 5 :

For any academic year the maximum marks for the internal and external assessment shall be shown in the teaching and examination scheme. These will be in the ratio of 1:2. For the purpose of internal assessment, two internal tests one per term or any other suitable methods of assessment may be used by the College. The average of both the tests should be considered for the purpose of deciding final result.

R. B.C.A. 6 :

To pass any year-end examination, a candidate must obtain atleast 36% in the University examination and internal assessment in each head of paper and practical separately.

R. B.C.A. 7 :

- (a) Those of the successful candidates will be placed in the First Class who obtain atleast 60% or more of the aggregate marks of internal and external examination taken together.
- (b) Those of the successful candidates will be placed in the Second Class who obtain at least 48% or more but less than 60% of the aggregate marks of internal and external examination marks taken together.
- (c) All the other candidates passing the examination will be placed in Pass Class.

1. 2. 3. 4. 5.

When a candidate chooses the option to appear in all the subjects, the marks obtained by the candidate in a examination at the earlier examinations of the same year will

FIRST YEAR

SECOND YEAR

... and computing

THIRD YEAR

3.2.2. *Controlled experiment*

ગુજરાત યુનિવર્સિટી



ગુજરાત યુનિવર્સિટીની એકેડેમિક કાઉન્સિલની સભા ગુરુવાર, તા. ૧૮-૧૧-૧૯૯૯ના રોજ સવારે ૯-૦૦ વાગ્યે યુનિવર્સિટી કાર્યાલયમાં મળી હતી. સભાનું પ્રમુખસ્થાન કુલપતિશ્રી એસ. બી. વોરાએ સંભાળ્યું હતું. સભામાં હાજરી નીચે પ્રમાણે હતી :

ક્રમ	સભ્યનું નામ	
૧.	પ્રો. એસ. બી. વોરા, કુલપતિશ્રી	હાજર
૨.	પ્રો. કે. એસ. શાસ્ત્રી, ઉપકુલપતિશ્રી	હાજર
૩.	પ્રો. એન. એમ. પરીખ	હાજર
૪.	ડૉ. વાય. કે. અગ્રવાલ	હાજર
૫.	પ્રિ. ડી. એમ. શીખ	હાજર
૬.	પ્રિ. બી. એમ. મોદી	હાજર
૭.	ડૉ. સી. એ. દેસાઈ	ગેરહાજર
૮.	પ્રિ. એચ. એમ. દેસાઈ	હાજર
૯.	પ્રો. વી. પી. ભારદ્વાજ	ગેરહાજર
૧૦.	પ્રો. વાય. ડી. વ્યાસ	હાજર
૧૧.	પ્રો. આર. ડી. મુળિયા	હાજર
૧૨.	પ્રો. યુ. એમ. રાવલ	હાજર
૧૩.	ડૉ. એસ. આર. દવે	હાજર
૧૪.	ડૉ. સુમન જી. શાહ	હાજર
૧૫.	ડૉ. આલોક ગુપ્તા	હાજર
૧૬.	પ્રો. એ. આર. શુક્લ	ગેરહાજર
૧૭.	પ્રો. વી. વી. પાઠક	ગેરહાજર
૧૮.	પ્રો. એન. એમ. અન્સારી	હાજર
૧૯.	પ્રો. વાય. એસ. શાસ્ત્રી	ગેરહાજર
૨૦.	પ્રો. એન. એન. શાહ	હાજર
૨૧.	પ્રો. આર. જી. ભટ્ટ	ગેરહાજર
૨૨.	પ્રિ. એમ. એમ. દેસાઈ	હાજર
૨૩.	ડૉ. કેતન દેસાઈ	ગેરહાજર
૨૪.	ડૉ. બી. બી. જાની	હાજર
૨૫.	પ્રિ. એ. એલ. પાઠક	ગેરહાજર
૨૬.	પ્રિ. કે. જે. પટેલ	હાજર
૨૭.	શ્રી. સી. પી. જોશી	ગેરહાજર
૨૮.	પ્રિ. આર. એચ. વ્યાસ	હાજર
૨૯.	પ્રો. જે. સી. ત્રિવેદી	ગેરહાજર
૩૦.	પ્રિ. કે. જે. પરમાર	ગેરહાજર
૩૧.	ડૉ. આર. પી. મહેતા	ગેરહાજર
૩૨.	પ્રિ. મીરાબહેન ડી. મેનન	ગેરહાજર
૩૩.	પ્રો. બી. એન. સુહાગિયા	હાજર.

સભાની શરૂઆતમાં કુલપતિશ્રીએ નવા વર્ષના અભિનંદન સૌ સભ્યશ્રીઓને પહોંચીને તેઓને આવકામી તથા તે પછી સભાનું કામકાજ શરૂ થયું હતું.

૧. તા. ૪-૭-૧૯૯૯ની સભાની નીમ મંજૂર કરવા બાબત.

સરકાર સભાની નીમના પાના ક્રમાંક ૨૦ સ્થાનિત તપાસસમિતિના હેવાલની આટકમ (૧)માં "સરકાર વલ્લભભાઈ કોમરે કોલેજ" ના બદલે "સરકાર વલ્લભભાઈ પટેલ કોમરે કોલેજ" લખ્યું. તે પછી તા. ૪-૭-૧૯૯૯ના રોજ મળેલ ઐત્રીયિક કાઉન્સિલની સભાની નીમ મંજૂર કરવામાં આવી તથા તે પર પ્રમુખશ્રીએ સહી કરી.

૨. ચેરમેનશ્રી જનસામાયક ટ્રસ્ટ, અમદાવાદ તરફથી આર્ટિ. ૧૨૦-ની મુજબ નીરામણી ઈન્કિયુટર ઓફ શીડિયા એક્યુકેશન એન્ડ રિસર્ચને માન્ય સંસ્થા તરીકે જાન્યતા મેળવવા આરંભ અટકાવ પરત્વે સ્થાનિક તપાસસમિતિના હેવાલ અને વિચારણા કરવા બાબત.

આશી કરાવવામાં આવે છે કે ઉપરોક્ત સ્થાનિક તપાસસમિતિનો હેવાલ સ્વીકાર્યો અને તકરુરના રીક્ષાલિક વર્ષ ૧૯૯૯-૨૦૦૦ની લીરામણી ઈન્કિયુટર ઓફ શીડિયા એક્યુકેશન એન્ડ રિસર્ચ, અમદાવાદને માન્ય સંસ્થા તરીકે આ સાથે સામેલ રાસતોને સ્થાનિત માન્યતા આપવા એકિઝ્યુટિવ કાઉન્સિલને ભલામણ કરવી. (ઐત્રીયિક કાઉન્સિલની ભલામણ તથા સ્થાનિક તપાસસમિતિનો હેવાલ પરિશિષ્ટ "૧" તરીકે સામેલ છે.)

૩. કે. એમ. શાહ ચેરિટેબલ ટ્રસ્ટ, વડોદરાને ૧૯૯૯-૨૦૦૦ના રીક્ષાલિક વર્ષની પીપરિયા, તા. વાણગિયા ખાતે સેકન્ડ કોન્ટાન-નાના પોરસે ડેન્ટલ વિદ્યાશાળાની નવી કોલેજ શરૂ કરવાની અટકાવ પરત્વે સ્થાનિક તપાસસમિતિના હેવાલ પર વિચારણા કરવા બાબત.

નોંધ - (૧) ૧૯૯૯-૨૦૦૦ના રીક્ષાલિક વર્ષની કોલેજ શરૂ કરવાની ડેન્ટલ કાઉન્સિલ ઓફ ઇન્ડિયા તરફથી મંજૂરી મળી છે.

(૨) આ સંસ્થાને ૧૯૯૯-૨૦૦૦ના વર્ષ માટે 'નાનાંશ પ્રમાણપત્ર' આપવામાં આવ્યું છે.

(૩) આ સંસ્થાને તા. ૨૫-૯-૯૮ની એકિઝ્યુટિવ કાઉન્સિલના કરાવ અનુષ્ઠે જોડાણની મંજૂરી આપવામાં આવી ન હતી, જેની સામે સંસ્થાએ યુનિવર્સિટી એક્ટની કલમ૩૩(૮) અનુસાર રાખ્યું સરકારમાં તા. ૧-૯-૯૮ના રોજ અપીલ કરતાં રાખ્યું સરકારે તેના તા. ૨૯-૧૨-૯૮ના આદેશથી આ સંસ્થાને ૧૯૯૮-૯૯ના વર્ષમાં જોડાણની મંજૂરી આપી હતી.

આશી કરાવવામાં આવે છે કે ઉપરોક્ત સ્થાનિક તપાસસમિતિનો હેવાલ સ્વીકાર્યો અને તકરુરના કે. એમ. શાહ ચેરિટેબલ ટ્રસ્ટ, વડોદરાને ૧૯૯૯-૨૦૦૦ના રીક્ષાલિક વર્ષની પીપરિયા, તા. વાણગિયા ખાતે સેકન્ડ કોન્ટાન-નાના પોરસે ડેન્ટલ વિદ્યાશાળાની નવી કોલેજ શરૂ કરવા માટે સ્થાનિક તપાસસમિતિના ઐત્રીયિક કાઉન્સિલની રાસતોને જોડાણ આપવા એકિઝ્યુટિવ કાઉન્સિલને ભલામણ કરવી.

(ઐત્રીયિક કાઉન્સિલની ભલામણ તથા સ્થાનિક તપાસસમિતિનો હેવાલ પરિશિષ્ટ "૨" તરીકે સામેલ છે.)

૪. કુલપતિશ્રીએ મંજૂર કરેલ નીચેનાં કામો (ખાસ સાચુ) :

૪ (૧). બી.બી.એન. વિષયની તા. ૨૩-૧૨-૧૯૯૮ના રોજ મળેલ અભ્યાસસમિતિને જૂન, ૧૯૯૯થી અમલી થનાર એમ.એસસી. ભાગ-૧ના ભીતિકાલાલ વિષયનો નવો સુધારેલો અભ્યાસક્રમ સ્વીકારવા કરેલ ભલામણ સ્વીકારી, મંજૂર કરી પરિપત્રિત કર્યું.

૪ (૨). જુલોજી વિષયની તા. ૨૯-૧-૧૯૯૯ના રોજ મળેલ અભ્યાસસમિતિને જૂન, ૧૯૯૯થી અમલી કરેલ થઈ બી.એસસી. જુલોજી વિષયની પેપરનું યુનિટવાર વિભાજન તથા થઈ બી.એસસી. પ્રેક્ટિકલ પરીક્ષાનો સેલેટન પેપર તેમજ પેપર-૧૦ પોલ્ટી વિભાગના કામો અને સેકન્ડ બી.એસસી.ના લોખંડરના વિષયોનાં પાઠ્ય લઘુઓ, મુખ્યમંત્રી અને ઉપમંત્રીના અભ્યાસક્રમમાં કરવામાં આવેલા સુધારા સ્વીકારવા કરેલ ભલામણ સ્વીકારી, મંજૂર કરી પરિપત્રિત કર્યું.

૪ (૩). ઉલ્ટ્રાસોનિક વિષયની તા. ૨૬-૨-૧૯૯૯ના રોજ મળેલ એકાદોક સમિતિની સભાએ જૂન, ૧૯૯૯થી અમલી થનાર એમ.એસસી. ભાગ-૧ના ઉલ્ટ્રાસોનિક વિષયનો સુધારેલો અભ્યાસક્રમ સ્વીકારવા કરેલ ભલામણ મંજૂર કરી પરિપત્રિત કર્યું.

૪ (૪). બી.બી.એન.નો અભ્યાસક્રમ તેમજ કરાવ કુલપતિશ્રીએ નિમણી સમિતિની તા. ૨૮-૧-૧૯૯૯ની સભામાં કરેલ કરાવ અનુષ્ઠે જૂન, ૧૯૯૯થી અમલી બનેલ કરેલ બી.બી.એન. તેમજ દિનિયા બી.બી.એન.ના અભ્યાસક્રમ તેમજ થઈ બી.બી.એન.નો અભ્યાસક્રમ તેમજ માળનું જૂન, ૧૯૯૯થી અમલી કરવા કરેલ ભલામણ સ્વીકારી પરિપત્રિત કર્યું.

૪ (૫). માર્કીંગઓલોજી વિષયની તા. ૧૯-૧-૧૯૯૯ના રોજ મળેલ અભ્યાસસમિતિની સભાએ જૂન, ૧૯૯૯થી અમલી કરેલ એમ.એસસી. ભાગ-૧-૨નો માર્કીંગઓલોજી વિષયનો સુધારેલા નવો અભ્યાસક્રમ સ્વીકારવા કરેલ ભલામણ મંજૂર કરી પરિપત્રિત કર્યું.

૪ (૬). બોટાની વિષયની તા. ૧૦-૬-૧૯૯૯ના રોજ મળેલ અભ્યાસસમિતિની સભાએ એમ.એસસી. ભાગ-૧ના બોટાની વિષયના વિષયો અને પ્રેક્ટિકલનો સુધારેલ અભ્યાસક્રમ જૂન, ૧૯૯૯થી અમલી કરવા કરેલ ભલામણ સ્વીકારી, મંજૂર કરી પરિપત્રિત કર્યું.

૪ (૭). બી.બી.એન.ની સમિતિએ કરેલ બી.બી.એન.ના 'ગ્રોથ એન્ડ ટ્રાન્સફર' પેપરના અભ્યાસક્રમમાં ૧૯૯૯-૨૦૦૦ના વર્ષ માટે નીચેના ઉપમંત્રીનો ટીટેઈલ સ્ટડી માટે પસંદગી કરવા ભલામણ કર્યાના અને સેલેન સંસ્થાઓને પરિપત્રિત કર્યું :
(૧) સુગર ઈન્ડસ્ટ્રી (૨) કોલ ઈન્ડસ્ટ્રી (૩) કાઉન્ટરબાઉ ઈન્ડસ્ટ્રી (૪) કોન્ટેન્ટરબાઉ ઈન્ડસ્ટ્રી.

૪ (૮). કાર્મસી વિદ્યાશાળાની એકાદોક સમિતિની તા. ૧૨-૭-૧૯૯૮ના રોજ મળેલ સભાએ સેકન્ડ બી.કોમના ડિગ્રી પરીક્ષાનો નવો સુધારેલો અભ્યાસક્રમ જુલાઈ, ૧૯૯૯થી અમલ કરેલ ભલામણ સ્વીકારવા તેમજ કરેલ બી.કોમ-૧ને જે વિદ્યાર્થીઓએ ઓક્ટોબર, ૧૯૯૯ અને મે, ૧૯૯૯માં પરીક્ષા ખસ કરી હોય તેવા જૂના અભ્યાસક્રમવાળા વિદ્યાર્થીઓને સેકન્ડ બી.કોમના નવા કોર્સમાં જુલાઈ, ૧૯૯૯થી પ્રવેશ આપવા કરેલ ભલામણ સ્વીકારી, મંજૂર કરી પરિપત્રિત કર્યું.

૪ (૯). કાયદા વિદ્યાશાળાની વિવિધ અભ્યાસસમિતિઓની તા. ૧૯-૭-૧૯૯૯ના રોજ મળેલ સંયુક્ત સભાએ તૈયાર કરેલ જૂન, ૧૯૯૯થી અમલમાં આવનાર સેકન્ડ એલએલ.બી.નો નવો અભ્યાસક્રમ સ્વીકારવા જૂન, ૧૯૯૯થી અમલમાં આવેલ કરેલ એલએલ.બી.ના અભ્યાસક્રમના વિદ્યાર્થીઓને રે.પુ. ૫(૩) મુજબ એ.ટી.કે.ટી.નો લાભ આપવા તેમજ થઈ એલએલ.બી.ના ચાલુ અભ્યાસક્રમ મુજબ ૧૯૯૯-૨૦૦૦ની પરીક્ષા લેવા કરેલ ભલામણ સ્વીકારી, મંજૂર કરી પરિપત્રિત કર્યું.

૪ (૧૦). એકાઉન્ટન્સી વિષયની તા. ૩-૮-૧૯૯૯ના રોજ મળેલ અભ્યાસસમિતિની સભાએ સેકન્ડ બી.કોમના ટેક્સ્ટન વિષયમાં તેમજ થઈ બી.કોમના એડવાન્સ એકાઉન્ટન્સી પેપર-૧ના અભ્યાસક્રમમાં કરેલ સુધારા જૂન, ૧૯૯૯થી અમલી કરવા કરેલ ભલામણ સ્વીકારી, મંજૂર કરી પરિપત્રિત કર્યું.

૪ (૧૧). આંકડાસાસ્ત્ર વિષયની તા. ૩-૫-૧૯૯૯ના રોજ મળેલ અભ્યાસસમિતિની સભાએ થઈ બી.એ. અને થઈ બી.એસસી.ના આંકડાસાસ્ત્ર વિષયનો સુધારેલ અભ્યાસક્રમ જૂન, ૧૯૯૯થી અમલી કરવા કરેલ ભલામણ સ્વીકારી, મંજૂર કરી પરિપત્રિત કર્યું.

૪ (૧૨). વિનપન વિદ્યાશાળાની જુલિયાન વિષયની તા. ૧૫-૭-૧૯૯૯ના રોજ મળેલ અભ્યાસસમિતિની સભાએ જૂન, ૧૯૯૯થી અમલી કરેલ સેકન્ડ બી.એ. હોમ સાયન્સ વિષયના મુખ્ય અને ગોલા પેપરોમાં કરેલ સુધારા સ્વીકારવા કરેલ ભલામણ સ્વીકારી, મંજૂર કરી પરિપત્રિત કર્યું.

૪ (૧૩). તમીમી વિદ્યાશાળાની તા. ૨૫-૧૧-૧૯૯૯ અને તા. ૨૯-૪-૧૯૯૯ની સભાઓના કરાવ અનુષ્ઠે સેકન્ડ એમ.બી.બી.એસ. અને થઈ એમ.બી.બી.એસ.નો એમ.સી.આઈ.નાં પારાધોરણ અનુસાર નવો સુધારેલો અભ્યાસક્રમ ઓગસ્ટ, ૧૯૯૯થી અમલ કરવા કરેલ ભલામણ તથા કિંગડોમેરોપીની નવો ૪.૫ (સાડા ચાર) વર્ષનો સુધારેલો અભ્યાસક્રમ ઓગસ્ટ, ૧૯૯૯થી અમલ કરવા કરેલ ભલામણ સ્વીકારી ઉપરત્ત એમ.સી.આઈ.ના નિયમોનુસાર શિક્ષકોની નિમણૂક એવોના પારાધોરણ સ્વીકારવા તેમજ નવા વિષયો ઉમેરતાં પ્રાપ્તિઓપરીક્ષાઓના મહેનતજાના દરમાં ૧.૫ (ઠાકો ગણો) વધારો મંજૂર રાખવા કરેલ ભલામણ સ્વીકારી પરિપત્રિત કર્યું.

૪ (૧૪). ડાકનંરી વિદ્યાભાષાની ઈ-કૉમ્પા ટેકનોલોજી વિપયની તા. ૩૧-૫-૧૯૯૮ના રોજ મળેલ બેઠકોકે સમિતિની ભાષાએ જુદાઈ, ૧૯૯૮થી અમલી થનાર બી.ઈ. (ઈ-કૉમ્પા ટેકનોલોજી સેમેસ્ટર ૭, અને ૮)નો ત્રીજા વર્ષનો તૈયાર કરેલો નવો અભ્યાસક્રમ સ્વીકારવા તેમ જ સેમેસ્ટર ૧થી ૬ની પરીખાની ટોચ નોવો સીઝન સ્વીકાર્યા બંને કા સુધારા સ્વીકારવા ફરજ ભાષામંત્રી સ્વીકારી, મંજૂર કરી પરિપત્રના કલ્પેઃ

૪ (૧૫). ડાહજેરી વિદ્યાશાળાની મિકેનિકલ વિષયની અભ્યાસસમિતિની તા. ૮-૯-૧૯૮૦ના રોજ મળેલ ત્રાયામે સારેશ્વર, ૧૯૮૦થી અમલી થનાર બી.ઈ. (મિકેનિકલ) સેમેસ્ટર ૩, ૪ અને ૮ના અભ્યાસક્રમ અને રીટીંગ સ્કીમમાં ફેરફાર સુધારા સ્વીકારવા ફેરફાર બાદમાં મંજૂર કરી પરિપત્રિત કર્યાનું.

૪ (૧૬). કોમ્પ્યુટર ડેન બિઝનેસ ઓપરેશન (ગોળ વિષય) પેપર-૧ અને ૨નો નવો સુધારેલો થિયરીનો અભ્યાસક્રમ જૂન, ૧૯૯૯થી અમલી કરવામાં આવતાં કરશે બી.કોમ., સંક્ર.: બી.કોમ.ના સહકર અભ્યાસક્રમ સાથે પ્રેક્ટિકલનો અભ્યાસક્રમ સુધારવા એને શ્રી રોલવાડા કોમ્પ્યુટર વિભાગના અધ્યક્ષશ્રીને કરેલી ભલામણ નોંધકારી ને પરિપત્રિત કરાશે.

૬ (૧૭). મુજરાત શ્રી સોનાપટ્ટી, અમદાવાદની, જૂન, ૧૯૮૮થી એમ.ટી.એ.ના આચાર્યશ્રી શ્રીમદવા માટેની શ્રાવણારંજ પદ્મ નિધુકા કરેલ આર્થિક તથાઅભિયાનનાં કેવાલ આચાર્ય હાઈ ને પદ્મને અંકેતિક કાર્યમિતની પલામણ અંકેતિક કાર્યમિત યતી મંજૂર કર્યાં;

૪ (૧૮). નીચેની કાંઠાઓમાં વિગતમાં માટેની જોડાના અન્ય ધરનું નિયુક્ત કરેલ અધાનિક સ્થાપનામંતિનો દેવાજ આપ્યાના રાઉં ને ધરનું અકર્ષક કાર્ડિનિયનની આ તાચે સામાજી અસામણી અકર્ષક કાર્ડિનિયલ ધર્મી મંજર કપાંતું :

ક્રમાંક	કોલેજનું નામ	વિષય
૧.	અમ. સી. આરટી કોલેજ, નમકપરાલ (૧૯૮૬)	બી.એ. (ગીતરંગમાં ટિકટન સ્ટડીઝ)
૨.	અમ. સી. આરટી આરટી કોલેજ, પણી જામખુડ (૧૯૮૬)	બી.એ. (આધ્યાત્મ નવરંગનું, અમરોલગર, એરજી, નરકનું, બી.એ. (ગીતરંગમાં સ્થાવરસાહન, માનવસાહન, હિન્દી- બી.એ. (આધ્યાત્મ) નરકનું, એરજી, હિન્દી, પ્રતિભાવન, બી.એ. (ગીતરંગમાં) કોમ્પ્યુટર ગણતર, બી.કામ. (ગીતરંગમાં) કોમ્પ્યુટર ઈન્ડા પ્રતિભાવન આધારનું
૩.	આરટી બેન્ક કોમ્પનિ કોલેજ, ગાંધીદાસ (૧૯૮૬)	બી.એ. (આધ્યાત્મ) અમરોલગર, નવરંગનું, (હિન્દી- બી.કામ. (આધ્યાત્મ) અમ. આકર્ષકરિંગનું અમ. આર્થિકગર, બી.કામ. (ગીતરંગમાં) અમરોલગર, બી.એ. (આધ્યાત્મ) નરકનું, આરજી, હિન્દી, પ્રતિભાવન, બી.એ. (ગીતરંગમાં) કોમ્પ્યુટર ગણતર, બી.કામ. (ગીતરંગમાં) કોમ્પ્યુટર ઈન્ડા પ્રતિભાવન આધારનું
૪.	વાઘ. એસ. આરટી બેન્ક કોમ્પનિ કોલેજ, કલકત્તાપરિયા (૧૯૮૬)	બી.એ. (આધ્યાત્મ) નરકનું, આરજી, હિન્દી, પ્રતિભાવન, બી.એ. (ગીતરંગમાં) કોમ્પ્યુટર ગણતર, બી.કામ. (ગીતરંગમાં) કોમ્પ્યુટર ઈન્ડા પ્રતિભાવન આધારનું
૫.	નિકાઈ બી કોલેજ, ગોલીપનન (૧૯૮૬)	અરે બાલકેસબ બી. સુધીના અભ્યાસક્રમ

४ (१८). धर्मसिंह देशांत काउन्सिल, गव्हर्नरनी जून, १९८८ची भेळवर ओळ इन्फोमेटर सल्लिइराना
(बी.सी.मे.ना) मन्त्रालयक शीषवया मागेनी ओठांन अरुळ परत्ये निपुळन करइ म्हाणइ
तपाससभित्तिनां उवाळ आळ्यो जांळ ते परत्ये न्हेकेंद्रिक काउन्सिलनी मन्त्रालय न्हेकेंद्रिक
काउन्सिलवनी मंजूर क्वांन;

૪ (૨૮). વર્ષ ૧૯૯૯-૨૦૦૦ માં ચાલુ શીશીક ધર્મે બેચરલ ઓફ કમ્પ્યુટર એપ્લિકેશનના અભ્યાસક્રમ રાફે કરવામાં આવેલ છે. ત્રણ વર્ષના બી.સી.એ.ના અભ્યાસક્રમ માટે શીશીક તમેજ દેડાનવા જન્મ્યાઓના અભ્યાસક્રમના સંદર્ભમાં લાયકાત અનુભવ તમેજ કરવાના પોતેથી નક્કી કરાવું.

૪ (૨૧). સ્વર્ગીય સુરેશ બ્રહ્મકુમાર બદ્ધ મંત્ર આંક કિરિયોચરારાની તા. ૨૩-૧-૧૯૮૬નાં અંકક્રમિત કોઈમિસાની સમાપ્તિ શ્રાવણ કોઈમિસાની જેમ ફોન ધોરણે મુજબ જોડાણ આપવામા આવ્યું હતું. તેને બદલે 'મોંઠક કોઈમિસા' ધોરણે જોડાણ આપવાનો સુધારો કર્યો અને તેના અનુસંધાનામાં કાલજી જોડા કર્યો.

એકેડેમિક કાઉન્સિલ : તા. ૧૮-૧૧-૧૯૯૯

ક (૨૨). બી.સી.એ. (ન્યૂયર્ક ઓફ કોમ્પ્યુટર એપ્લિકેશન) ના અભ્યાસક્રમ અંગે કુલપતિશ્રીએ નીમીસી બી.સી.એ.ની એડ્રીક સમિતિની તા. ૧૦-૮-૧૯૮૮ની સભાએ થી કાઢેલ બી.સી.એ.નું ગ્રાજ વર્ષ. સુધારેલ માળખું તથા ફર્ટ ઈયર બી.સી.એ.નો અભ્યાસક્રમ જુલાઈ, ૧૯૮૮ની રાત્રે કરવા નીચેના સુધારામાં સ્વીકારવામાં આવેલ છે.

આથી ઠરાવવામાં આવે છે કે કુલપતિશ્રીએ મંજૂર કરેલાં ઉપરોક્ત ક્રમાંક ૪(૧)થી ૪(૨૨)નાં ફરિયાદી કાર્યોની તોંધ લેવામાં આવી.

(આખત ક્રમાંક ૪(૧)થી ૪(૨૨)ના બિડાણો અનુક્રમે પરિશિષ્ટ “૩/૧થી ૩/૨૦” તરીકે સામેલ છે.)

પ. તા. ૨૫-૫-૧૯૯૮, તા. ૧૭-૪-૧૯૯૯, તા. ૨૮-૮-૧૯૯૯, તા. ૨-૯-૧૯૯૯ના રોજ મળેલ રેન્ડેન્ડા કમિટી આંન ઈક્વિવેલેન્સ સભાની બલામણો અંગે વિચારણા કરવા બાબત.

આથી એકિન્સ્ટિટ્યુટ કાઉન્સિલને ભલામણ કરવામાં આવે છે કે ઉપરોક્ત સ્ટેનિંગ કમિટી આના કાર્યવિધે-સની સમાઓની ભલામણો મંજૂર કરવી.

(સદસ્ય સભાઓના બલામણો પરિશિષ્ટ "૪" તરીકે સામેલ છે.)

૬. કુલપતિશ્રીએ મંજૂર કરેલું નીચેનું કાર્ય (જાણ સારું) :

બુજરાત આદર્શ એન્ડ સાયન્સ કોલેજ, અમદાવાદ (નાટક વિદ્યા)ની જૂન, ૧૯૯૮થી બી.એ. (પ્રિન્સિપી)માં વિષયરૂઢ ઈન આદર્શ, પ્રથમ વર્ષ, દ્વિતીય વર્ષના વિષયો રીખવવા ચાલુ જોડાણ તથા તૃતીય વર્ષનું વપારાનું જોડાણ મેજવવા જોડાણ અરજી પરવે નિયુક્ત કરેલ શ્યાનિક તપાસસમિતિના હેવાલ પરની ઓરેકેમિક કાઉન્સિલની ભવાખ્યાના ઓરેકેમિક કાઉન્સિલ વતી મંજૂર કર્યાં.

(સત્યજીત એજેન્ડામાં કાર્ટુનિસ્ટની ભલામણ તેમજ સ્થાનિક તપાસસમિતિનો હેવાલ પરિશિષ્ટ "પ" તરીકે સામેલ છે.)

३. संस्कार केंद्रवर्गी ट्रस्ट, पीपलिया जाते शैक्षणिक वर्ष १९८८-२०००ची कार्यसूची विद्याशाखांनी (सेल्फ-हॉलिंग) नवी कार्यसूची शत्रु करवा अंगे स्थानिक तपाससमितींना देवात पर विचारणा करवा जायत.

આથી કારણવામાં આવે છે કે ઉપરાસ્ત ધ્યાનિક તપાસસમિતિના બહામણો સ્વીકારથી બંને તકનુના-
સ્વાનિર્ભર ધારણે (એક કાર્યાનાલ) રાષ્ટ્રિક વર્ષ ૧૯૯૯-૨૦૦૦થી નવી કાર્મતી કોલેજ શરૂ કરવા માટે
એકૈકીક કાર્મિતલગી સામેલ શરતોને જાણવા આપવા એકિંકમુદિય કાર્મિતલગી બહામણ કરતી.
(એકૈકીક કાર્મિતલગી બહામણ તમેજ ધ્યાનિક તપાસસમિતિનો લેવાલ પદિશિષ્ટ "ક" તરીકે સામેલ છે.)

૮. બુનિવર્સિટીમાં સેલ્ફ કરીનાન્સ ધોરણે ચાલતા ઈન્ટીગ્રેટેડ એમ.બી.એ. અને એમ.એસસી. (કોમ્પ્યુટર એપ્લિકેશન અને ઈન્ફર્મેશન ટેકનોલોજીની શૈક્ષણિક તેમજ બિનશૈક્ષણિક જગ્યાઓ માટે યોજાયેલ ઈન્ટરવ્યુ અને વરદીપ્રાપ્તિની તમામશો પરત્વે વિચારણા કરવા બાબત ;

ક્રમ	સીદી	વિષય	જન્મ/આવૃત્તિ	ગરબી/અધ્યાપન
			જોબા	અનાની તાડીયા
૧.	આવૃત્તિ	અકાઉન્ડેન્સી	૨	૧૦/૧૦/૧૯૮૦
૨.	અકબર	મોન્ટગોમરી (કાઉન્સિલર)	૨	૧૦/૧૦/૧૯૮૦
૩.	અકબર	મોન્ટગોમરી (માર્કેટિંગ)	૨	૧૦/૧૦/૧૯૮૦
૪.	અકબર	ડાકીનામિકલ	૨	૧૧/૧૦/૧૯૮૦
૫.	અકબર	સેલિંગકલ	૨	૧૦/૧૦/૧૯૮૦
૬.	અકબર	સેલિંગકલ	૨	૧૦/૧૦/૧૯૮૦
૭.	અકબર	કોમ્પ્યુટરના કલીક (અંગ્રેજી)	૧	૧૧/૧૦/૧૯૮૦
૮.	અકબર	રેકોર્ડિંગ	૧	૧૧/૧૦/૧૯૮૦
૯.	અકબર	મર્કેટીંગના સો	૧	૧૧/૧૦/૧૯૮૦
૧૦.	અકબર	અકબર-કમ-અકબરને આઈડિયલ	૧	૧૧/૧૦/૧૯૮૦
૧૧.	અકબર	કોમ્પ્યુટર સાયન્સ	૮	૧૧/૧૦/૧૯૮૦

१२. प्रोग्रामर-कम-क्षेत्र ३

११. सोम्युद्धर ओपरेद्धर — ४ ११/११/११

परिशिष्ट “२”

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એકેડેમિક કાઉન્સિલની ભલામણ

આથી ઠરાવવામાં આવે છે કે. એમ. શાંર ચેરિટેબલ ટ્રસ્ટ, પીપલિયા, તા. વાઘોડિયા તરફથી શિક્ષકગણના નિમણૂકમાં એંગ્લો શારત સંમિત નીચે જણાવેલ શારતાનાં પરિવારના અક્રિમ્યુટિવ કાઉન્સિલને સંતાપ થાય તે રીતે તા. ૮-૧૨-૧૯૯૯ સુધીનાં અને શારતમાં ૨૪નાં તા. ૩-૧૨-૧૯૯૯ સુધીનાં કરે તો તેને સેલ્ફ કાઉન્સિલના ધોરણ પ્રથમ વર્ષ બી.ટી.એલ.ના રીતે અપનાવવામાં એક વર્ષનાં ૧૯૯૯-૨૦૦૦ના શૈક્ષિક વર્ષ સુધીનાં કરે. જોગવા વાપર અક્રિમ્યુટિવ કાઉન્સિલને બહાનમાં નવું.

૧. ૧૮૨૬ કલિંગનિગમન બુનિયાદીની નિયમનુસાર જરૂરી શિક્ષકગણની તેમ જ બિનાશિક્ષકગણની નિમણૂક કરવામાં આવે (પરિશિષ્ટમાં જણાવ્યા મુજબ).
૨. પ્રથમ વર્ષમાં ધોતીન વિદ્યાર્થીઓને પ્રવેશ આપવામાં આવે.
૩. સૌજ માટે આવે જરૂરી ભોતિત સાધનો, લેબોરેટરી, વર્કશોપ માટેના જરૂરી ઇન્ફ્રાસ્ટ્રક્ચર, કમિન્ટર વગેરે સંભાળવામાં આવે.
૪. આ નિયમ મંત્રીમાં જરૂરી પાટલોઓ, બુકરી, ટેબલ, એક્સનાઈ, લાઈટ, પંખાની પધાન સુવિધા ઉપલબ્ધ કરવામાં આવે.
૫. કોઈજના કુલ વિદ્યાર્થીઓની સંખ્યાના આઠમા અંશના આઠના ૧૮૬૪ જેટલા વિદ્યાર્થીઓને બેસી શકે તેવા બેંઠ.
૬. વિદ્યાર્થીઓની સંખ્યાના આઠમા અંશના આઠના ૧૮૬૪ વિદ્યાર્થીઓના માટેના બેંઠ સંતરના સોઝાવણ પરંતે તૈયારી લેવાના.
૭. પ્રથમ વિદ્યાર્થીઓના એકઠામાં આઠના ૧૮૬૪ વિદ્યાર્થીઓ એક્સનાઈ બેસીને વાંચી શકે તેટલી નવનવગણના સુરેજજ સંબંધનઃ લીલી પ્રેરણાય.
૮. આવ્યાં માટેના બેંઠ (એકેડે ટોપલટરી યવચ્ચા સાથે).
૯. કોઈજના કાર્યાલય માટેનો બેંઠ.
૧૦. લીના પાલી માટેના બેંઠ, સોજાલય વગેરેની ધામ્ય અવચ્ચા.
૧૧. લેખાભ્યાસના વિષયબુજાર સુરેજજ સાપનાં સોસીની સંચલપચાલી લેબોરેટરી ૧૮૬૪ કલિંગનિગમન નિયમનુસાર જવાવગણમાં આવે.
૧૨. આઠમા અંશના પચસી વિદ્યાર્થીઓ રોડી શકે તેવા જવાવગણની જાગવાઈ કરવામાં આવે તેવા તમા પ્રેરણાય માટે આઠમા અંશના રોકાણની ધામ્ય અવચ્ચા કરવામાં આવે.
૧૩. પ્રેરણાય વિદ્યાર્થીઓ માટે ૧૮૬૪ કલિંગનિગમન ધોરણી મુજબ પુનઃન સંભાળવામાં આવે.
૧૪. બુનિયાદીની ધોરણોરસ મુજબ આવ્યાં માટે સોજ જાજી આપુનુજ રોકાણની યવચ્ચા કરવામાં આવે.
૧૫. બુનિયાદીના ધોરણોરસ મુજબ શિક્ષકોને પચારાધારસ, માધ્યમથી રોકાણ, ધરવાના અધ્યુ અને કા. કરનાં કામ પચારવામાં આવે તેવા શિક્ષકના વાર્ષિક મુજ પચારસ ૨.૫ (અઢી) ટકાના રોકે પ્રેરણાથી ૬ : તામ કરવામાં આવે.
૧૬. સંજે કોઈનાઓના ધોરણ જાજી આવ્યામાં આવવાના રોકે કોઈજના સંભાળવાઈ જે અધ્ય થાય તે પુનઃ કરવામાં આવેસક મેજલ નરકપી માધ્યમથી આવવામાં આવે.
૧૭. જુરજટના રોકાણ, આવના રોકાણ અને જુરજટીને વિદ્યાર્થી પ્રદરશ શિક્ષક નિયમનિસકવગણના કમ્પાઈની બાવરી નિમણૂક, પચરી, પચરી નિમણૂક એવં અનુમુજિજ જાતિ, અનુમુજિજ જાતિનાં અને માધ્યમિક ધરવાના કોઈનાઓની અપાનજ જયાં આવ્યામાં બુનિયાદીને અપાનજવાળા નિયમ કરેલ ધોરણોરસોના અપમજ કરવામાં આવે. તે મુજબનુજ નિયમનિસકવગણના અપાનજવાળા અપાનજવાળા રોકાણ.
૧૮. ૧૮૨૬ કલિંગનિગમન માટે ઇન્ફ્રાના તમા કાલ સરકારની મજૂરી સંભાળવામાં આવે.
૧૯. આ બુનિયાદીની ધોરણોરસ જુરજટના રોકાણ નિયમ કરે તે રાખવામાં રોકાણ.
- (૧) આવ્યાઓ, (૨) શીક્ષક સાથે બિનાશિક્ષકગણના કમ્પાઈનીઓ નિમણૂક કરવામાં આવે. ૧૮૨૬ કલિંગનિગમન ધોરણોરસોના ધરવામાં આવે.
૨૦. બુનિયાદીના નિયમનુસાર વરસીસમિતિ ઉપરાંતના તમા વરસીસમિતિ ઉપર કલપનિસકવગણના રોકાણ કરવામાં આવે.
૨૧. કલપનિસકવગણના રોકાણ કરવામાં આવે.

અંકડેમિક કાર્ડિનલ : તા. ૧૮-૧૧-૧૯૯૯

22. વિધાયીમાન જ પ્રજાને આપવાના યાત્રા તે ગામને મજરાર નહીં કરે તે ધારાધારના મનુષ્યને કંઈએ પદ્ધતિનો પ્રવેશ આપવાના સ્વચ્છે. તે બંને બંધનમાં જવાની રીતે ૧૯૪૧-૪૨
23. ૧૯૩૧ની શરવાત બાદના સમયેનિ ત્યાસતપતિવિનિને તેની ત્યા ૧૯૪૧-૪૨ ૧૯૪૦ અને આપેલ હેરાલમાં ૪૫ થતા જવાની ૧૫ તનુ પુત્ર પાસને નામને ૩૨
24. ૧૯૩૨ને પુનિવિજિતિના સંજિવિત્તોશીના નામે ૩૨ ૨૯/૧૨/૧૯૩૨ (અંક) રૂપિયા રીસ ગામ પુરાબી વિગિરિટ મુકરા મોટની રૂપ પુનિવિજિતિમાં જમા કરવામાં આવે, આ રૂપમાં ત્યા ૩૧ ૧૨ ૧૯૪૦ તુથીમા પુનિવિજિતિમાં મજરારની રૂપ

PARISHIST--DENTAL COLLEGE

Teaching Staff

1	Prosthodontics	1
2	Oral Pathology	1
3	Conservative Dentistry	2
4	Oral Surgery	2
5	Periodontics	2
6	Orthodontics	1
7	Pedodontics	1
8	Oral Medicine & Radiology	1
9	Dental Materials	1

(3-9) 5(24, 2245 : (Non-teaching Staff)

1. *Wiederholung*
2. *Erklärung*
3. *Beispiel*
4. *Frage*
5. *Antwort*
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266. *Erklärung*
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स्वर्गनाथ न्यासस्तोत्रमिति नामो नमः॥

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૧૦
 સમય પૂરતી તથા હોસ્ટેલ તરફના બનાવેલ છે એની બાજુમાં જ ૧૦૦૦ વિદ્યાર્થીઓ સમાવી શકાય તેવી ૧૨૦૦૦
 બેનાટીમાં ૧૨૦૦ વિદ્યાર્થીઓની અને ૧૦૦૦ સ્ટાડીયમની કોલોડોરી બનાવેલ છે. જેમાં પણ પ્રોફેસર અમલ,
 લેક્ચરર ૨૦ અને ટાઇમલેટ બ્લોક અમલ બનાવેલ છે. રહેતે રહેતે બીજી બાજુમાં પણ મોબ્યુટી ટેન્ક બનાવેલ
 છે આ ઉપરાંત બેચાળા પાછળના બાજુમાં સ્ટોરૂમ, જુવેનલ ટેન્ક, બોયિંગ ધમ્પ ૨૦૦ તથા ફેનલી તથા સ્ટોર
 રૂમ તમા બનાવેલ છે આ પ્રકારનું ત્રણેય માળ સહિતનું અગ્નિપ્રતિકારક ૪૦,૦૦૦ ચોટરિય તજારે સંવેરવેલ છે
 જેટલું છે. આ પ્રકાર બનાવેલ ૬ એકરની જમીનમાં બનાવેલ છે.

૧. આ મકાન અને જમીનના ૭-૧૨ના ઉતારાની નકલ ટ્રસ્ટના નામની છે, જે અમને આપવામાં આવેલ છે.

૨. આ સંસ્થાએ ટેન્ટલ કાઉન્સિલ ઓફ ઇન્ડિયામાં રૂ. ૭૫ લાખની બેન્ક ગેરંટી આપેલ છે જેની નકલ અમને આપેલ છે.

૩. આ સંસ્થા (કોલેજ)ના વિદ્યાર્થીઓ ખાટે પ્રેક્ટિકલની અવસ્થા નરહરિ હોસ્પિટલમાં કરવામાં આવેલ છે તેમ જણાવેલ છે (પત્ર સામેલ છે).

૪. પ્રક્રિયક માટેની કેટલીક સાધનસામગ્રી ખરીદવામાં આવેલ છે અને બાકી અંગે ઓર્ડર આપેલ છે જે પત્રની નકલ અમને મળેલ છે.

૫. ગ્રંથાલય માટેનાં પુસ્તકોની વ્યવસ્થા થયેલ છે.

૧. ઇન્ટર ક્રાઇસિસ ઓફ મેનિયાના ધારાધોરણ અનુસાર જરૂરી શૈક્ષણિક સ્તરની નિમણૂક કરેલ છે અને નિયુક્તિપત્રો તથા સ્વીકૃતિપત્રો અમન બતાવેલ છે.

હાલમાં બા મકાનમાં બહારનોરો નથા કિનિશિયનું કામ ચાલી રહેલ છે, જે બે-ત્રણ દિવસમાં પૂરું થવાની શક્યતા છે તેમ જણાવેલ છે.

આ સંચાલન ઇન્ટર કાઉન્સિલ ઓફ ઈન્ડિયા તથા કેન્સ સરકારે તેઓના પત્રોક ૧૯૭૧-૭૨-૭૯-૮૦-૮૧અંતરમાં
 ૧. ૧-૧-૧૯૭૭થી ૪૦ સીટની મંજૂરી આપી છે જે મુંબઈના આમંત્રિ બતાવેલ છે. ઉપરાંત આ સંચાલન
 મુંબઈના પત્રકારમાં ૪૦ સીટોના ૧૦૦ સીટ માટેની અંગત-અંગત સિટિફિકેટો અરજના સંચાલનમાં સરકારે
 સરકારે તમામ ૧૧. ૨૯-૧-૧૯૭૯ના પત્રો ૧૧. ૧-૧૦-૭૭થી મુંબઈ આપેલ છે જે પત્ર સંમત છે. ઉપરાંત સરકાર
 નવાંચેલ ૬૦ સરકારમાં પણ ૪૦ સીટના બકસ ૧-૧૦ સીટની વિચાર્યો ભૂમત્ર અંગેની અરજ ઇન્સ. ૨ પણ
 નવાંચેલ નવાંચેલમાં આપેલ છે.

૧૬૨ મંદકારે નયા ડેન્ટલ કાર્ડિસિસ્ટનમને ૪૦ સીડની મંજૂરી આપણ છે તે જોતાં આ સંસ્થાને ૪૮ વિદ્યાર્થી ભવતાની મંજૂરી આપી શકાય. આ માટે સંસ્થાને ડેન્ટલ કોલેજનું જોડાણ આપવા કમિટી બલામણ કરે છે.

આ સંસ્થાનાં જોડણા આપવામાં આવે તો ટેન્ડર કાર્ડનિસિલ ઓફ ઇન્ડિયા તથા બુજરાત સરકાર તથા બુજરાત યુનિવર્સિટીનાં ધારાધોરણોનું પાલન કરવાનું રહેશે.

Sd-
 ડૉ. કે. એચ. શાહ
 ડૉ. બી. એન. મુદાગિયા
 ડૉ. પોગેન્દ્ર વ્યાસ

परिशिष्ट "३/१"

$$514518 \pm 4418 \times (1)$$
M.Sc. Part I Syllabus for Physics

(Effective from June, 1999)

Paper I

(i) **Mathematical Physics** : Functions of a complex variable :

1. Introduction
2. Analytic functions
3. Contour Integrals
4. Laurent series
5. Residue theorem
6. Methods of finding residues
7. Evaluation of definite integrals
8. The point at infinity, residues at infinity
9. Mapping
10. Some applications of conformal mapping

10. Some applications of conformal mapping

Integral Transforms :

1. Introduction
2. Laplace transforms
3. Solution of differential equations by Laplace transform
4. Convolution
5. Inverse laplace transforms.

Text for (i) and (ii) M

Group theory

81. Group, subgroup

- x2 Invariant subgroups, factor groups
- x3 Homomorphism and Isomorphism
- x4 Group representation
- x5 Reducible and irreducible representation
- x6 Schur's Lemmas, orthogonality theorem
- x7 Character of a representation, character tables
- x8 Decomposing a reducible representations into irreducible ones
- x9 Construction of representation
- x10 Representations of groups and quantum mechanics
- x11 Lie groups and Lie algebra
- x12 The three dimensional rotational group (SO3)
- x13 The special unitary groups SU2, SU3
 - (a) The homomorphism between SU2 and SO3
 - (b) The irreducible representation of SU2
 - (c) Representation of SO3 from those of SU2
 - (d) The generators of unitary groups
 - (e) The group SU3

- 8.14 Some application of group theory in physics

Ref Mathematical Physics by P K Chattopadhyaya

Integral equations and Green's functions

Introduction

Conversion of differential equation into an integral equation

- Linear Harmonic oscillator

4 Liouville-Newman series separation methods

Ref : Mathematical methods for Physicist by G Arfken

- 6.1 Non homogeneous boundary value problems and Green's functions
- 6.2 Green's functions for one dimensional problems
- 6.3 Eigen function expansion of Green's functions

- 6.4 Fourier transforms: method of constructing the Green's functions
- 6.5 Green's functions in higher dimensions
- 6.6 Green's functions for Poisson's equation and a formal solution of electrostatic boundary value problem
- 6.7 Wave equation with a source
Ref : Mathematical Physics by P. K. Chattopadhyaya, Wiley Eastern Ltd
- Tensors**
- 2.1 Introduction
- 2.2 n-dimensional space
- 2.3 Superscript and subscript
- 2.4 Coordinate transformation
- 2.5 Index notation convention
- 2.6 Dummy and Real indices
- 2.7 Chronical and symbol
- 2.8 Scalars, contravariant vectors and covariant vectors
- 2.9 Tensors of higher rank
- 2.10 Algebraic operations
- 2.11 Symmetric and Antisymmetric tensors
- 2.12 Invariant tensors
- 2.13 Conjugate and reciprocal tensors
- 2.14 Relative and absolute tensors
- 2.15 The element and matrix tensor
- 2.16 Fundamental tensors
- 2.17 Raising and lowering of indices
- 2.18 Length of orthogonality of vectors
- 2.19 Christoffel's C-index
- 2.20 Transformation laws for Christoffel's symbols
- 2.21 Geodesics
- 2.22 Covariant differentiation of vectors
- 2.23 Covariant differentiation of tensors of higher rank
- 2.24 Covariant derivative of fundamental tensors
- 2.25 Laws of covariant differentiation
- 2.27 Tensors form of grad, div ∇^2 and curl
- 2.28 Div of a tensor
- 2.29 Intrinsic derivatives
- 2.30 Geodesic coordinates
- 2.31 Riemann Christoffel's tensors
- 2.32 Covariant curvature tensor and its properties
- 2.33 The number of algebraically independent components of the curvature tensor
- 2.34 Contraction of Riemann - Christoffel's tensor
- 2.35 Bianchi identities
- 2.36 Contraction of Bianchi identity
- 2.37 Simple application of tensor to non relativistic physics.

(ii) Quantum Mechanics : Approximation methods for stationary states :

- 5.1 Perturbation theory for discrete levels. Equations in various orders in perturbation theory.
- 5.2 The non-degenerate state
- 5.3 The degenerate case: removal of degeneracy
- 5.4 The effect of an electric field on the energy levels of the atom (The Stark effect)
- 5.5 Two electron atoms.
The variation method
- 5.6 Upper bound on ground state energy
- 5.7 Applications to excited states
a) Direction linear in variational parameters

- 5.9 The hydrogen molecule
- 5.10 Exchange interaction.
W.K.B. Approximation :
- 5.11 The one dimensional Schrodinger equation
- 5.12 Bohr-Sommerfeld quantum condition
- 5.13 W.K.B. Solution of the radial wave equation.
Evolution with time : Exact formal solution Propagators
- 9.1. Schrodinger equation, general solution
- 9.2. Propagators.
- 9.4 Alteration of Hamiltonian transition and sudden approximation
Ref : Textbook of Quantum Mechanics by Mathews and Vankatesan.
- 10.3. Description in terms of one electron Green's function.
Ref : Solid State theory by W. A. Harrison TMH.
2. Einstein's Quantum theory of radiation :
- 2.1 Einstein-Coefficients
- 2.2 Momentum transfer
- 2.3 Life time
- 2.4 Possibility of amplification
- 3 Interaction of radiation with matter :
- 3.1 Time dependent perturbation theory
- 3.2 Electric dipole interaction
- 3.3.1 Creation and annihilation operators
- 3.3.2 Fock states
- 3.3.3 Quantization of the field
- 3.3.4 Zero point energy
- 3.3.5 Coherent state description of electromagnetic field
- 3.3.6 The interaction of radiation with matter.
Ref : Lasers and Non linear optics by B. B. Laud New Age International
- Alternative picture of time evolution*
- 9.16 The Schrodinger picture : Transformation to other pictures
- 9.17 The Heisenberg picture.

(iii) Programming in C

- 1 Overview of C
- 1.1 Introduction
- 1.2 Importance of C
- 1.3 Sample C programs
- 1.4 Basic structure of C programs
- 1.5 Programming style
- 1.6 Executing a "C" program
- 1.7 Points to remember
- 2 Constants, Variables and Data types
- 2.1 Introduction
- 2.2 Character set
- 2.3 C tokens
- 2.4 Constants
- 2.5 Keywords and identifiers
- 2.6 Variables
- 2.7 Data types
- 2.8 Declaration of variables
- 2.9 Assigning values to variables
- 2.10 Defining symbolic constants
- 3 Operators and Expressions :
- 3.1 Introduction

- 22 Arithmetic operators
- 23 Relational operators
- 24 Logical operators
- 25 Assignment operators
- 26 Increment and decrement operators
- 27 Conditional operator
- 28 Bitwise operators
- 29 Special operators
- 30 Arithmetic expressions
- 31 Evaluation of expressions
- 32 Procedure of Arithmetic operators
- 33 Some conceptual problems
- 34 Type conversions in expressions
- 35 Operator precedence and associativity
- 36 Mathematical functions case studies
 - 4 Managing Input and Output operations
- 41 Introduction
- 42 Reading a character
- 43 Writing a character
- 44 Formatted Input
- 45 Formatted output case studies

Text book : Programming in C by J. Balapurusamy Tata-McGraw-Hill Publ. Co. New Delhi

Paper II

- (a) Classical Mechanics
- (b) Orbital Mechanics
- (c) Electrodynamics
- (d) Plasma Physics
- (e) Statistical Mechanics

- (a) **Classical Mechanics :** (i) Euler's angles (ii) Motion of a symmetric top, Cayley-Klein transformation and Hamilton-Jacobi theory, Gauge transformation, Canonical transformation, condition for transformation to be canonical, illustration of canonical transformations, poisson bracket, canonical equations in terms of Poisson bracket relation, Infinitesimal small transformations, Relation between infinitesimal small transformation and Poisson brackets, The Hamilton-Jacobi equation, Separation of variables, Action-angle variables, Properties of action-angle

Non-linear oscillations and chaos

- 101 Introduction
- 102 Singular points of trajectories
- 103 Non-linear oscillations, Collet's problem
- 104 Limit cycles
- 105 Chaos

Ref : Introduction to Classical Mechanics by T. F. L. L. and P. M. (M)

Classical Mechanics by H. Goldstein, Addison-Wesley

Classical Mechanics by A. B. Bhatia, Narosa Publ. Co. Ch. 10

- (b) **Orbital Mechanics :** Solar system, celestial sphere, spherical triangle, Horizontal, equatorial, ecliptic and radiative coordinate system, Circumpolar star, orbital time, Many body problem, integrals of many body system, formulation of two body problem, elliptic orbit, solution of Kepler's equation by different methods, parabolic orbit, Numerical problem related to the motion of artificial satellites and heavenly bodies, orbital elements, Determination of orbital elements from position and velocity

Ref : Text book on spherical Astronomy, by Smart W.M. Cambridge, Univ. Press, Introduction to orbital mechanics by Geyling F. T. and Westerman, Addison-Wesley, Publ. Co.

- Introduction to Celestial Mechanics by McSusk S. W. Addison Wesley
- (c) **Electrodynamics : Electromagnetic radiation :**
 - 91 Dipole radiation
 - 92 Radiation from a point charge
 - 93 Radiation reaction
- Electrodynamics and Relativity*
- 102 Relativity Mechanics
- 103 Relativistic electrodynamics
- 104 Structure of space time
- Ref : Introduction to electrodynamics by Griffith's Prentice Hall India Ltd.
- Scattering and Dispersion*
- 111 Scattering of radiation by a free charge
- 112 Scattering of radiation by a bound charge
- 113 Radiation damping
- 114 Dispersion in dilute gases
- 115 Dispersion in liquids and solids
- Ref : Media contains free electrons.
- Ref : Electromagnetics by B. B. Laud, Wiley, Eastern
- (d) **Plasma Physics : Hydrodynamic description of plasma :**
 - 5.1 The moment equations
 - 5.2 Derivation of the moment equations
 - 5.3 Magnetohydrodynamics OR MHD
 - 5.3.1 One fluid model
 - 5.3.2 Two fluid model
- B-B-G-K-Y Equations*
- 6.1 Collisions
- 6.2 Fokker-Planck equation
- 6.3 Fokker-Planck-B-B-G-K-Y Equations
- 6.4 Fokker-Planck equation with self-consistent field
- Transportation of Plasma*
- 7.0 Controlled Thermonuclear Reaction
- 7.1 Fusion Reaction
- 7.2 Tokamak Barrier
- 7.3 Fusion and Confinement of plasma
- 7.4 Radiation loss of energy
- 7.5 Instability problem
- 7.6 Magnetohydrodynamic conversion of energy
- Plasma propulsion*
- Other plasma devices*
- Ref : Introduction to Plasma Physics by F. F. Chen, Plenum Press
- (e) **Statistical Mechanics : Time dependence of Fluctuations :**
 - 8.1 Power spectrum of Fluctuation
 - 8.2 Persistence and correlation of fluctuation
 - 8.3 Wiener-Khinchine theorem
 - 8.4 Einstein noise - Nyquist theorem
 - 8.5 Shot noise
 - 8.6 Fokker - Planck equation
 - Isopropyl gases and gas condensation*
 - Van der Waals equation
 - 8.7 Virial coefficient
 - 8.8 General virial coefficient and cluster diagrams
 - 8.9 Gas-Liquid condensation
 - Cooperative phase transition*
 - Cooperative processes

પરિશિષ્ટ "૩/૨"
ક્રમક્રમ ક્રમાંક ૪ (૨)
T.Y.B.Sc. Zoology

Theory

Paper VI :

Unit I : Carbohydrates

Unit II : Proteins

Unit III : Lipid and enzymes

Unit IV : Metabolism and physiology of movement

Unit V : Physiology of nervous system reproduction and endocrine glands

Paper VII :

Unit I : Tools of cytology technique in cytology

Unit II : Ultra structure of cell organelles structure of chromosomes and cell division

Unit III : Question from genetics subunit 1 to 5

Unit IV : Question from genetics subunit 6 to 7

Unit V : Embryology

Paper VIII :

Unit I : Taxonomy of phyla and symmetry evolution of bilateria and significance of coelom & metamerism

Unit II : Types - monocytes, lucosolenia, obelia, planaria, sepi

Unit III : General questions of protozoa, porifera, coelenterata & helminths

Unit IV : Annelida & arthropoda; type scorpion

Unit V : Mollusca & Echinodermata: type starfish.

Paper IX :

Unit I : Labeo: pigeon

Unit II : Rat, origin of chardate, chardate organisation, binomies, distribution and systematics of chordate

Unit III : Protochordate, cyclotomata, fishes, amphibia

Unit IV : Reptiles, aves

Unit V : Mammals, mammalian histology

Paper X :

Unit I : Pollution

Unit II : Applied entomology and poultry

Unit III : Fisheries

Unit IV : (a) Radiation (b) Cancer and mankind (c) Biotechnology.

Unit V : Wild life subunit 1 & 2 and wild life subunit 3 & 4.

પરિશિષ્ટ "૩/૩"
ક્રમક્રમ ક્રમાંક ૪ (૩)

M.Sc. Electronics Syllabus

(Effective from Academic year June, 1999)

First Semester (650 Marks)

Subject	Total Marks	External Exam Marks	Internal Exam Marks
Paper I : Elements of condensed Matter and Semi conductor devices	100	70	30
Paper II : Electronic Communication I	100	70	30
Paper III : Linear IC's and its applications	100	70	30
Paper IV : Digital Systems Design & Microprocessors	100	70	30
Practicals	150	105	45
Project	100	70	30

Second Semester (650 Marks)

Paper I : Microwave Devices and circuits	100	70	30
Paper II : Microprocessor-II	100	70	30
Paper III : Programming in C Language	100	70	30
Paper IV : Television	100	70	30
Practicals	150	105	45
Project	100	70	30

First Semester

Theory Papers :

Paper I : Elements of condensed matter and Semiconductor Devices total 100 Marks
(External 70, Internal 30)

The effect of lattice periodicity on allowed states. The Kronig-Penney model, conductors, semiconductors and Insulators. The effective mass and concept of a hole. Band shapes of real conductors. The density of states in energy bands.

Metal-semiconductor junctions : Schottky barriers, rectifying contacts, ohmic contacts, typical Schottky barriers; Metal insulator semiconductor diodes : Ideal Metal-Insulator-Semiconductor (MIS) diode, surface space charge region, Ideal MIS curves.

The continuity Equation : Derivation of continuity equation, applications of continuity equations to the abrupt P-N junction operating with constant current calculation of charge densities at the edge of the depletion regions, solution of continuity equations for a reversed biased abrupt p-n junction, solution of continuity equation for forward biased abrupt p-n junction. A brief discussion of the p-n junction, the incremental resistance of a forward biased p-n junction Einstein's equation.

Junction Transistor : Interaction of two junctions, transistor action, transistor parameters, transistor static characteristics.

Junction field effect transistor (unipolar transistor), Metal oxide semiconductor (MOS) field effect transistor.

Super conductivity : Introduction, empirical criteria, transition temperature, energy gap, properties of energy gap (microwave and infrared absorption, density of states, specification heat, thermal conductivity) Meissner effect, critical field type and type II superconductors, critical current, London equation, thermodynamics of super conducting transitions

Books

1. Introduction to solid state electronics : G. I. Yefimov Yu A. Moma (Mir Publishers).
2. Solid state electronic devices : Ben G. Streetman, Prentice Hall of India.
3. Physics of semiconductor devices : S. M. Zee, Wiley Eastern Limited, New Delhi.
4. Transistors : Dennis Le Groisette, Prentice Hall of India.
5. Electronic devices and linear circuits : G. N. Garud and I. C. Jain, Tata McGraw-Hill

Publishing Company Limited, New Delhi.

6. Solid State Physics : C. M. Kachhava, Tata McGraw Hill publishing Company, New Delhi.

Paper II: Electronic Computation I [Total 100 Marks (External 70, Internal 30)]

Single side band modulation : Introduction, single side band principles, Balanced Modulators, SSB generation, SSB Reception, Modified SSB systems, Signal to noise for SSB, Companded single side band

Angle Modulation : Introduction, Angle modulator circuits, FM Transmitters, Angle Modulation Detectors, Automatic Frequency Control, Amplitude Limiters, Noise in FM systems, Pre-emphasis and De-emphasis, FM Broadcast Receivers, FM stereo Receivers.

Pulse Modulation : Introduction, pulse amplitude modulation, pulse code modulation, pulse frequency modulation, pulse time modulation, pulse position modulation, pulse width modulation.

Microwave transmission lines: Introduction, transmission line equations and solutions, reflection coefficient, standing waves and standing wave ratio, line impedance and admittance, smith chart, impedance matching (stubs, quarter waves and baluns), microwave coaxial connectors

Microwave Waveguides, Introduction, Rectangular waveguides, solution of wave equation, rectangular coordinates, TE modes in rectangular waveguides, TM modes in rectangular waveguides, power transmission in rectangular waveguides, excitation of modes in rectangular waveguides, characteristics of standard rectangular waveguides, circular waveguides, solution of wave equation in cylindrical coordinates, TE and TM modes in circular waveguide.

Antennas: Radiation from a short current filament, some basic antenna parameters (Radiation resistance, directivity, gain and radiation pattern, radiation resistance) Half wave dipole antenna, effect of ground on directional pattern of ungrounded antenna, antenna arrays.

Books

1. Dennis Roddy and John Coolen, Electronic Communications (Fourth edition), Prentice Hall of India.

2. Microwave Devices and circuits, Samuel Y. Liao, Prentice Hall of India.

3. Microwave Propagation and Technique, D. C. Sarkar, S. Chand and Company Ltd., New Delhi.

4. Antennas and radiowave propagation, Robert E. Collins, McGraw Hill Book Company, India.

5. Electronics and Communication systems, George Kennedy, McGraw Hill International Edition.

6. Electromagnetic waves and Radiating systems, Edward C. Jordan and Keith G. Balmain, Prentice Hall of India.

Paper III: Linear IC's and its application [Total 100 Marks (External 70, Internal 30)]

Op. Amp. Application

Logarithmic amplifier using diode/transistor/antilog amp., frequency selective amplifier, instrumentation amplifier, charge amplifier, peak detector, sample and hold circuit, high resistance voltage AC/DC voltmeter, High resistance Universal voltmeter, interfacing microcomputer to a desktop printer, Tone control circuit, Halfwave/Fullwave Rectifier, Analog computation, Power amplifier, power amplifier using power booster, Monolithic power amp. (LM 380)

Oscillators

Op. amp. applications: Phasor/astable oscillator, Wien bridge, quadrature oscillator, square wave generator, triangular wave generator, sinusoidal wave generator, voltage controlled oscillator (IC 565 and 8038 and 2206) V to F and F to V converter (IC 9404)

Active Filters

First/Second order low pass/high pass/butter worth filter, higher order filter band pass (wide/narrow) filter, Band reject filter (Wide/narrow), All pass filter, universal filter using LM 324, HP-147, Grator, Generalised impedance converter (AF 120)

Phase-Locked Loop

Operation: Principle with block diagram, Lock range and capture range (without mathematics) IC 565, 565 applications: Frequency multiplier, FSK demodulator, Frequency translation, AM/FM detector

Comparator

Basic comparator for zero crossing detector, Schmitt trigger comparator characteristics, Limitations of Op. amp as comparator, Voltage limiter, High speed and precision type comparator, window detector, Level detector for photodiode using LM 311, ON-OFF

temperature controller using LM 339, Preamplifiers in audio systems (LM 833).

Norton's Op. amp. LM 3900, Norton Op. amp. in inverting and Non-inverting configuration, FET input Op. amp. Electronic Analog computation using Op. amps. time scaling of differential equation, amplitude scaling of diff. equation Simulation transfer function, logarithmic amplification of multipliers, Division, square root, as Rectifier, RMS and phase shift detectors.

Books

- Op. amp. and Linear Integrated circuits, 3rd Ed. Gajavakad, PHI
- Operational amplifiers and Linear integrated circuits 4th Ed. Coughlin and Driscoll, PHI
- Integrated circuits by K. R. Botkar by Khanna Prakashan, 8th ed.

Paper IV: Digital system design & microprocessor [Total 100 Marks (External 70, Internal 30)]

- Design of synchronous digital circuit designs, MOD-3, MOD-5, DECADE COUNTER UP-DOWN counter using J-K Flip Flop

- Design of code converters, BCD to Decimal, Decimal to BCD using universal gates.

- Design of drive circuit, Seven segment, multiplexed display dot matrix display

- Design of a preset timer using magnitude comparator, counter, decoder and display with 1 Hz precise clock

- Design of digital stop watch using CMOS IC's

- Design of time base circuit to obtain 1 MHz, 100 KHz, 10 KHz, 1 KHz, 100 Hz, 10 Hz, 0.1 Hz, 0.01 Hz

- Design of frequency counter period measurement

- Design of digital clock using conventional and special IC's

Introduction and function of computer systems, system board ROM and RAM BIOS, CPU, I/O, Peripherals, Disk drivers, floppy diskettes, Winchester, disk (Hard Disk), Monochrome display, Colour display, dot matrix and laser printer, keyboard, display and printer adaptor card, Floppy and Hard disk controller card, serial communication interface adaptor, colour graphics monitor adaptor, installing the PC, operating system, system files, functions of the operating systems. Internal and external DOs commands

Counters and time delays : Illustrative program (Hexadecimal counter), Illustrative program (Dec to hex (Mod-10) counter, illustrative program (Generating pulse wave form), Debouncing counter and time delay

Stack and subroutine : Stack, subroutine, conditional call and return instructions, Advanced subroutine concepts

Code conversion, BCD arithmetic and 16 Bit data operations : BCD to binary conversion, Binary to BCD conversion, BCD to seven segment LED conversion, Binary to ASCII and ASCII to binary code conversion, BCD addition, BCD subtraction, Introduction to advanced instruction and applications, Multiplication, subtraction with carry

Interrupts : The 8085 interrupts, additional 8085 interrupts, Restart as software instructions, additional I/O, concept and Processes.

Serial I/O and Data Conversions : Basic concepts in serial I/O, software controlled synchronous serial I/O, The 8085 serial I/O lines, SOD & SID

Books

- Digital electronics and technology by D. C. Green
- System design using IC's by B. S. Sonde
- Digital Computer Fundamentals by Bartee
- Microprocessor Architecture, Programming and Applications by R. S. Gaonkar

Ref Books

- Digital Design Principles and Practices by John F. Wakerly
- Digital Logic and Computer Design by Morris Mano
- Let us "C" by Yashwant Kanetkar (BPB)

Department of Physics

M.Sc. Electronics, Structure for Semester System

(Effective from Academic Year June, 1999)

First Semester (650 Marks)

Subject	Total	External	Internal
	Marks	Exam	Exam

			Marks	Marks
Paper I	Elements of Condensed Matter and Semiconductor Devices	100	70	30
Paper II	Electronic Communication I	100	70	30
Paper III	Linear IC's and its applications	100	70	30
Paper IV	Digital Systems Design & Microprocessors	100	70	30
	Practicals	150	105	45
	Project	100	70	30

Second Semester (650 Marks)

Paper I	Microwave Devices and Circuits	100	70	30
Paper II	Microprocessor-II	100	70	30
Paper III	Programming in C Language	100	70	30
Paper IV	Television	100	70	30
	Practicals	150	105	45
	Project	100	70	30

(Effective from Academic year June, 1999)

Second Semester

Theory Papers

Paper 1 Microwave Devices and Circuits. Total 100 Marks (External 70, Internal 30)

Microwave Components . Microwave cavities (Rectangular cavity resonators, circular cavity resonator and semicircular cavity resonator, Q-Factor of a cavity resonator), Microwave hybrid circuits (Waveguide tees, magic tees, hybrid rings, waveguide corner bends and twists), Directional couplers (Two hole directional couplers, S-Matrix of directional couplers hybrid couplers) (Circulators and Isolators (Microwave circulators and microwave isolators).

Microwave bipolar Transistors (Physical structure, power frequency limitations), Heterojunction bipolar transistors (HBTs) Microwave Tunnel Diodes (Principles of operation, Microwave characteristics), Microwave Field effect Transistors (Metal semiconductor Field-effect Transistors MESFETs, physical structure, Principle of operation, small-signal equivalent circuit, drain current Id cutoff frequency and maximum oscillation frequency, High electron-Mobility Transistors HEMTs) (Physical structure, Operational mechanism, performance characteristics, equivalent circuit, electronic applications)

Transferred Electron Devices TENS Gunn-effect diodes-GaAs diode, background, Gunn effect, Ridley-Watkins-Hilsum (RWH) theory, differential negative resistance. Two valley model theory, High field domains, modes of operations), Microwave generation and amplification, α

Avanche Transist-time (Read Diode, avalanche multiplications, carrier current and external current, output power and quality Factor Q, IMPATT Diode, physical structure, negative resistance, power output and efficiency, Trapatt diode, physical structure, Principle of operation, power output and efficiency) Parametric Devices (Physical description, nonlinear Resistance and minkley, Rowe power relations, parametric amplifiers applications)

Klystrons : (Recapitral cavities, velocity modulation, bunching, transit angle, gain, bandwidth limitations)

Klystrons (Reentrant cavities, velocity modulation process, bunching process, output power and beam loading, state of the art) Multicavity Klystron amplifiers, beam current, density output current and output power of two cavity Klystron)

Helix Travelling-Wave Tubes **TWT** (input and output power, gain, noise figure, electronic admittance)

Magnetron Oscillators: (Cyclotron resonance, convection current, Axial electric field, wave modes, Gain considerations)

Magnetron Oscillators. (Cylindrical magnetron, equation of electron motion, cyclotron angular frequency, power output and efficiency).

Strip Lines Microstrip (Loss and efficiency) Resonant circuit, Rectifier, Rectifier motion, Cylindrical dielectric constant, Transformation of Rectangular impedance of microstrip line, effective characteristic impedance equation, Losses in microstrip lines, quality factor Q of microstrip lines

Coplanar Waveguides (Distributed parameters) Characteristic impedance, Attenuation losses

Substrate materials lines, shielded strip lines, Monolithic microwave integrated circuits (Materials, fabrication techniques, conductor materials, Dielectric materials, Resistor materials, Inductor materials, capacitor examples, Thin Film, formation (Planner resistor Film, Planner conductor Film, Planner capacitor Film) Hybrid integrated circuit fabrication

Microwave Measurements Frequency measurements, measurement of power attenuation measurements, measurement of Phase Shift, measurement of voltage standing wave ratio VSWR, measurement of impedance, measurement of insertion loss, measurement of dielectric constant, measurement of noise factor, measurement of Q of a Cavity resonator

Books recommended

1. Microwave Devices and Circuits by Samuel Y. Liao (Prentice Hall of India).
2. Introduction to Microwave Theory by H. A. Atwater (McGraw Hill Book Company).
3. Foundation of Microwave Engineering by R. E. Collins (McGraw Hill Book Company).
4. Microwaves by K. C. Gupta (Wiley Eastern Limited, India).
5. Microwave Propagation and Techniques by D. C. Sarkar (S. Chaud and Company Limited).
6. Microwave Semiconductor Devices and their Circuit Application by H. A. Watson (ed.) (McGraw Hill Book Company).
7. Microwave Integrated Circuits by K. C. Gupta and A. Singh (Wiley Eastern India).
8. Microwave Engineering and Applications by O. P. Gandhi (Maxwell Macmillan International Edition).
9. Microwave and Radar Engineering M. Kuikarni (Umesh Publications).

Paper II: Microprocessor II [Total Marks: 100 (External 70, Internal 30)]

Programmable Interface Devices. Basic concepts in programmable Devices. The 8155/8156 and 8335/8755 Multipurpose programmable Devices. The 8279 programmable Keyboard/Display Interface.

General Purpose programmable Peripheral Devices: The 8255 programmable peripheral interface, Illustration . Interfacing Keyboard and seven segment display, Illustration . Bidirectional Data Transfer between two microcomputers, the 8254 (8253) programmable interval timer; The 8259 programmable Interrupt controller, Direct memory access (DMA) and the 8257 DMA controller.

Interfacing data converters Digital to Analog converters Analog to Digital converters
Hardware-controlled serial I/O using programmable chips

Microprocessor Applications : Measurement of physical quantities, Temperature measurement and control, Water level indicator, Measurement and display of speed of a motor, Scheduling and monitoring of traffic, Microprocessor based traffic control, Frequency measurement

[illegible]

James H. Jones, author

1. Microprocessor Architecture, Programming and Application by R. S. Gaonkar (Wiley Eastern Limited)
2. Microprocessor and Microcomputers by B. Ram (Dhyaniprai and Sons)
3. Microprocessor Architecture, Programming, Interfacing and Applications by Borole and Vaidute (Technosway Publications, PUNE)

Paper III Programming in C (Language: Total Marks: 100 (External: 70, Internal: 30))

Overview of C—Importance of C programming style and execution. Constants, Variables and Data Types, Character Set, C tokens, keywords, and identifiers. Constants, variables, data types declaration, assignment, arithmetic, control flow, loop.

Operators, and Expressions. Arithmetic, relational, logical, assignment, increment and decrement, conditional, bitwise and special operators, evaluation of expressions, type conversions, operator precedence and associativity. Mathematical functions.

2) Operations: Reading and writing a character, formatted I/O

3. Reason making and branching/looping. If statements nesting of if-else statements, else if ladder, switch statement conditional operator, goto statement, while, do and for statements, jumps to loops.

10. `array` One dimensional arrays, declaration and initialisation of arrays, two dimensional and three dimensional arrays.

Character strings: Declaring and initializing string variables, reading and writing strings, arithmetic operations on characters, concatenation, comparing, copying, and finding length of strings, string handling functions, table of strings.

Functions: Need for user defined functions, the form of C functions, return values and their types, calling a function, category of functions, non-integer functions, nesting of functions, recursion, functions with arrays, scope and lifetime of variables, ANSI C functions.

Structures and Unions: structure definition, giving values to members, structure initialisation, arrays of structures arrays within structures, structures within structures, structures and functions unions, size of structures bit fields

Paper II: Television [Total Marks 100 (External 70, Internal 30)]

Unit 1: Analysis and Synthesis of Television Pictures: Gross structure, image continuity, number of scanning lines, flicker, fine structure, total gradation.

Unit 2: Signal Transmission and Channel Bandwidth: Channel bandwidth, Vestigial sideband transmission, complete channel bandwidth, reception of vestigial sideband signal, FM channel bandwidth, channel bandwidth for colour transmission allocation of frequency bands for TV signal transmission: TV standards

Unit 3: TV Receiver: Receiver sections, vestigial sideband correction, choice of IF, picture tube, circular and controls sound signal separation, sound section, sine processing and AFC circuits, vertical/horizontal deflection circuit

Unit 4: Tuner, Video IF, sound IF, video amplifier (circuit description), picture tube

Unit 5: Horizontal oscillator and sink separator, vertical oscillator and output section, EHT section, Switch mode power supply (SMPS) for TV

Unit 6: Compatibility, colour TV camera, colour TV display tubes, Remote control, electronic control system, electronic touch tuning, instant-on circuit

Books

1. Monochrome and Colour Television by GULATI, Wiley Eastern Limited
2. Television Engineering by Dhake, TMH
3. Fundamentals of Television Engineering by Glassford, TMH

Pointers: Concept, accessing the address of variables declaring and initializing pointers, accessing variables through pointers, pointer expressions, pointer increments and scale factor, pointers and arrays, pointer and character strings, pointers and functions, pointers and structures

File management in C: Defining, opening and closing a file, I/O operations on files, error handling, saving I/O operations, random access to files, command line arguments

Dynamic memory allocation and linked lists.

Preprocessors.

Bitwise operations.

Graphics in C

Object oriented programming (C++)

Books

1. Balagurusamy E., Programming in ANSI (2nd Ed.) TMH Pub
2. Kochan S. G., Programming in C, CBS Pub
3. Gottfried B. S., Programming with C
4. Knetiker Y., Let Us C, BPH Pub
5. Siegel C., Teach Yourself C, DPB Pub
6. Kernighan B. W. and Ritchie D. K. C, Programming Language, PHI Pub
7. Stan Kelly-Booth, Mastering Turbo C, BPH Pub
8. Balagurusamy E., Object Oriented Programming with C, TMH Pub
9. Wally Wang and Kenneth Rob, Illustrated C, BPH Pub

પરિશિષ્ટ "૩/૪"

સાધારણ અધ્યયન

TABLE I
FIRST B.B.A.

Sr. Subject No	No of Papers	Lectures Including Tutorials Seminars	Distribution of Marks	
			External	Internal
			Group Discussion	Practical Studies and Other Teaching Techniques (Per Week)

1. Principles of Management	1	3	20	40
2. Principles of Economics (Micro & Macro Economics)	1	4	20	40
3. Principles and Practices of Accountancy	1	4	20	40
4. Business Mathematics	1	4	20	40
5. Communication Skills (English)	1	4	20	40
6. Elements of Business Organisation	1	3	20	40
7. Growth & Structure of Industries	1	3	20	40
8. Practical Studies	1	3	20	40

Note: (1) The duration of each lecture or tutorial, Seminar etc. will be fifty minutes.

(2) A minimum of two guest lectures per year arranged by experts and/or courses in the area concerned.

(3) For Practical Studies, the candidate should satisfy the following requirements:

A year wise unit (Practical) Course of Banking Co-operative and Finance (First Year) to be completed and followed by a report on the course, should be submitted to the Controller of Examinations in the form of a report in general at the end of the year.

સાધારણ અધ્યયન : પ્રથમ સર્વિસ

Administration (B.B.A.)

સાધારણ અધ્યયન : પ્રથમ સર્વિસ

સાધારણ અધ્યયન : પ્રથમ સર્વિસ

સાધારણ અધ્યયન : પ્રથમ સર્વિસ

સાધારણ અધ્યયન : પ્રથમ સર્વિસ

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સાધારણ અધ્યયન : પ્રથમ સર્વિસ

ଶିକ୍ଷା ବିଭାଗ : ୩, ୧୨-୧୩ ୧୯୯୯

୧. BBA : For the purpose of deciding final result at the First Year BBA, Second Year BBA, and Third Year BBA Examination, the ratio between the internal assessment and the final University Examination shall be 30/70 for the purpose of Internal assessment (including Assignments, Term paper etc.) the institute concerned will conduct at least one test in each term. The institute shall also arrange quizzes, Term Papers, Assignments etc.

୨. BBA : The scheme of examination for various subjects of study at the First Year BBA, Second Year BBA, and Third Year BBA Examinations under the three year degree course will be as shown in the Table-I, II and III respectively. (Candidates desirous of appearing at the First Year BBA, Second Year BBA, and Third Year BBA examinations, must forward their application in the prescribed form accompanied by certificate of attendance, to the Registrar through the Director of the Institute on or before the date prescribed for the purpose under the relevant ordinance)

୩. BBA : (i) For First Year BBA, Second Year BBA, and Third Year BBA Examination

(a) To pass the examination a candidate must obtain in each paper not less than 40% marks in the University Examination and a composite of 50% marks out of 70 marks; and

(b) To be eligible in the internal assessment and for university Examination, a candidate must obtain 12 marks out of 50 marks in each paper.

୪. BBA : (a) First Class : A successful candidate will be placed in the First Class, if he/she obtain 40% and more, but less than 50% marks in the University Examination.

(b) Second Class : If he/she obtain 30% and more, but less than 40% marks in the University Examination and if he/she obtain 12 marks in the University Examination.

(c) Third Class : If he/she obtain 20% and more marks in the University Examination and obtain also in aggregate will be placed in Third Class.

(iii) Exception : A candidate who fails in the examination will be permitted to appear whether to appear only in the heads in which he has failed or in the heads prescribed for that particular examination. Option exercised shall be final.

A candidate who has refused once to avail himself to the exemption offered by him in any paper can not claim it on a subsequent occasion. A candidate passing the examination in compartments in the manner provided above shall not be eligible for a prize or scholarship to be awarded on the basis of the examination or for the award of class.

(iv) F.Y.BBA : A candidate who fails at the F.Y.BBA examination in not more than two papers will be permitted to keep terms for the S.Y.BBA course but will not be declared to have passed the S.Y.BBA Exam unless he/she appears and passes in the papers of the S.Y.BBA Examination in which he/she has failed either previously or simultaneously at the S.Y.BBA Examination.

A candidate who fails at the S.Y.BBA Examination in not more than two papers will be permitted to keep terms for the T.Y.BBA course but will not be declared to have passed the T.Y.BBA Examination unless he/she appears and passes in the papers of the S.Y.BBA Examination in which he/she has failed either previously or simultaneously at the T.Y.BBA Examination.

(v) Scheme of Marks (University Exam.)

Topics	% Marks	Marks (out of 70)
I & III	20%	34
	+ 20%	14

ଶିକ୍ଷା ବିଭାଗ : ୩, ୧୨-୧୩ ୧୯୯୯

	II	15%	10
	IV & VI	10%	7
		+ 10%	7
	V	25%	18
		100%	70
2. Forms of Business Organization	1 & 6	10%	7
		+ 10%	7
	2	20%	14
	3 & 4	20%	14
	5	20%	14
	7	20%	14
		100%	70
3. Principles of Economics	I	7%	5
	II, III & IV	30%	20
	V, VI, VII & VIII	43%	30
	IX, X & XI	20%	15
		100%	70

4. Principles & Practice of Accountancy : Allocation is already given in the detailed syllabus.

Growth & structure of Industries	Theory portion (60%)		
	1 & 2	17%	12
	4 & 5	17%	12
	3 & 6	26%	18
		60%	42
	Industries - 40%	40%	28
		100%	70

5. Communication Skills : Details of the syllabus and allocation of marks as per the attached sheet.

6. Mathematics			
1. Set Theory	7%		
2. Real Analysis	7%		
3. Functions	5%		
4. Permutation & Combination	5%		
5. Matrix Algebra	18%		
6. Co-ordinate Geometry	5%		
7. Limit	5%		
8. Derivatives	10%		
9. Integration	15%		
10. Linear Programming	15%		
11. Transportation Problem	10%		
12. Assignment Model	5%		

First Year BBA.

1. Principles of Management (B.B. Management) (Hours) Paper - I :

(a) Nature and scope of Management ; Management : Meaning, significance and objectives ; Management as a process including levels of Management, Management as a science, University of Management, Schools of Management thought including management a system, Social responsibility of business.

Planning : Meaning and nature of planning; Forecasting; Planning premises, and Constraints of Planning; Planning process with emphasis of objectives ; Classification of plans on the basis scope, time and functions including budgetary planning ; Decision making : Decision process; techniques of decision making.

(ii) Organising : Definition of organising; Steps in organising ; Principles of organising ; Organisation process-Departmentation, Delegation of authority and Decentralisation ; Organisation charts; Types of organisations : Line, functional Line and staff, and committee.

Organisation climate : Formal and Informal

- (vi) Staffing: Recruitment, Development and Training of Managers at various levels
(vii) Directing: Nature and scope of directing. Motivation: Meaning, Importance. Motivation models-Maslow, Herzberg, Douglas Mc Gregor, Victor Z, Victor Vroom, MC Lelland Leadership: Meaning Importance Theories of Leadership Styles including Black and Montor's Model

Communication: Meaning, Importance, Communication process, Principles of effective communication Barriers to effective Communication
Factors of effective supervision

- (viii) Control: Meaning and Importance of controlling, Process of control, Technique of control, Requisites of an effective control system.
(a) The course will include studies of (i) Sole Proprietorship, (ii) Partnership, (iii) Joint Stock Company, (iv) Cooperative and (v) Public enterprise forms. There will be special emphasis on the study of the Joint Stock Company form.

In addition to the Theory papers as above, each student will have to participate in the conduct factory visits for the spot studies of work situations at an overall weekly two hours' work-load equivalent programme, submit his/her own individual report on the prescribed topic, through the college concerned. So as to reach the University dates on the third day from the completion of the University written examination and appear at a Viva at the end of the year as notified by the University.

The assessment of the Reports and the Viva will be made by a panel of examiners appointed by the University. The break up of assessment will be
Report 70% Viva 30%

Paper II: Principles of Economics (Micro & Macro Economics) (70 Marks, 3 Hours)

- (i) Introduction: Definitions of Economics, nature and scope of Economics, Micro and Macro Economics
(ii) Theory of Demand: Theory of demand-concept of utility and demand curve-demand function-determinants of demand and shift in demand curve-concept of elasticity
(iii) Theory of Supply: Notion and determinants of supply - Law of supply-Meaning and types of market demand and supply as determinants of price
(iv) Distribution: Concepts of rent, wages, interest and profit-Marginal productivity of distribution
(v) National Income: The concept of national income-GDP, GNP and NNP Methods of measurement of national income-personal, disposable Money & real income-capital income
(vi) Theory of Income and Employment: Classical approach-Keynesian approach Role of Government expenditure and income determination-Aggregate demand and supply propensity to consume and save-Equilibrium of saving and Investment investment multiplier
(vii) Business Cycle: Concept and characteristics of business cycle-Phases of business cycle
(viii) Theories of Interest Rate: Classical - Loanable fund and Liquidity preference theory
(ix) Money: Functions of Money-Value of Money-The Quantity Theory Money (Fisher's and Cash balance equations)-components of Money supply
(x) Banking: Functions of Commercial Bank-Credit creation-Functions of a Central Bank- weapons of credit control
(xi) International Trade: Theory of comparative cost-balance of payment

Paper III: Principles and Practice of Accountancy (70 Marks, 3 Hours)

- (i) Nature of Accounting: Definition, Objective and Scope: Postulates and Conventions in Accountancy, Accounting Concepts 10%
(ii) Analysis of Business Transactions: Meaning of accounts Classification of accounts Rules of Debit and Credit 10%
(iii) Accounting Cycle: Journal Purpose, Ruling and Recording, Ledger Purpose: Ruling, Posting, Balancing: Types and Sub-Divisions Journal Sub-Divisions Preparation of Trial Balance Preparation of Final Accounts Manufacturing Account Trading Account Profit & Loss Account and Balance Sheet 50%

- (iv) Accounting Errors: Rectification of errors. Effects of errors on final accounts 10%
(v) Preparation of Bank reconciliation statement 10%
(vi) Methods of Depreciation: A brief study of the method of depreciation, preparation of assets accounts under Straight Line Method and Diminishing Balance Method 10%
(vii) Accounting of Non-Trading concerns: Distinction between Capital and Revenue Expenses, Preparation of Income and Expenditure Account and Balance Sheet from Receipt Payments Account and other information 10%
(viii) Preparation of Final Accounts from incomplete records 10%

Paper IV: Business Mathematics (70 Marks, 3 hours)

Sets, subsets, equality of two sets. Null set, Universal sets, Complement of a set, Union and intersection of sets, difference of two sets, Venn Diagram, laws of algebra of sets, De Morgan Laws and Cartesian product of two sets.

Real Numbers, absolute value and its properties

Relation, Functions and their graphs, Constant functions, polynomial functions, rational functions, exponential function and logarithmic function, functions in economic theory (demand, supply, consumption revenue and cost functions), equilibrium price

Permutations and combinations

Matrices, addition, subtraction scalar multiplication and multiplication of matrices, Null matrix, identity matrix, transpose conjugate of a matrix symmetric and skew-symmetric matrices, orthogonal matrices, determinants and their basic properties (without proof), singular and non-singular matrices, inverse of a matrix, adjoint of a matrix, solution of a system of linear equations using matrix theory.

Co-ordinate Geometry: Straight Lines.

Limit of a function, limits of sum, product and quotient of two function and their uses in evaluating limits:

$$\lim_{n \rightarrow \infty} \frac{1}{n} = 0 \quad \lim_{x \rightarrow 0} \frac{a^x - 1}{x} = \ln a \quad \text{and} \quad \lim_{x \rightarrow 0} \frac{x^a - a^x}{x - a}$$

Derivatives of explicit, composite and implicit functions, derivatives of exponential and logarithmic function, rules of differentiation (without proof) Higher order derivatives, maxima and minima

Indefinite integrals, antiderivative, standard integrals, basic rules of integration integration by parts, integration by substitution definite integral, simple properties of definite integral, total revenue from marginal revenue and total cost from marginal cost

Linear Programming: Graphical and simple methods.

Transportation and Assignment Problems: N-W corner rule, stepping stone method Modified distribution method simple assignment problems in production function of management, Dugrethack and its resolution, Introducing a dummy row and a dummy column in a transportation matrix

Books for Reference

1. Fundamental Methods of Mathematical Economics by Chiang (Mc Graw Hill)
2. Elements of Business Mathematics by Saha, Sharma and Saxena (Pitambar Pub. Co.)
3. Business Mathematics by Saichei and Kapoor (S. Chand Co.)
4. Mathematics for Economists by Taro Yamane (Prentice Hall of India)
5. Modern Business Mathematics by Adam Holts (Rinchart Abd Winston)
6. Quantitative Approach to Management by Cery Bronson and Richard Bronson

Paper V: Forms of Business Organisation (70 Marks, 3 Hours)

1. Meaning of the terms: Business, Industry, Commerce, Profession, Vocation
2. (a) Forms of Business Organisation: Sole Proprietorship, Partnership, Joint Stock Company, Co-operative Society and Public Enterprises
(b) Meaning, Characteristics, Formation (Except of Joint Stock Company) and Merits and Demerits of 2 (a) above
(c) Conversion of one form into another, wherever feasible
3. Company Formation Procedure
4. Share Capital-Classification of Share Capital, Shares, Stocks and Debentures, Share Certificate-Share Warrent-Share coupon

5. Company Management : Director : Position - Qualifications - Appointment - remuneration
Managing Director, Manager, Company Secretary : Position - qualifications - Appointment
Rights Duties and Responsibilities Powers - Duties - Responsibilities.
6. Company Meetings - Types and Procedure :
(a) Equity Shareholders : Statutory Meeting, Annual General Meeting, Extra-ordinary
General Meeting
(b) Preference Shareholder.
(c) Creditors : Debenture holders, Creditors and
(d) Meeting of Board of Directors, Minutes of the Annual General Meeting.
7. Business Combinations : Meaning & Causes, Forms and Types

Paper VII - Growth & Structure of Industries (70 Marks : 3 Hours)

SECTION I (60% Weightage)

1. Introduction : Concepts - Industry and Industrialisation; classification of industries on the basis of (a) nature, (b) ownership and (c) size. Industrialisation - significance and limitations
2. Location of Industries : Meaning and importance. Factors affecting industrial location - Economic and non-economic. Agglomeration and deglomeration tendencies. Concentration and dispersal of industries, industrial location decision. Dynamics of Industrial location.
3. Industrial Policy : Objectives of industrial Policy. Past and present Government policy in regard to public sector, Private sector, small scale and village industries, Industrial licensing, Technology and modernisation, Industrial sickness, District industries centres, Pollution control
4. Basis of Modern Industry : Human resources, growth of population and occupational structure employment in organised industries, Basic raw materials - Agro bases, Minerals and industrial. Energy resources - Coal, Petroleum and Electricity.
5. Cottage and Small Scale Industries : Meaning, characteristics and classification, importance and place in Indian Economy, Problems and Promotional measures, Items reserved exclusively for small scale industries. Development of industrial estates
6. Government and Industries : Government as entrepreneur, development of public sector industries and their performance. Government financial assistance to industries, Industrial (Development and Regulation) Act, 1971 - Scope, Objectives, industrial licensing, control of concentration of economic power : Promotional role of the Government - Tax incentives, for developing industries in the economically backward areas and incentives to small scale industries. Promotional Role of development banks

SECTION II (40% Weightage)

Study of growth and structure of any four of the following industries with special reference to : (1) Location (2) Raw Materials (3) Infra-structure (4) Technological changes (5) Labour (6) Marketing (7) Finance (8) Government control and regulation : (1) Cotton Textile Mills Industry (2) Iron and Steel Industry (3) Chemicals and Pharmaceuticals Industry (4) Fertilizers Industry (5) Automobiles Industry (6) Dairy Industry (7) Sugar Industry (8) Cement Industry (9) Coal Industry (10) Plastics Industry and Petro-Chemical Industry (11) Jute Industry (12) Paper Industry

Communication Skills : Paper I (Paper V)

Section I

- | | Marks |
|--|-------|
| 1. Text : 'The Wreck' by Rabindranath Tagore Pub. by Macmillan India Ltd. (Stories to Remember Series) | 15 |
| General Question or Short Notes | |
| 2. Comprehension of a given passage of about 300 words | 10 |
| 3. Paragraph Writing of about 200 words | 10 |

Section II

- | | |
|--|----|
| 1 (a) Formal Letters : | 5 |
| (i) Letter to a higher authority (ii) Letter to a Municipal Corporation/ Nagarpalika (iii) Letter to an Editor of a newspaper on a topic of public interest. | |
| (b) Business Letters : | |
| (i) Inquiries & Replies to them (ii) Quotations & Offers (iii) Orders (Placing, Execution, Cancellation) (iv) Applications | 10 |
- Note :** Lay-out of a business letter and essentials like Accuracy Brevity & Courtesy to be duly credited.

- | | | | |
|--------------------|---|----------------------------|---|
| 2. Grammar : | | | |
| (1) Articles | 2 | (5) Question-Tags | 2 |
| (2) Prepositions | 2 | (6) Words often confused | 3 |
| (3) Tenses | 4 | (7) Commercial Terms and | 4 |
| (4) Auxiliaries | 3 | | |

*As per lists attached.

List of Abbreviations

Abbreviations

- | | |
|----------|---|
| @ | - at or at the rate of |
| a/c | - Account |
| a/d | - after date |
| Ad | - Anno Domini, In the year of our lord |
| ad va | - ad valorem (acc. To the value of Goods), first rate |
| adv | - advice |
| advl. | - advertisement |
| afft | - affidavit |
| agt | - agent |
| a.m. | - Antimeridien |
| amt | - Amount |
| approx | - approximate |
| av | - average |
| bal | - balance |
| B/D | - Bank Draft |
| B/E | - Bill of exchange |
| b/f | - Brought forward |
| B/n | - Bank note |
| B/p | - Bills payable |
| B/R | - Bills receivable |
| B/s | - Bills of sale |
| C & F or | |
| CFR | - Cost and Freight |
| cheq | - Cheque |
| CHF | - Cost Insurance and Freight |
| CHF C | - Cost, Insurance, Freight and Commission |
| C/N | - Credit Note |
| COD | - Cash on Delivery |
| CWO | - Cash with order |
| Cr | - Credit |
| diff | - Difference |
| disc | - discount |
| D/N | - Debit Note |
| DO | - Delivery Note/Order |
| dr | - Debtor |
| ex | - Errors excepted |
| F & OF | - Errors & Omission Excepted |
| ex div | - Without dividend |
| ex ant | - Without Interest |
| FOB | - Free on Board |
| For | - Free on Rail |
| frt | - Freight |
| fwd | - Forwarded |
| gr | - Gross |
| ibid | - ibidem (from the same source) |
| in trans | - in transit to/on the way |

inc	incorporated
ins	Insurance
int	Interest
inv	Invoice
IOU	I Owe you
L.C	Letter of Credit
mem memo	Memorandum
NB	Nota Bene (Note Carefully)
no(s)	Number(s)
non seq	non sequence (it does not follow)
o/a	on account
o/d	on demand
OD	Over draft
OGS	On Indian Government Service
OS	Outstanding/Out of Stock

TABLE II
SECOND YEAR B.B.A.

Sr No	Subject	No of Papers	Lectures including Tutorials, Seminars, Group Discussion, Practical Studies and other Teaching Techniques (Per Week)	Distribution of Marks	
				External	Internal
				Examination	Evaluation
				Per Paper	Per Paper
1	Marketing Management	1	3	70	30
2	Personnel Management	1	3	70	30
3	Financial Management	1	4	70	30
4	Business Statistics	1	4	70	30
5	Communication Skills (English-II)	1	4	70	30
6	Company Accounts	1	4	70	30
7	Managerial Economics	1	4	70	30
8	Practical	1	-	70	30

- Note: (1) The duration of each lecture or tutorial, seminar etc. will be fifty minutes.
(2) A minimum of two guest lectures per year be arranged by experts and executives in the area concerned.
(3) For "Practical Studies" at SYBBA, the candidate should satisfy the following requirements:
(a) A visit to an unit (as recommended for SYBBA) to be followed by a report on the organisational, personnel and marketing (any one of them) aspects of such unit and.
(b) Submit a study report of the published annual reports (Covering three years) of a limited company or a public enterprise or a Co-operative.
(4) Three cases should be discussed in the class in the functional areas of marketing, personnel and Finance, during the year.

Part I

- Marketing in a changing world - Creating customer value and satisfaction What is marketing? Needs, Wants and Demands, Products, Value, Satisfaction and Quality
—Exchange, Transactions and Relationships, Markets, Marketing
—Marketing Management: Demand Management, Building
—Marketing Management profitable customer relationship
—Marketing Management Philosophies
—The production concept, the product concept
—The selling concept, the marketing concept

The societal concept.

- Strategic Planning and Marketing Process: Defining the marketing manager.
- Marketing Research and Information Systems: The marketing information system: Assessing information needs, developing information, distributing information. The Marketing Research Process: Defining the problem and research, objectives, developing the research plan, Implementing the research plan and reporting the findings, other marketing research considerations.
- Consumer markets and consumer buyer behavior: Model of consumer behavior. Characteristics affecting consumer behaviour: cultural factors, social factors, personal factors, psychological factors.
- Measuring and forecasting demand: Defining the market: Measuring current market demand, estimating total market demand, estimating area market demand, market built-up method, market factor index method, estimating actual sales and market shares. Forecasting future demand: Survey of buyers intentions, composite of sales force opinions, expert opinion, test marketing, time-series analysis leading indicators, statistical demand analysis.
- Markets: Segmentation, targeting and positioning for competitive advantage: Markets, market segmentation, bases of segmenting consumer markets, market targeting, Evaluating market segments, selecting market segments, Positioning: What is market positioning, positioning strategies, choosing and implementing a positioning strategies.
- Designing products: Products, brands, packaging and services: What is a product? Product classification, consumer products, industrial products, individual product decisions, product attributes, branding, packaging, product line, product mix.
- Designing products: New product development and product life cycle strategies: New product development strategy, New product success and failure, the new product dilemma, The new product development process: Idea generation, idea screening, concept development and testing, market strategy development, business analysis, product development, Test marketing, commercialization, speeding up new product development. Product life cycle: Introduction stage, growth stage, maturity stage, decline stage.
- Pricing process: Factors to consider when setting prices, Internal factors affecting pricing decisions, external factors affecting pricing decisions, General pricing approaches: cost based pricing, value based pricing.
- Placing products: Distribution channels: retailing and wholesaling: the nature of distribution channels: who are marketing intermediaries used - distribution channel functions: retailing, wholesaling.
- Promoting products: Advertising: sales promotion and public relations: advertising: major decisions in advertising: setting objectives, setting the advertising budget, advertising strategy, advertising evaluation, international advertising decisions: Sales, promotion: Rapid growth of sales promotion: purpose of sales promotion, setting sales promotion objectives: determine sales promotion tools: Developing the sales promotion programme: Public relations: The nature of personal selling, the role of the sales force: Major public relations tools: major public relations decisions.
- Promoting products: Personal selling and sales management: the role of personal selling: Managing the sales force: Designing the sales force strategy: structure: Recruiting and selecting sales people: Training sales people, compensating sales people, supervising sales people: evaluating sales people: Principles of personal selling: The personal selling process: steps in the selling process: relationship marketing.

Part II: Personnel management (70 Marks: 3 Hours)

- Foundation Course: Emergence of the Personnel Function in Industrial Administration and its growth: Scope of personnel function: personnel policies: organisation and functions of personnel department.
- Manpower planning: Concept, need, importance, types, objectives, environments, process and audit, job-analysis: job-description, job-standards and job-specification, manpower inventory.
- Selection process and methods: Recruitment: External and internal sources of manpower, selection: Basic selection model, selection methods-application, blanks selection tests, interview-medical examination placement.

- Mathematical expectation, probability distributions, some applications.

- [illegible]

- Paper I (a) Communication Skills* **Second Year B.B.A.**
Paper II (Theory)

Section I

1. Text: Macmillan stories for colleges (except stories 6 and 8) ed. by K. G. Sheshadri 15
2. Precis-writing of a passage of about 300 words. 10
3. Report-writing by an individual or a committee/comprehension of a stock-exchange-report (bullish, bearish, mixed)

for report writing

2. Selection of a suitable site for the proposed factory of a company.
3. Opening of a branch of a company.
4. Providing amenities and welfare facilities to the employees of a company.
5. Inquiry into the causes responsible for the decline in the sales of a company's products.
6. Accident in a factory, (e.g. fire).
7. Inquiry into the demands and grievances of a company's employees.
8. Inquiry into serious charges levelled against an employee of a company.
9. A branch manager's report to the head office regarding the performance of the rural branch under his control.

Section II

- | | | | |
|----|--|-------------------|----|
| | | Section II | |
| 1. | Business Letters | | |
| | (i) Sales promotion letters | | 10 |
| | (ii) Circulars | | |
| | (iii) Complaints & their adjustment | | |
| | (iv) Collection letters | | |
| 2. | Grammar | | |
| | (i) Change the voice | | 25 |
| | (ii) Transformation of sentences Positive to Negative without changing the meaning and Vice-Versa, Synthesis | | 3 |
| | (iii) Participles, Gerunds & Infinitives | | 4 |

- (iv) Idioms (30)
- (v) Phrasal Verbs (30)
- (vi) Words often confused (60)*
- (vii) Terms (30) Abbreviations (30)

Note: To be replaced by direct indirect narration w.e.f. 1999-2000

Paper V-B Communication Skills II (Practical)

- per V-B Communication Skills II (Practical)
- 1 The syllabus for the SYHBA, theory and aural/oral testing is sought to be aimed at training the students in developing skills in spoken english and comprehension of the spoken and conversational language, the students to be trained during tutorials in, manageable groups.
 - 2 To help students to express themselves adequately through english.
 - 3 To develop both loud and silent reading skill, this is aimed to help them read and understand the advance english.
 - 4 To help students learn and comprehend the written language viz comprehending company reports, market reports, business letters etc.
 - 5 To help public speaking and help participate in group discussions.

To achieve the above objectives, the following areas need to be covered, some of these areas, already covered in the F.Y.B.B.A., need to be developed further so, a repetition becomes inevitable.

- repetition becomes inevitable.
- 1 Listening Skills : The students need to develop this skill further by : (a) Listening to and understanding speeches, lectures, passages read aloud, pre-recorded cassettes and passages dictated (b) To listen to and understand conversations based on familiar situations barring politically biased conversations. (c) To listen to and understand speeches, lectures, conversations related to business management. (d) Taking notes of passages read aloud.
- 10

Recommended material

- | | | |
|----|-------------------------|-------------|
| 1. | Getting on the Radio | BBC |
| 2. | Choosing Your English | " |
| 3. | Modern Office Ltd | " |
| 4. | Language of Business | " |
| 5. | The Bellest story | BBC & OUP |
| 6. | Advanced English Course | Linguaphone |
| 7. | The Tiger's Eye | OUP |
- II. Reading : (a) A Reading of selected passages and understanding them. (b) To develop this skill the students be encouraged to read for pleasure such as personal essays, reading stories, reading and interpreting course material, developing vocabulary. (c) At least four books/other than prescribed texts to be recommended for reading such as essays, drama, novels, newspaper and magazines. 10
- III. Speech Making : To guide the students to develop speech making short speeches on business management, social topics be recommended, the student be given a list of topics (about ten/fifteen) for speech making/the student be given the topic for an extempore speech (must write about 5-10 mts to think on the topic/the student be given the freedom to speak on a topic of his/her choice maximum time permitted be 4-5 mts, the emphasis should be more on the oral communication component, rather than it be a test of his/her knowledge, the emphasis should be on the ability to put forth the thoughts in public. 10
- IV. Group discussion : The students be tested in groups of four/five, the topic again should be a management related subject or some current social problem. 25
- The topics for discussion should not be politically biased topics, each participant be given an even chance to speak, the examiner should initiate the discussion again the assessment be more on the communication skill rather than other components.
- V. Dictation : The students were asked to take down dictation at the first year of the programme, this year the students ability to give a dictation be tested, a pre-prepared piece/letter be given from which the examinee gives a dictation, emphasis should be on the spelling of dictated words, articulation, etc. for assessment. 10

TABLE III
THIRD YEAR B.B.A.

Sr. Subject No.	No. of Papers	Lectures Including Tutorials, Seminars, Group Discussion, Practical Studies and Other Teaching Techniques (Per Week)	Distribution of Marks	
			External Evaluation Per Paper	Internal Evaluation Per Paper
1. Manufacturing and Materials Management	1	3	70	30
2. Business Environment	1	3	70	30
3. Organizational Behaviour	1	3	70	30
4. Industrial and Commercial Laws	1	3	70	30
5. Taxation	1	3	70	30
6. Electives	1	3	70	30

(Any two of the following)

- Advanced Marketing Management
- Advanced Financial Management
- Management Accountancy
- Advanced Personnel Management
- Export Management
- Farm and Livestock Management
- Quantitative Techniques for Decision Making
- Data processing for Management
- Hospital Management
- Hotel Management
- Tourism Management

7. Project Work & Viva-voce

8. Computer Skills

Note: (i) The duration of each lecture or tutorial, Seminar etc. will be fifty minutes.

(ii) A minimum of two guest lectures per year arranged by experts and executives in the area concerned.

1. Manufacturing and Materials Management

(Effective from June, 1999) (70 Marks : 3 Hours)

(A) Manufacturing Management (60%)

(i) Introduction

- Production Management : Importance, scope, areas as a function of industrial organisation
- Manufacturing processes : Types, basic functions and applications.
- Production system : Continuous, batch-type, job-order type : Characteristics and applications
- Plant Location : Concept and factors governing plant location - City, Suburb and rural areas as plant site, industrial estates, selection of exact site
- Plant layout : Need for layout, types, relative merits and demerits, layout for different industries with ref. to production systems
- Materials Handling : Need, Objectives and Principles of MH, Classification and use of MH equipments

(ii) Work study

- Purpose, procedure and scope of work study, concept of productivity, work study and productivity, techniques of work study
Method study : Basic procedure, objectives, recording technique, charts-operation, process-chart, flow process chart, flow diagram, principles of motion economy, therbligs

Work Measurement : Objectives, procedure techniques-time study, elemental breakdown, performance rating, allowances, standard time and its uses and importance.

- Value analysis : Concept of value, Need and procedures of value analysis-output analysis

(iii) Production planning and control :

- Introduction : Objectives, organisation and benefits of PPC, functions-preplanning, routing, loading and scheduling, despatching, follow-up route sheet, gantt charts and their use in PPC.
- Project planning : Network techniques, introduction to CPM and PERT, critical path, floats and slack.

(B) Materials management (40%)

- Introduction : Scope, importance and objectives of materials management, integrated material management
- Industrial Purchasing : Importance, functions, objectives, duties and methods of purchasing, centralized and decentralized purchasing, purchasing procedure, purchasing through DGS and D, vendor selection and rating
- Store keeping : Importance, centralized and decentralized store keeping, organisation and functions of store, location of materials Stores layout, accounts of store Valuation of material issued from stores
- Inventory control : Inventory-need, importance and types, inventory control-importance, objectives, steps and advantages, inventory costs, EOQ-simple deterministic models, selective control techniques-ABC analysis, codification of materials

2. Business Environment

(Effective from June, 1999) (70 Marks : 3 Hours)

- Concept and importance of business environment, business environment and strategic management.
- The emerging scenario : Global scenario and the Indian scenario.
- Business and society : Changing concept and objectives of business, professionalisation, business ethics & culture, technological development and social change, cultural lag.
- Social responsibility of business to various related sections & community at large : The Indian situation, social audit
- Consumer rights, consumerism and business.
- Economic roles of government-regulatory, entrepreneurial, planning & economic development in India. The constitutional environment, expansion in state intervention.
- Monetary and fiscal policies. Monetary policy : measurement of money stock, monetary policy and money-supply, instruments of monetary policy, fiscal policy : the union budget, state budgets, finances of the union and states, the finance commission, importance of the budget
- Industrial policy from 1991 onwards.
- Protection of patents and trade marks : regulatory provisions and present scenario
- Privatisation : Expansion of public sector and its effects, the privatisation reaction, ways of privatisation, obstacles, benefits of privatisation, privatisation in India
- Price and distribution controls : objectives of price and distribution controls : Price policy in India, price control, direct controls, administered prices, dual pricing, subsidisation, the essential commodities and other laws, control production distribution and price, the public distribution system
- Money and capital markets : Meaning, importance, constituents, function, the Indian money market and capital market, nature of the Indian capital market, development of the market, recent development, capital market reforms
- Stock exchange & its regulations SEBI and its functions
- Industrial finance : Short - term, medium term and long term : Corporate securities : ownership and creditorship securities : new issues and its marketing : Underwriting of securities : internal financing (Retained earnings) : Public deposits
- Role of institutional financing in India (Study of individual institutions is not expected)
- Worker's participation in management
- Quality circles.

- 18 Globalisation and its impact.
- 19 Joint ventures.
- 20 Multinational corporations.
- 21 Regulation and promotion of foreign trade : introduction, objective and main provision of the foreign trade development and regulation act, 1992 export-import policy.

Recommended Text book

Business environment by Francis Cherumilam, Himalaya Publishing House (Edition : 1997, Reprint July, 1998) (Chapters : 1 to 5, 7 to 9, 11, 14, 20, 22 to 25, 29, 30, 36, 38, 39 & 41).

Industrial and Commercial Law

(Effective from June, 1999) (70 Marks : 3 Hours)

Section I

Industrial Law (35 Marks)

Evils of industrialisation, labour problems, principles of labour legislation, industrial adjudication and its guiding principles: Main provisions of :

1. The Industrial Disputes Act, 1947.
2. The Factories Act, 1948.
3. The Workmen's Compensation Act, 1923.
4. The Payment of Wages Act, 1948.
5. The Payment of Bonus Act, 1965.
6. The Trade Union Act, 1926.
7. The Employees Provident Fund Act, 1952.

Section II

Commercial Law (35 Marks)

Main Provision of :

1. Sales of Goods Act, 1930
2. Negotiable Instruments Act, 1882
3. Indian Contract Act, 1872 (ss. 1 to 75)

Taxation

(Effective from June, 1999) (70 Marks : 3 Hours)

I. Income-tax Act :

- (a) (i) Concept of Direct and Indirect taxes. Importance of Finance Act.
- (ii) Definitions of assessee, person; assessment year; previous year (Income year). Income : Gross total income, total income (Taxable income). Agricultural income, casual income. Company-domestic company, Indian company, industrial company, dividend.
- (iii) Residential status and incidence of taxation.
- (iv) Incomes exempt from tax.
- (b) Heads of Income : Introduction.
- (i) Specific heads of income and computation of total income.
 - (1) Salary income : Meaning of salary; basis of charge; incomes includable under this head. Allowances : Taxable and tax-free allowances; House rent allowance; Medical allowance; reimbursement of medical expenses; Retirement benefits : Gratuity; leave salary; voluntary retirement compensation valuation of perquisites. Provisions regarding employees provident fund. Specific deductions under this head of income.
 - (2) Income from House property.
 - (3) Profits and gains from business or profession : Incomes covered under this head, allowable deductions other than depreciation and conditions there of (U/s. 30, 31; 35(A), 35 (AA); 35(AB), 35 (ABB); 35 (D); 36, 37 (1), 37 (2B) and general deductions u/s 37). Depreciation (section 32). Concept of block of assets for tangible and intangible assets rules for computation of depreciation. Disallowable expenses u/s 40, 40 A (3), 40 A(12), 43 (B).

- (4) Capital gains : Chargeability. Meaning of capital asset-short-term and long-term; computation of capital gains; total or partial exemption of capital gains u/s 54, 54 B, 54EA & EB, 54 F.

- (5) Income from other sources.
- (6) Clubbing of income.
- (7) Carry forward and self-off of losses.
- (8) Deductions from gross total income u/s 80 ccc; 80 D; 80 DD; 80 DDB; 80H; 80 G; 80 GG; and 80 L. Tax rebate u/s 88 and 88 B.
- (ii) Filing of Tax Returns under prescribed parameters and time schedule; obtaining PAN and TAN.
- (iii) Advance payment of tax : TDS.
- II (a) The Gujarat Sales Tax Act, 1969 : Liability to pay tax. Registration, Licence, Recognition and Permit.
- (b) Central Excise Act : Definitions : "Manufacture", "Sale" and "Purchase"; Retail sale price u/s 4 A. Manufacturer's liability for payment of duty. Exemptions from duty. Registration of certain persons u/s 6. Relaxations for small scale sector. Concept of MODVAT under Central Excise Act.
- (c) Customs Tariffs of India : Levy of duty under sections 2, 3; 3 A; 7; 9.

* The Gujarat Sales Tax Act, 1969 by R. P. Shah (The Tax Publication) Ch. 1 & 2. Electives : (Any two to be selected from below given papers 6 onwards)

6. Advance marketing management (70 Marks : 3 Hours)

(Effective from June, 1999)

1. Production Management : Basic concepts of product - environment factors affecting product and brand management - product planning-product market strategies - branding decisions - brand image - brand equity. Brand personality and brand image.
2. Marketing Research : Scope of marketing research - integrating research with the decisions - project development - utilizing secondary data - major types of samples, sampling process and determination of sample size - deciding instruments for questionnaire. Field collection of data; data analysis including univariate, bivariate and multi variate analysis. Data processing and interpretation presentation and follow through of data.
3. Personal selling : Decision - 1 sales force size - sales force. Selection and training - compensation plans-supervision and control of sales force-strategic decisions of distribution channels. Distribution models - design and evaluation.
4. Advertisement : Advertisement goals : Exposure, awareness, attitude, sales creating. Advertising appeals : determination of advertising budget - specification of the media schedule, specification of copy and format.

7. Advanced Financial Management (70 Marks : 3 Hours)

(Effective from June, 1999)

- I. Valuation of securities : Time-scale of Maury. Significance of valuation of securities. Method of valuation of securities : valuation of fixed-income securities.
 - II. Capital Budgeting : Importance of capital budgeting. Tools and techniques of capital budgeting-analysis of risk and uncertainty-capital budgeting and Indian practices.
 - III. Cost of capital : Meaning, significance in financing and investment decisions. Cost of different types of funds. (Based on both book-value and market-value). Capital Asset pricing model approach-overall cost of capital.
 - IV. Capital structure : Meaning and significance; capital structure theories, -NI - NOI-traditional approach and Miller-Modigliani approach.
- Operating and financial leverage analysis. Concepts of financial break-even point and indifference point : concept of optimum capital structure.
- Long-term fund raising through security issues and other modes : Marketing of corporate securities. Right issues. Private Placement and Public Issues. Underwriting arrangement, Listing of Securities, Venture capital, lease financing.
 - VI. Management of working capital : Working capital planning financing of working capital-Role of commercial banks.
 - VII. Profit Planning and control : Role of profit planning dividend theories & policies.
 - VIII. Management information system (MIS) Concept of MIS and a brief idea about the system.

Recommended text-book : Financial management by M. Y. Khan and P. K. Jain
(Tata McGraw Hill)

Management Accountancy (70 Marks : 3 Hours)

(Effective from June, 1999)

1. Meaning, scope and limitations. 10%
2. Essentials of cost accounting : Elements of Cost-classification, allocation & absorption of overheads. Methods of costing-theory only. 10%
3. Standard costing & budgetary control. 25%
Standard costing : Meaning and significance-establishing standard costing system, analysis of various cost variances and sales variances-presentation of variances to management.
Budgetary control : Meaning and significance: Introduction and function of budgetary control system-key factor responsibility centres - Linkage of functional budgets and master budget-periodic budgeting continuous budgeting-flexible budgeting - performance budgeting-introduction to zero based budgeting.
(Note : With emphasis on preparation of cash budget and forecasted financial statements)
4. Cost-volume-profit analysis : Meaning and significance of marginal costing-contribution-break even point, margin of safety - angle of incidence-PV ratio, break-even-chart-application of marginal costing in profitability planning, pricing policies, and levels of activity planning-limitations of break-even analysis. 10%
5. Profitability analysis : Meaning of profit centre, difference between profit centre, cost centre and investment centre measurement of divisional performance by transfer pricing-market price or variable cost return on investment. 25%
6. Introduction to responsibility accounting : Cost benefit assessment-goal congruence-top management objectives - incentives - use of multiple goals - organization structure & responsibility accounting, format of feed-back report (In theory only). 20%
7. Decision making : Differential cost-relevant cost-application of differential cost analysis in following decision making area : Change in sales, adding a new product, make or buy decision, selling or further processing replacement of an equipment, lease or buy decisions, plant shutdown, plant abandonment. 10%
8. Reporting : External and internal, control reports and information reports. 10%
9. Introduction to computer based management information system (Theory only). Case study method may be adopted for : Standard costing : Cost volume profit analysis - profitability analysis - decision - making. 10%

Organizational Behaviour

(Effective from June, 1999)

1. Fundamentals of Organizational Behaviour :
(i) Working with people
(ii) Models of organizational behaviour
(iii) Social systems and organizational culture
(iv) International dimensions of organizational behaviour
(v) Managing communications
2. Motivation and reward systems :
(i) Motivational basics
(ii) Motivational applications
(iii) Appraising and rewarding performance
(iv) Employee attitudes
3. Leadership and Change :
(i) Leadership
(ii) Empowerment and participation
(iii) Managing change
(iv) Organizational development
4. Organizations and their effects :
(i) Structure, technology and people
(ii) Quality of work life and sociotechnical systems.

Behaviour in the organization :

5. Behaviour in the organization :
(i) Issues between organizations and individuals
(ii) Interpersonal behaviour
(iii) Group dynamics
(iv) Informal organizations
(v) Stress and counselling
(vi) Organizational behaviour in perspective.
6. Case Problems :
(i) Falcon computer company
(ii) The consolidated life company
(iii) The video electronics company
(iv) Elite electric company
(v) The patterson operation
(vi) The cavalry stables
(vii) TRW-oilwell cable division
(viii) United mutual insurance company
(ix) The palmer export site.

परिचित "३/४"

(समय ५५ म. (१))

Syllabus for M.Sc. (Part I)

MICROBIOLOGY

(Inforce from June, 1999)

There shall be 3 theory papers each of 3 hours duration and 3 practicals each of 7 hours duration. Each theory paper shall carry 100 marks and each practical shall carry 50 marks. 15 marks from each practical shall be reserved for term work and viva-voce examination.

Theory :

Paper I : Microbial : Taxonomy and Diversity

Paper II : Microbial : Physiology and Biochemistry

Paper III : Microbial Genetics and Biostatistics.

Every theory is divided in to five units. Each unit will have equal weightage while setting the question-paper. Questions or its sub-questions including the options will be set from the same unit.

The last date submission of term-work will be 1st March

Paper I : Microbial : Taxonomy and Diversity :

Unit I : Microbial evaluation and principles of taxonomy :

- Evolution of life forms, fossil records and extraterrestrial life
- Chromometer, RNA sequencing and evolution
- Species concept and microbial nomenclature
- Theories and methods of microbial classification : structural, biochemical and molecular
- Phylogenetic relationships of microorganisms.

Unit II : Prokaryotic diversity (a) :

- Principles of Biodiversity, characterization, magnitude and distribution of biodiversity, Generation, maintenance and conservation strategies, loss of economic value.
- Diversity of Archea : limit of microbial existence and archea as earliest life forms, extremotically halophilic, hyperthermophilic, thermoplasma, methanogenes.

Unit III : Prokaryotic diversity (b) :

- Diversity of Bacteria : Purple and green bacteria, cyanobacteria chemolithotrophs, methanotrophs and methylotrophs, sulphur and sulphate reducing bacteria, gliding, sheathed and budding bacteria, pseudomonads, Gram positive rods and cocci, Gram negative rods and cocci, lactic, propionic and acetic acid bacteria, actinomycetes.

Unit IV : Metabolic diversity among microorganisms :

- Energy : yielding, metabolism, photosynthesis, autotrophy, aerobic and anaerobic respiration, fermentation.
- Diversity of various major substrate utilization

Unit V : Diversity of eukaryotic microorganisms : An overview :

- Fungi
- Algae
- Slime molds
- Protozoa

Paper II : Microbial Physiology and Biochemistry :

Unit I : Microbial Growth :

- Microbial growth and growth kinetics
- Continuous culture as research tool
- Sporulation, spore germination, cell cycles, cell division synchronous cultures
- Yeast budding
- Fungal growth and cell differentiation.

Unit II : Microbial metabolism :

- Metabolism of carbohydrates, C_1 compounds, aromatic and aliphatic hydrocarbons, amino acids and lipids

Unit III : Biosynthesis and regulation

- Biosynthesis of purines, pyrimidines and major cellular metabolites

- Biosynthesis and biochemical regulation of antibiotics
- Co-ordinated control of amino acids synthesis
- Antibiotics and drug resistance.

Unit IV : Physiology and enzyme kinetics :

- Physiology and metabolism of N_2 fixation, bioluminescence signal transduction, chemotaxis, membrane structure and transport of solutes
- Mechanism of enzyme action, enzyme kinetics, activation and inhibition of enzyme, influence of various factors on enzyme activity
- Co-enzyme, isoenzymes, allosteric enzymes, ribozyme and abzyme.

Unit V : Biochemical techniques :

- Principles and application of gel filtration, ion exchange and affinity chromatography, GLC, HPLC, TLC, column chromatography, electrophoresis, ultra centrifugation.
- Principles of biophysical methods
- Principles and application of Tracer techniques in microbiology, NMR spectrophotometric and polarographic techniques.
- Analysis of macromolecules, carbohydrates, nucleic acids, lipids, proteins
- Analysis of elements C, N, P, H, O, S

Paper III : Microbial Genetics and Biostatistics :

Unit I : Molecular Genetics :

- Principles of Mendelian inheritance
- Chromosome structure and function
- Genomic organization
- Fine structure of prokaryotic and eukaryotic gene
- Extrachromosomal inheritance: plasmids, transposons, phage, mitochondria and chloroplast
- Mutation
- DNA Damage and repair
- Oncogenes.

Unit II : Genetics of selected microorganisms :

- T_2 , T_4 and λ (lambda Phage) Phages
- P_{22} , O_{X174} , MS_2 phages
- Virioids and prions
- Yeast and fungal genetics
- Genetics of Streptococci

Unit III : Recombination and regulation of gene :

- Gene transfer : Transformation, transduction and conjugation
- Recombination, general and non-homologous
- DNA replication, amplification and rearrangement
- Transcription and translation: process and control
- Environmental factors of gene regulation
- Operon concept: lac, ara, trp, his operons
- Heterochromatinization.

Unit IV : Principles and methods of genetic engineering :

- Protoplast fusion
- Principles of gene cloning, rDNA, characterization and expression.
- Shotgun, cot curves, sequencing of proteins and nucleic acids, Southern, Western, Northern and South-Western blotting techniques, PCR techniques, RFLP analysis
- Genomic library
- Application of genetic engineering.

Unit V : Biostatistics :

- Principles
- Data representation and measures
- Population, samples and inference
- Probability and distributions: binomial, Poisson and normal

- Significance tests
- Estimation and analysis of variance
- Regression analysis
- Principles of experimental designs
- Simple factorial experiments
- Applications

Practicals

Paper I :

- 1 to 5 : Isolation and identification of economically important bacteria
- 6 to 10 : Isolation and identification of economically important Fungi
- 11 to 14 : Biodiversity study of two isolates from bacteria from bacteria and fungi
- 15 : Effect of water activity on microbes of different environment
- 16 : Enzyme activity from soil

Paper II :

1. Evaluation of bacterial growth in liquid media.
2. Estimation of the D - period in exponentially growing microbial culture
3. Enzyme kinetic study
4. Estimation of carbohydrate
5. Estimation of proteins
6. Estimation of lipids
7. Chromatography
8. Electrophoresis
9. Demonstration of various equipments
10. Spectrophotometric examination of prodigiosin

Paper III :

1. Isolation of Nucleic acids
2. Isolation of Plasmids
3. Isolation of antibiotic resistance mutants
4. Isolation of pigment variant mutants
5. Characterization of mutants with altered pigmentation
6. Induction of mutant by radiation
7. Induction of mutant by chemicals
8. Gene transfer experiments
9. One step growth curve of bacteriophage
10. Application of statistical analysis
11. Determination of S. D. and significance test for the data.

Besides these practicals, other practicals of relevance shall be introduced as per the need

References books

- Berge's Manual of Systematic Bacteriology Vol. I-IV : Krieg and Holt
 The Prokaryotes Vol. I & II : Ed. Starr & others
 Smith's Introduction to Industrial Mycology : Onions et al
 Moulds & Filamentous Fungi in Technical Microbiology : O. Fassatova
 Biology of the Fungi : I. K. Ross
 A guide to identifying and classifying yeasts : Burnet et al
 Biology of the Conical Fungi : Cole & Kendrick
 Fundamentals of Fungi : E. Moore & Landecker
 The Yeasts : Rose & Harrison
 Brooks Biology of Microorganisms 8th edition : M. T. Madigan, T. M. Michael, M. M. John
 General Microbiology : Stanier et al
 Bacterial Metabolism : Gottschalk, G

- Microbial Physiology : Dawes & Sutherland
 Growth of Bacterial Cell : Ingraham et al
 Biochemistry of Bacterial Growth : Mandelstam et al
 Experimental Ecology : R. M. Atlas
 The Microbial cell Cycle : C. Edwards
 Principles and Practice of Disinfection, Preservation and Sterilization : Russel et al
 Methods in microbiology : Norris and Ribbons
 Energetics of microbial growth : F. H. Bailey
 Bacterial respiration and Photosynthesis : C. W. Jones
 Advances in Microbial Physiology : Volumes
 Annual Review of Microbiology : Volumes
 Scientific American : Volumes
 Microbiology : R. M. Atlas
 Quantitative Problems in Biochemistry : E. A. Dewas
 Harper's Biochemistry : Murry et al
 Gene Function : Robert Glass
 Molecular Biology of Gene : J. D. Watson
 Genetics as a Tool in Microbiology : Golver & Hopwood
 Genetics of Bacteria : Scaife et al
 The genetics of bacteria & their viruses : Hyes W.
 Biostatistics : Lewis A. E.
 General Genetics : I. Synder, D. Friedlander, D. Hartl
 Gene V : Benjamin Lewin
 Molecular Genetics of Bacteria : Snyder & Champness
 Laboratory exercise in Microbiology : Harley & Prescott
 Molecular Biotechnology : Primrose
 Gene cloning & Manipulation : Christopher Howe
 Statistics & Experimental Design : G. M. Clarke
 Analytical Biochemistry : D. J. Holme & H. Peck
 Practical Biochemistry : Wilson & Goulding
 Statistical Methods in Biology : N. T. J. Bailey
 Introduction to Biostatistics : R. N. Furthofer & Lee
 Current references will be added wherever necessary
 For each topic current references will be given as and when needed

M.Sc. Part II

Microbiology

(choice from June 1999)

There shall be 3 theory papers, each of 100 marks, and 3 hours duration. There shall be 3 practical, each of 7 hours duration. The practical examination will be of 150 marks of out of which 15 marks will be from each practical will be assigned on the basis of term work and oral examination

The last date for submission of term work will be 1st March

Theory

- Paper IV : Advance in Microbial Technology
- Paper V : Economic Microbiology
- Paper VI : Environmental Microbiology

Every theory paper is divided into five units. Each unit will have equal weightage while setting the question-paper. Questions of its sub-questions including the options will be set from same unit

Paper IV : Advances in Microbial Technology

Unit I : Elements of Microbial Technology

- Substrate modification

- Strain development and preservation
- Mixed culture and mixed substrate concept
- Bioreactor design and Scale-up
- Product modification.

Unit II : Selective Techniques and its Application :

- Immobilization techniques - enzymes, cells, enzyme-cells
- Tissue culture
- Monoclonal Antibodies
- Biosensors - development and application
- Bioassay techniques

Unit III : Upstream and Downstream Processing :

- Solid and liquid handling
- Sterilization
- Aeration and agitation
- Development of inoculum for bacterial, yeast and mycelial processes
- Recovery and purification of products.

Unit IV : Microbial Biomass Production :

- Biofertilizers : Nitrogen, Phosphorous, Sulphure and Iron
- Mycorrhiza
- Bioinsecticides
- Biopesticides
- SCO, SCP
- Edible mushrooms.

Unit V : Quality Assurance and Fermentation Economy :

- Influence of growth condition on inocula
- Influence of Post growth condition on inocula
- Screening for novel products
- Sterility testing, LAL test and bioassays
- Product safety analysis
- Patenting of Processes and products
- Economics of fermentation processes.

Paper V : Economic Microbiology**Unit I : Health Care Products**

- Antibiotics - Peptide antibiotics, penicillin, streptomycin
- Anticancer agents
- Steroids
- Vaccines
- Products from rDNA
- Gene therapy.

Unit II : Food and Beverages Products

- Modern brewing technology : Wine, beer, whiskey
- Traditional fermented foods
- Dairy products : Starter culture and cheese technology
- Amino acids : Lysine, glutamic acid
- Vitamins : B₁, B₂

Unit III : Industrial Chemical and Biochemicals :

- Organic acids : citric acid, acetic acid and gibberic acid
- Ethanol, acetone-butanol
- Amylase, Protease, lipase

Unit IV : Biofuels and Biopolysaccharides

- Biogas, gasohol, Biophotosynthesis of H₂O
- Dextran, xanthan
- Microbial surfactants.

Unit V : Biogeochemistry

- Biobleaching
- Biobenefaction
- MEOR
- Desulfurization of fuels.

Paper VI : Environmental Microbiology**Unit I : Concept Dynamics of Ecosystem :**

- Component
- Food chain and energy flow
- Types and complexity of ecosystems
- Community structure and organization
- Productivity and biogeochemical cycles
- Environmental pollution
- Environmental impact assessment
- Conservation strategies
- Microbial production of pollutants.

Unit II : Principles and Method of Waste Management :

- Characterization of waste
- Principles of biological waste treatments
- Waste treatment processes : activated sludge, fixed-film system, rotating biological contactor (RBC), fluidized-bed and packed-bed reactors, oxidation ditches, aerated lagoons, anaerobic digestion

Unit III : Bioremediation

- Principles
- Bioremediation techniques : in situ, solid phase treatment, slurry reactors, biofilters, fixed film and immobilized cells
- Biosorption and bioaccumulation
- Bioconversions
- Co-metabolism
- Bioremediation kinetics.

Unit IV : Biodegradation

- Principles
- Mechanisms : activation and enhancement, growth linked, detoxification, aerobic and anaerobic
- Hydrocarbons, lignin, dyes, pesticides, recalcitrant compounds
- Biopulping and biobleaching
- Microbial degradation of water based metal working fluids

Unit V : Biodeterioration

- Principles
- Microbial mechanism
- Testing methodology
- Prevention and control measures
- Biodeterioration of wood, petroleum, foods and feed, paints, leather, stone, pharmaceuticals, metal, rubber, plastic, paper.

*Practicals***Paper IV :**

1. Oxygen Transfer Rate (OTR)
2. Study of rheological changes of broth due to fungal growth
3. Recovery and Purification of fermentation products-enzymes, antibiotics, organic acids, alcohol
4. Influence of medium composition
5. Strain improvement study
6. Biooxidation Iron
7. Biobleaching study
8. Development of SCP

- १० Development of biofertilizer
10 Immobilization of cells and enzymes.

Paper I :

- 1 Production of antibiotics
- 2 Production of amylase
- 3 Production of Lipase
- 4 Production of Alcohol
- 5 Production of Vinegar
- 6 Study on Indian fermented food
- 7 Production of Organic Acids
- 8 Microbial Production of Polysaccharide
- 9 Microbial Production of Biosurfactants
- 10 Microbial Production of Biogas

Paper II :

- 1 Study of microbial ecology
- 2 Bioremediation of domestic water
- 3 Biodegradation of hydrocarbon
- 4 Biotransformation of metals
- 5 Bioremediation of metals
- 6 Biodegradation of stone/leather
- 7 Biodegradation of paper
- 8 Characterization of waste - physical
- 9 Characterization of waste - chemical
- 10 Analysis of drinking water

Besides these practicals, other practicals of relevance shall be introduced as per the need.

References books

- Microbial Mineral recovery - Ehrlich & Brierty
Genetic Engineering - S. Mitra
Recombinant DNA Methodology II - Ray We
Enzymes and Immobilized Cells in Biotechnology - A. L. Laskin
Environmental Microbiology - A Laboratory Manual - Papper et al
Biodegradation and Bioremediation - M. Alexander
Source or experiments for the teaching of Microbiology - Primrose & Wardlaw
Microbial Transformation and Degradation of toxic Organic Chemicals - Young & Cernigliola
Biotechnology of Filamentous Fungi - Finkelstein & Ball
Assessing Ecological Risks of Biotechnology - Lev R. Ginzburg
Microbiological Quality Assurance - Brown & Gilbert
Comprehensive Biotechnology Vol. II - Conney & Humphrey
Biotechnology Volumes - H. J. Rehm & G. Reed
Waste Water Treatment - Arcevala
Molecular Industrial Mycology - Leong & Burke
Topics in enzyme & Fermentation Biotechnology - Volumes by Wiseman
Bioprocess Engineering - P. K. Ghosh
Principles of Fermentation Technology - Stanbury, Whittaker & Hall
Superbugs - Horikoshi & Grant
N₂ fixation - Muller & Newton
Biodegradation - Volumes
Handbook of water and waste water treatment technology - Paul
Recent advances in biological N₂ fixation - Subbarao
New approaches in microbial ecology - Tiwari & Saxena
Genetic control of environmental Pollutants - Gilbert & Alexander
Microbial cell-cell interactions - Martin
Bacteria in their natural environment - Fletcher
For each topic the current references will be given as and when needed.

**Syllabus for M.Sc. (Part I)
BOTANY**

(Effective from June, 1999)

1. There will be one hundred marks for each paper and fifty marks for each practical.
2. Each practical examination will be of 50 marks and will be of five hours duration
3. There shall be atleast one botanical excursion for each year. It will pertain to different botanical regions even outside Gujarat State. The botanical excursion is highly essential for studying vegetation in its natural state.
4. Candidate shall be required to produce at the time of practical examination at the end of each year.

1. The laboratory journal and diary of field work duly signed by the teachers concerned from time to time
2. A set of micro-preparations or materials illustrating the subject-matter for each year

M.Sc. Part I

Paper I : Atrachocophyta-Algae, Mycology (Fungi) Plant Pathology & Bryophyta.

Paper II : Tracheocophyta-Plendophyta including fossils Gymnosperms including fossils Angiosperms and Embryology.

Paper III : Cell Biology, Bio-physics, Bio-chemistry and Physiology.

M.Sc. Part II

Paper IV : Genetics and genetic engineering, Biometrics, Plant breeding, Economic Botany and Ethnobotany.

Paper V : Plant Ecology with remote sensing, Plant geography and Anatomy.

Paper VI : Special Papers.

Paper I : Atrachocophyta - Algae, Mycology (Fungi), Plant Pathology and Bryophyta

Algae : (2-Units) :

- Principles of classification
- Classification according to Fritsch and Smith.
- * Cyanophyta
- Classification
- Ultra structure of a cell
- Range of thallus structure and branching
- Ecological distribution
- Reproduction
- Chlorophyta :
- Classification
- Ultra structure of a cell
- Range of thallus structure
- Types of chloroplasts
- Reproduction and Life-Cycles
- * Phaeophyta :
- Classification
- Range of thallus structure
- Reproduction and life Cycles
- * Rhodophyta
- Classification
- Range of thallus structure
- Reproduction - Carposporophyte and Tetrasporophyte and Life Cycles
- * General account of Chrysophyta, Euglenophyta and Bacillariophyta
- * Pigments of Algae
- * Coastal Algae of Gujarat
- * Economics importance of Algae : As food and Fodder, fertilizer, in treatment of sewage, industrial products of Algae, use of Algae in medicine and cosmetics, as tools for

physiological investigations.

- * Interrelationship of major groups of Algae : Cyanophyta, Chlorophyta, Phaeophyta and Rhodophyta.

Fungi : (1 Unit) :

- (a) A general knowledge of classification of Fungi by Aleuxopolous and Amisworth.
- (b) Physiology and interrelationships of major groups.
- (c) Heterothallism.
- (d) Spore and spore producing organs of Fungi.
- (e) Para Sexual Cycles in Fungi.
- (f) Sexuality in Fungi.
- (g) Development of Ascus and Basidium.
- (h) Economic importance of Fungi in industries medicines agriculture and waste recycling.

Plant Pathology : (1 Unit) :

- (a) Classification of Plant diseases on the basis of causative organisms and symptoms.
- (b) Host-parasitic interaction : Histological, Physiological and Biochemical.
- (c) Effect of weather and soil fertility on plant diseases.
- (d) Koch's postulates.
- (e) Fungicides.
- (f) Disease control : Quarantary, Microtoxic and Aphletovic.

Bryophyta : (1 Unit) :

- (a) Recent classification of Bryophytes by Rohdendorf and Proskauer.
- (b) Origin of Bryophytes.
- (c) Evolution of gametophytes.
- (d) Origin and evolution of sporophytes.
- (e) Alternation of generations.
- (f) Reproduction : (1) Vegetative (2) Sexual.
- (g) Fossil Bryophytes.
- (h) Experimental studies in Bryophytes.

Paper II : Pteridophytes, Gymnosperms, Angiosperms and Embryology

Tracheophyta : (Pteridophytes including fossils, Gymnosperms including fossils, Angiosperms and Embryology)

Pteridophytes (1 Unit) :

1. Classification of pteridophytes by Smith.
2. Interrelationships of the different groups of pteridophytes.
3. Evolutionary tendencies in ferns and classification of ferns.
4. Spore bearing organs in Pteridophytes.
5. Ecological theory.
6. Patterns of Gametophyte development and sex organs.
7. Asterosylon, Madecasma, Sigillaria and calamophyton.

Gymnosperms : (1 Unit) :

1. Different types of classification of Gymnosperms.
2. Comparative account and interrelationships of the groups of Gymnosperms.
3. Evolutionary tendencies in Gymnosperms.
4. General account of Male and Female gametophyte of gymnosperms.
5. Origin, rise and fall of Gymnosperms.
6. Fossil Gymnosperms : (1) Cycadofilicales (ii) Bennettiales (iii) Cordaitales (iv) Gnetales.
7. General Account of Pteridophytes.

Angiosperms (2 Units) :

- (a) Classification Systems.
 - (1) Bentham and Hooker System of Classification in detail with merits and demerits.
 - (2) Phylogenetic Systems of classification of Hutchinson, Bessey, Rendle (Outline only).
 - (3) Modern Systems of classification Takhtajan, Dhalgren, Cronquist (Outline only).
- (b) Classification Interrelationship, Systematic position of the following groups

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- (c) Origin of Angiosperms : Different theories showing of Angiosperms : (1) Ranales (2) Sympetalae (3) Helobial.
- (d) Modern Trends in Angiosperms : Chemotaxonomy, Serumatxonomy, ICBN and Numerical Taxonomy.
- (e) Flora of Gujarat State : Land flora including hill flora and forest flora and flora of plain, Desert and Semidesert Flora, Aquatic flora (Fresh water and Marine).

Embryology : (1 Unit) :

- (a) Reproductive cycles in Angiosperms.
- (b) Evolutionary tendencies in female gametophyte.
- (c) E. M. Structure of Male and Female gametophyte.
- (d) Haustorial behaviour of Embryosac, Endosperms and Embryo.
- (e) Behaviour of Embryosac during fertilization.
- (f) Role of Synergids and Polar nuclei during fertilization.
- (g) Classification of Embryo in Angiosperms (scheme only).
- (h) Application of palynology.
- (i) Apomixis -- Apospory.
- (j) Experimental Embryology.
- (k) Application in different field (tissue culture) and its significance.

Paper III : Cell Biology, Biochemistry, Biophysics & Plant Physiology

1.5 Unit :

- (1) The ultra structure of the cytoplasm Cell Biology.
 - (a) Cytoskeleton.
 - (b) Endomembrane system.
 - (c) Membrane organelles.
 - (d) Plant Cell Cytoplasm.
- (2) Techniques in cell biology.
 - (a) Microscopy (i) Light microscopy (ii) Electron microscopy.
- (3) Microtubules and microtubular organelles (Cilia, Flagella, Centriole).
- (4) Cytochemistry and functions of Golgi complex.
- (5) Molecular organization and functions of Mitochondria.
- (6) Molecular organization of chloroplast with special reference to thylakoids.
- (7) Cell cycle.
- (8) Chromosomes.
 - (a) Ultra structure of chromosome-Various models for structure.
 - (b) Satellite chromosome.
 - (c) Heterochromatinic.
 - (d) Chromosomal movements.
 - (e) Cell division.
 - (f) Mitotic apparatus.
- (9) Microbodies.
 - (a) Peroxisomes.
 - (1) Morphology of peroxisomes.
 - (2) Biosynthesis of peroxisomes.
 - (3) Function of microperoxisomes.
 - (b) Glyoxisomes.

Biophysics : (0.5 Unit) :

- (a) Bonds.
 - (i) Free radicals and charge transfer complex, measurement and role plant processes.
 - (ii) Oxidation reduction potential.
- (b) Nature of energy and its measurement.
 - Chemical energy -- Free energy.
- (c) Radio isotopes.
 - measurement and role in plant processes.

Biochemistry : (1 Unit) :

1. Lipids - Metabolism including and Oxidation
2. Amino acids - structure and function
3. Enzymes - classification, mode of action and Km value
4. Nucleic acid - structure and function of different kinds of DNA & RNA. Their role in protein synthesis and reverse transcription.
5. Nitrogen metabolism, Nitrogen fixation
6. Structure and functions of Vitamins and alkaloids.

Plant Physiology : (2 Units) :

1. Water relation in plants :
 - (a) Water potential - measurement and significance
 - (b) Transpiration :
 - (i) Recent theories of mechanism of stomatal movement
 - (ii) Law of perimeter
 - (iii) Antitranspirant.
2. Mineral nutrition
 - (a) Methods for studying mineral nutrition
 - (b) Micro-nutrients, role and deficiency symptoms
 - (c) Beneficial and toxic elements
 - (d) Uptake and translocation of mineral ions.
3. Translocation - Detailed account including all theories
4. Photosynthesis :
 - (a) Photosystem I & II, Composition, Function and Location in thylakoids
 - (b) C_3 cycle
 - (c) Different kinds of C_4 pathways
 - (d) CAM
 - (e) Photorespiration its Ecological and Biochemical adaptations
 - (f) Link between respiration and other metabolic reactions, Anapneumatic sequence.
5. Stress Physiology :
 - (a) Physiology of water stress development of internal water deficit in plants. Physiological response of crop plants to water stress and drought resistance
 - (b) Salt stress: Salt resistance, ion stress, mechanism of stress injury and resistance
6. Growth development and differentiation :
 - (a) Pattern of growth, development and differentiation
 - (b) Growth indices
 - (c) Kinds of developmental control
 - (d) Vernalization and photoperiodism
 - (e) Detailed account of phytochromes.
7. Hormones (Auxin, GA, Cytokinin ethylene and abscisic acid) :
 - (a) Biosynthesis - translocation
 - (b) Bioassay
 - (c) Mechanism of action
 - (d) General account of plant growth inhibitors.
8. Biological clock.
9. Senescence abscission general account of circadian rhythm.
10. Dormancy :
 - Environmental and Hormonal
 - Regulation of seed dormancy.
11. Germination : Biochemical and Hormonal aspects of seed germination.
12. Applications of plant physiology in crop improvement in agriculture, forestry and horticulture including role of plant tissues culture and Biotechnology.

Botany Practicals

Each practical is based on theory paper and in addition to this types studies at T.Y.B.Sc. are also included.

A batch of 15 (fifteen) students is strongly recommended for practicals so that due attention

can be given to the students.

Practical Paper I : (Based on Paper I)

(Arachnophyta : Algae, Mycology (Fungi), Plant Pathology and Bryophyta)

The following types are prescribed for practical - I.

Algae

Cyanophyta :

Chroococcus, Microcystis, Nostoc, Anabaena, Gloeotrichia, Lyngbya, Spirulina, Arthrospira.

Tolypothrix.

Chlorophyta :

Chlamydomonas, Pandorina, Gonium, Scenedesmus, Hydrodictyon, Chactophora, Cladophora, Bulbochactae, ULVA, Pithophora, Zygnema, Cosmarium and Closterium.

Phaeophyta :

Dictyota and Padina

Rhodophyta :

Nemalion, Gelidium, Gracilaria, Champia, Ceramium.

Charophyta :

Chara and Nitella.

Fungi

Mastigomycotina : Peronospora, Albugo.

Zygomycotina : Rhizopus.

Ascomycotina : Taphrina, Aspergillus, Erysiphe, Uncinula, Neurospora.

Basidiomycotina : Ustilago, Polyporus, Lycoperdon.

Deuteromycotina : Alternaria, Cercospora, Fusarium.

Plant Pathology

1. Smut of Sugarcane
2. Early blight of Potato
3. Red rot of Sugarcane
4. Rusts of wheat
5. Blight of Jatropha and Isapgul
6. Bunt of Rice
7. Downy mildew of grapes and Pea
8. Powdery mildew of grapes and Pea
9. Soft rot of ginger

Bryophyta

Hepatocapsida : Lunularia, Tarqonia, Dumortiera, Pellia, Fossombronia, Porcella

(Madotheca), Funaria, Pallavicinia.

Anthocerotopsida : Anthoceros, Notofylas.

Bryopsida : Sphagnum, Pogonatum

Practical Paper II

Pteridophyta : (Over and above the types taught at Graduate level, the following types should be taught ophioglossum, Botrychium, Azolla, Lycopodium.)

Ferns : Angiopteris, Gleichenia, Pteris, Lygodium Cheilanthes and Blechnum. Permanent slides of the following types to study Indusium, Position of Sor and group of Sporangia. Woodsia, Woodwardia, Cyrtia Hymenophyllum, Asplenium and Dryopteris.

Fossil : Rhynia, Lepidodendron, Lepidocarpon, Lepidostrobus, Lepidophyllum, Stigmaria.

Sphenophyllum, Annularia, Calamites.

The permanent slides of types prescribed for anatomy, reproductive structures etc. should also be studied.

Gymnosperms : Cupressus, Thuja, Podocarpus, Araucaria and Cedrus.

Fossils Gymnosperms : Lyginopteris, Lagenostoma, Williamsonia and its fructification.

Pentoxylon, Cordaites, Cordaitanthus, Cardiocarpus.

Embryology : Dissection of Shoot apex Hydrilla, Grass Ceratophyllum, Dissection of

Embryo, Endosperm Endospermhaustoria.

Material : Cucumber, Cucurbita, Raphanus, Pollen tube germination, Pollen grain Exine of

different plants, use of Camera lucida through P. S. of Emb slides

Angiosperms (Families) : Flowering plants of Local Flora and to find out genus species with the help of cook's flora.

Practical Paper III :

Cell Biology, Biophysics, Biochemistry and Plant Physiology

Cell Biology

- 1 Study of different stages of mitosis and meiosis
- 2 Study of cell organelles - Nucleus, chloroplast and mitochondria
- 3 Localization of the enzyme peroxidase
- 4 Electron micrographs of cell organelles

Biochemistry :

- 5 Standard curves of glucose, starch, protein and RNA
- 6 Determination of amylase activity
- 7 Determination of acid number and iodine number of lipids
- 8 Absorption spectra of chlorophylls

Plant Physiology (Major Experiments) :

- 9 Determination of osmotic pressure by plasmolytic method
- 10 Determination of diffusion pressure deficit of potato tuber
- 11 Estimation of Chlorophyll 'a' and 'b' total chlorophyll and carotenoids
- 12 Separation of chloroplast pigments by the chemical method
- 13 Separation of aminoacids by the papers chromatography
- 14 Determination of organic acids
- 15 Calculations of growth indices. (Minor experiments - demonstration type)
- 16 Demonstration of opening and closing of stomata by PGRs
- 17 Tetrazolium tests for dormant, dead and viable seeds
- 18 Bioassays of auxins, gibberellins and cytokinins
- 19 Study of photoperiodic and vernalization effects
- 20 Study of Red-far-red system

Practical Examination in Botany

Practical I : (Based on Paper I)

(Atrachophyta Algae, Mycology (Fungi), Plant Pathology and Bryophyta)

Date

Marks : 50

Time : 5 hours

- 1 Identify and classify giving reasons. Draw the labelled diagrams of the structures observed in Specimens, A, B, C and D 12
- 2 Describe the structural peculiarities with labelled diagrams as observed in specimens E, F and G 9
- 3 Expose the pathogens from the given material H and I. Make a labelled sketch and show your preparation to the examiner 10
- 4 Identify and describe briefly the slides J, K and L 9
- 5 (a) Journal 2
- (b) Submission and Viva-Voce 8

Practical Examination in Botany

Practical II : (Based on Paper II)

(Tracheophyta Pteridophyta, Gymnosperms, Fossils Angiosperms and Embryology)

Date

Marks : 50

Time : 5 hours

- 1 Identify and classify giving reasons. Draw the labelled diagrams of the peculiarities observed in Specimens, A and B. 8
- 2 Describe the morphological peculiarities observed in the specimens C and D. 8
- 3 Expose and dissect out the from the given material 'E'. 4
- 4 Dissect out shoot apex from given material 'F' and by the help of Camera lucida calculate the cell area 4
- 5 Refer the specimens G and H to their respective families giving reasons including floral formula and floral diagram. Draw labelled diagrams 8
- 6 Find out the genus and species of the given specimen 'I' by the help of Cook's flora 4
- 7 Identify and describe the slides 'J' and 'K'. 4
- 8 (a) Submission/Herbaria/Tour report 4
- (b) Journal and Viva-Voce 5

Practical Examination in Botany

Practical III

Marks : 50

Time : 5 hours

Date :

- 1 (a) Prepare a slide from the given material 'A' showing two stages of cell division. Draw a labelled diagram. Show your preparation to the examiner. 6
- (b) Prepare a slide from given material 'B' showing the presence of nucleus/chloroplast/mitochondria. 4
- 2 Prepare a standard curve of glucose/starch/protein/RNA. 8
- 3 (a) Perform the experiment as per given slip. Calculate your results. 10
- (b) Determine iodine number/acid number/amylase activity/absorption spectra of chlorophylls. 6
- OR 6
- (b) Separate amino acids by paper chromatography. Calculate RGR/NAR/LWR. 6
- 4 Comment upon 'C' and 'D' 6
- 5 Viva and Journal 10

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Circular 12 :

Following Industries have been selected for detailed study in the Paper of "Growth and Structure" of Industries at F.Y. B.B.A. Examination for the year 1999-2000 :

- (1) Sugar Industries
- (2) Fertilizer Industry
- (3) Coal Industry
- (4) Cotton Textile Industry

স্বর্জিত "৩/৬"
স্বর্জিত ক্রমিক : ৯৮-১১-১০৫৫

SECOND B.PHARM.
PHARMACEUTICAL CHEMISTRY (ORGANIC CHEMISTRY)

(In force from July, 1999)

3 hrs/week

Theory

The subject of organic chemistry will be treated in its modern perspective keeping for the sake of convenience, the usual classification of organic compounds

1. Structure and Properties Atomic structure, Atomic orbitals, Molecular orbital theory, wave equation, Molecular orbitals, Bonding and Antibonding orbitals, Covalent bond, Hybrid orbitals, Intramolecular forces, Bond dissociation energy, Polarity of bonds, Polarity of molecules, structure and physical properties, Intermolecular forces: Acids and bases
2. Stereochemistry Stereoselective & Stereospecific reactions, Isomerism and nomenclature and associated physicochemical properties, optical activity, stereoisomerism, specification of configuration, Reactions involving stereoisomers, conformations, chirality, chiral reagents, stereochemistry of Biphenyl, Allenes, Spiroacetal and Decalin
3. Structure, Nomenclature, preparation and Reactions of Alkanes, Alkenes, Alkynes, cycloalkanes, Dienes, Benzene, Polynuclear aromatic compounds, Arenes, Alkyl halides, Alcohols, Ethers, Epoxides, Amines, Phenols, Aldehydes and ketones, Carboxylic acids, Functional derivatives of carboxylic acids, Reactive intermediates - carbocations, carbanions, carbenes, nitrenes and nitrenium ions.
4. Nucleophilic aromatic substitutions, alpha, beta-unsaturated carbonyl compounds, conservation of orbital symmetry and rules
5. Electrocyclic cycloaddition and Sigmatropic reactions Neighboring group effects, Catalysis by transition metal complexes

Practicals

3hrs/week

1. The student should be introduced to the various laboratory techniques through demonstrations involving synthesis of selected organic compounds (e.g. aspirin, p-bromoacetanilide, anthraquinone from anthracene, degradation of nitrobenzene etc.)
2. Identification of organic compounds and their derivatives.
3. An exercise involving stereoselective synthesis of a compound Resolution of racemic DL-alanine or any other example
4. Introduction to the use of stereomodels

BOOKS RECOMMENDED

1. "Organic Chemistry" by Morrison Boyd
2. Organic Chemistry, Vol. I & II by Finar

SECOND B.PHARM.
PHARMACEUTICAL ANALYSIS - I

Theory

3 hrs/week

1. Significance of quantitative analysis in quality control, Different techniques of analysis, Preliminaries and definitions, Significant figures, Rules for retaining significant digits, Fundamentals of volumetric analysis, Selection of sample, Precision and accuracy, secondary standards, USP parameters for method validation, rejection criteria, Q test
2. Acid Base Titrations: Acid base concepts, Role of solvent, Relative strengths of acids and bases, Van Slyke equation, Law of mass action, Common ion effect, Ionic product of water, pH, hydrolysis of salts, Henderson - Hasselbalch equation, Buffer solutions, Buffer indicators, mixed indicators, Acid-base indicators, Theory of indicator, Choice of acid titration, applications in assay of H₃PO₄, NaOH, CaCO₃ etc. Differential titrations, biphasic titrations of salts like NaCl, Salicylate, NaCl, Benzoate etc.
3. Oxidation Reduction Titrations: Concepts of oxidation and reduction, Redox reaction, Strengths and equivalent weights of oxidizing and reducing agents, Theory of redox

- titrations, redox indicators, color representations, Measurement of electrode potential, Oxidation-reduction curves, iodometry and lodometry, Titrations involving Ceric sulphate, potassium iodate, potassium bromate, potassium permanganate, titanous chloride and Sodium 2, 6- dichlorophenol Indophenol
4. Precipitation titrations: Precipitation reactions, Solubility products, Effect of acids, temperature and solvent etc. upon the solubility of a precipitate, Argentometric titrations and titrations involving Ammonium or potassium thiocyanate, mercuric nitrate, and barium sulphate indicators, Gay-Lussac Method, Mohr's method, Volhard's method and Fajan's method

5. Gravimetric analysis: Precipitation techniques, Solubility products, the colloidal state, Supersaturation co-precipitation, Post-precipitation, Digestional washing of the precipitate, Filtration, Filter papers and crucibles, Ignition, Brief introduction of thermogravimetric methods, Thermogravimetric curves, Specific examples like barium sulphate, aluminum as aluminum oxide, calcium as calcium oxalate and magnesium as magnesium pyrophosphate, Organic precipitates
6. Theoretical considerations, and application in drug analysis and quality control of the following analytical techniques will be discussed

1. Non-aqueous titrations
2. Complexometric titrations
3. Miscellaneous methods of analysis such as: Diazotization titrations, kjeldahl method of nitrogen estimation, Karl - Fisher titration, Oxygen flask combustion, gasometry
4. Extraction procedure including separation of drugs from excipients
5. Chromatography: The following techniques will be discussed with relevant examples of Pharmacochemical products
HPLC, HPLC, GLC, HPLC, Paper Chromatography and Column Chromatography
6. Potentiometry
7. Conductimetry
8. Colorimetry
9. Fluorimetry
10. Abspectrometry

Books Recommended

1. Analytical chemistry by Gary D. Christian, John Wiley & Sons N.Y. 5th Edition, 1994
2. Vogel's I. B. of quantitative chemical analysis I.I.B.S. (U.K.) 5th Edition, 1996
3. Quantitative Analysis R.A. Day and A.L. Underwood, Prentice Hall of India 4th Edn, 1993
4. Quantitative chemical analysis by Collett H. Axon, Harper and Row, New York, 2nd Edn, 1968
5. Quantitative analysis by V. Alexeev, Mir Publishers, Moscow, First Edn, 1994
6. A.T.B. of Pharmaceutical Analysis by Kenneth A. Connors, John Wiley and Sons, 3rd Edn, 1987
7. Analytical Chemistry Principles by John H. Kennedy, Saunders College Publishing N.Y. 2nd Edn, 1990
8. Analytical Chemistry Handbook by John Dean, Mc Graw Hill Inc. N.Y. 1st Edn, 1995
9. Analytical Chemistry an introduction by Skoog, West and Holler, Saunders College Publishing, 6th Edn, 1994
10. Fundamentals of analytical chemistry by Skoog West and Holler, Saunders College Publishing 7th Edn, 1996
11. Analytical Chemistry by R.M. Verma CBS Publishers 2nd Edn, 1991
12. Bentley and Drivers I.B. of Pharmaceutical Chemistry revised by I.M. Atherden Oxford University press Bombay, 8th Edn, 1994
13. Pharmaceutical Analysis by T. Higuchi etc. CBS Publishers, New Delhi, First Edn, 1997
14. Basic concepts of analytical chemistry by S.M. Khopkar New Age International Publishers 2nd Edn, 1998
15. Instrumental methods of chemical analysis by Gien W. Ewing, Mc Graw Hill Book Company N.Y. 5th Edn, 1985
16. Instrumental methods of analysis by Willard etc. 7th Edn, 1998
17. Chromatographic methods by A. Brathwaite and F.J. Smith, Blackie Academic and

- professional London 5th Edn., 1996
- 18 Principles of instrumental analysis by Skoog and Leary. Saunders College Publishing Fourth Edn. 1992
 - 19 Quantitative analysis of drugs in pharmaceutical formulation by P.D. Sethi CBS Publishers N.D. 3rd Edn., 1997
 - 20 Practical Pharmaceutical Chemistry by A.H. Beckett and J.B. Stenlake. CBS Publishers N.D. 4th Edn. 1997.

1.1.1 Practical

3 hrs/week

The students should be introduced to the main analytical tools through demonstrations. They should have a clear understanding of a typical analytical balance, the requirements of a good balance, weights, care and use of balance, methods of weighing and errors in weighing. The students should also be acquainted with the general apparatus required in various analytical procedures.

- 1 Standardization of analytical weights and calibration of volumetric apparatus
- 2 Acid Base Titration : Preparation and standardization of acids and bases; some exercises related with determination of acids and bases separately or in mixture form; some official assay procedures e.g. boric acid should also be covered
- 3 Oxidation reduction Titrations : Preparation and standardization of some redox titrants e.g. potassium permanganate, potassium dichromate, iodine, sodium thiosulphate etc., some exercises related to determination of oxidizing and reducing agents in the sample shall be covered. Exercises involving potassium iodate, potassium bromate, iodine solution, titanous chloride, sodium 2,6 - dichlorophenol indophenol and ceric ammonium sulphate.
- 4 Precipitation Titrations : Preparation and standardization of titrants like silver nitrate and ammonium thiocyanate. Titrations according to Mohr's, Volhard's and Fajan's methods.
- 5 Gravimetric Analysis : Preparation of good crucible for filtration and use of sintered glass crucible. Determination of water of hydration. Some exercises related to gravimetric analysis should be covered
- 6 Non aqueous Titrations : Preparation and standardization of perchloric acid and sodium/potassium/lithium methoxides solutions. Estimations of some pharmacopoeial products.
- 7 Complexometric Titrations : Preparations and standardization of EDTA solution, some exercises related to pharmacopoeial assays by complexometric titrations.
- 8 Miscellaneous Determinations : Exercises involving diazotisation, Kjeldahl, Karl-Fischer, Oxygen flask combustion and gasometry methods. Determination of alcohol content in liquid galeicals, procedure (BPC) shall be covered.
- 9 Experiments involving separation of drugs from excipients.
- 10 Chromatographic analysis of some pharmaceutical products.
- 11 Exercises based on titrations using potentiometric technique. Determination of acid-base dissociation constants and plotting of titration curves using pH meter
- 12 Exercises involving polarimetry.
- 13 Exercises involving conductometric and polarographic techniques

SECOND B.PHARM. NEW SYLLABUS

Subject : Pharmaceutics - II (Physical Pharmaceutics)

Theory

3 hrs/week

1. Matter, properties of matter : state of matter, change in the state of matter, latent heats and vapor pressure, sublimation-critical point, Eutectic mixtures, gases, aerosols-inhalers, amorphous polyphism
2. Micromeretic and powder rheology : Particle size and distribution, average particle size, number and weight distribution, particle number, methods for determining particle size and volume, optical microscopy, sieving, sedimentation, determining surface area, permeability, adsorption, derived properties of powders, porosity, packing arrangement densities, bulkness & flow properties.
3. Surface and interfacial phenomenon : Liquid interface, surface and interfacial tensions, surface free energy, measurement of surface and interfacial tensions, spreading coefficient, adsorption at liquid interfaces, surface active agents, HLB classification, solubilization, detergency, absorption at solid interfaces, solid gas and solid-liquid interfaces, complex

films, electrical properties of interface

4. Viscosity and Rheology : Newtonian systems, Law of flow, kinematic viscosity, effect of temperature, Non-Newtonian systems, pseudoplastic, dilatant, plastic, thixotropy in formulation, determination of viscosity and thixotropy by capillary, falling ball, rotation viscometers, applications of Rheology in Pharmacy.
5. Dispersion systems : (a) Colloidal dispersions : Definition types, properties of colloids, protective colloids, applications of colloids in pharmacy, (b) Suspensions and emulsions : Interfacial properties of suspended particles, setting in suspensions, theory of sedimentation, effect of Brownian movement, sedimentation of flocculated particles, sedimentation parameters, wetting of particles, controlled flocculation, flocculation in structured vehicles, rheological considerations, emulsions; types, theories, physical stability.
6. Complexation : Classification of complexes, methods of preparation and analysis, applications.
7. Buffer equations and buffer capacity in general, buffers in pharmaceutical systems, preparation, stability, buffered isotonic solutions, measurements of tonicity calculations and methods of adjusting isotonicity.

3 hrs/week

Practical

1. Determination of latent heat, vapor pressure, critical point
2. Studies on polymorphs, their identification and properties.
3. Determination of particle size, particle size distribution and surface area using various methods of particle size analysis.
4. Determination of derived properties of powders like density, porosity, compressibility, angle of repose etc.
5. Determination of surface/interfacial tension, HLB value and critical micellar concentration of surfactants.
6. Study of rheological properties of various types of systems using different Viscometers.
7. Studies of different types of colloids and their properties.
8. Preparation of various types of suspensions and determination of their sedimentation parameters.
9. Preparation and stability studies of emulsions.
10. Studies on different types of complexes and determination of their stability constants.
11. Preparation of Pharmaceutical buffers and determination of buffer capacity.
12. Preparations involving tonicity adjustments
13. Determination of C.S.T. and partial or mutual solubility
14. Determination of C.M.C. of surfactant
15. Determination of isoelectric point, bloom rating of proteins and gelatin
16. Study of measurement of molecular weight of polymers macromolecular substances
17. Temp. dependency and viscosity study of binary systems

List of Books

- 1 Physical Pharmacy by Alfred Martin, Fourth Edition
- 2 Pharmaceutics : The science of dosage form design edited by M.E. Aulton (1998 edition)
- 3 Remington : The science & practice of Pharmacy, 19th edition, Volume I & II
- 4 Pharmaceutical Dosage forms and drug delivery systems by Ansel, Popovich & Allen Sixth Edition

SECOND B.PHARM. NEW SYLLABUS

Subject : Pharmaceutics - III (Pharm. Engg. Unit Operations II)

3 hrs/week

Theory

1. Evaporation : Basic concept of phase equilibria, factor affecting evaporation, evaporators, film evaporators, single effect and multiple effect evaporators, Mathematical problems and evaporation
2. Distillation : Raoult's law, phase diagrams, volatility : simple steam and flash distillations, principles of rectification, McCabe Thiele method for calculations of number of theoretical plates, Azeotropic and extractive distillation, Mathematical problems on distillation
3. Drying : Moisture content and mechanism of drying, rate of drying and time of drying

- calculations : classification and types of dryers, dryers used in pharmaceutical industries and special drying methods. Mathematical problems on drying.
- 4 Size Reduction and Size Separation : Definition, objectives of size reduction, factors affecting size reduction, laws governing energy and power requirements of a mill, types of mills including ball mill, hammer mill, fluid energy mill etc.
- 5 Mixing : Theory of mixing, solid-solid, solid-liquid and liquid-liquid mixing equipments.
- 6 Crystallization : Characteristics of crystals like purity, size, shape, geometry, habit, forms size and factors affecting them. Solubility curves and calculation of and heat balances around Swenson Walker Crystallizer, Supersaturation theory and its limitations, Nucleation mechanisms, crystal growth. Study of various types of Crystallizer, tanks, agitated batch, Swenson Walker, Single vacuum, circulating magma and crystal agitated batch, Swenson Walker, and its prevention. Numerical problems on yields.
- 7 Automated Process Control Systems : Process variables, temperature, pressure, flow, level and vacuum and their measurements. Elements of automatic process control and introduction to automatic process control systems. Elements of computer aided manufacturing (CAM).
- 8 Reactors and fundamentals of reactors design for chemical reactions.

Practicals

3 hrs/week

- Determination of rate of evaporation, steam distillation.
- Experiments based on steam, Extractive and Azeotropic distillations.
- Determination of rate of drying, free moisture content and bound moisture content.
- Experiments to illustrate the influence of various parameters on the rate of drying.
- Experiments to illustrate principles of size reduction. Laws governing energy and power requirements of size reduction.
- Experiments to illustrate solid-solid mixing, determination of mixing efficiencies using different types of mixers.
- Crystallization and smooth behaviour.
- Principles of extraction.
- Study of Stoke's Law and sedimentation.
- Rectification.
- Particle size determination by microscopic method.

List of Books

- The theory & practice of industrial pharmacy by Lachman, Lieberman & Kanig Third edition.
- Pharmaceutical dosage forms : Tablets, Volume 2 edited by Lieberman, Lachman and Schwartz Second edition.
- Pharmaceutics : The science of dosage form design by M.E. Aulton (1998 edition).
- Pharmaceutical engineering by K. Sambamurthy.
- Remington The science & practice of pharmacy Volume I & II 19th edition.
- Elementary chemical engineering by Max S. Peters.
- Unit operations of chemical engineering (5th edition) by McCabe, Smith & Harriott.
- Perry's chemical engineer's handbook by Robert Perry (sixth edition).
- Tutorial Pharmacy : (Cooper & Crun).

SECOND B.PHARM. NEW SYLLABUS

Subject : Pharmaceutical Jurisprudence

Theory

3.62 Theory

3 hrs/week

- Introduction :
 - Pharmaceutical Legislations - A brief review.
 - Drugs & Pharmaceutical Industry - A brief review.
 - Pharmaceutical Education - A brief review.
- An elaborate (practical oriented) study of the following :
 - Pharmaceutical Ethics
 - Pharmacy Act 1948

- Drugs and Cosmetics Act 1940 and Rules 1945.
 - Medicinal & Toilet preparations (Excise Duties) Act, 1955.
 - Narcotic Drugs & Psychotropic Substances Act 1985 & Rules.
 - Drugs Price Control Order.
3. A brief study of the following with special reference to the main provisions :
- Poisons Act 1919
 - Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954
 - Medical Termination of Pregnancy Act 1970 & Rules 1975
 - Prevention of Cruelty to Animals Act 1960.
 - States Shops & Establishments Act & Rules.
 - Insecticides Act 1968.
 - AICTE Act 1987.
 - Factories Act 1948.
 - Minimum Wages Act 1948.
 - Patents Act.
 - Trade & Merchandise Act.
 - Industrial Regulation Act (Pollution).
4. A brief study of the various Prescription/Non-prescription Products, Medical/Surgical accessories, Diagnostic aids, appliances available in the market.
- Note : The teaching of all the above Acts should cover the latest amendments.
- List of Books**
- A textbook of forensic pharmacy by B.M. Mital 8th edition.
 - A textbook of forensic pharmacy by N.K. Jain, Vallabh Prakashan.
 - The Patents Act 1970 with Patents Rules 1972.
 - The narcotic drugs & psychotropic substances Act, 1985 with the prevention of illicit traffic in narcotic drugs & psychotropic substances Act, 1988 alongwith Allied rules & orders, 1993.
 - The medical termination of pregnancy Act 1971, alongwith the medical termination of pregnancy rules 1975.
 - Insecticides Act 1963 together with insecticides rules 1971 and Insecticides (Price, stock, display and submission of reports) order 1986 alongwith selected notifications (Fifth edition 1998).
 - The drugs (Price Control) order 1987 alongwith New drug policy 1994 and Drugs (Price control) order 1995.
 - The Opium Act 1857 with opium Act 1878 and opium & revenue laws Act 1950.
 - The standards of weights & measures Act 1976.
 - The Pharmacy Act 1968.
 - The Prevention of illicit traffic in narcotic drugs and psychotropic substances Act 1988.
 - The Poisons Act 1999.
 - The minimum Wages Act 1948.
 - The Drugs & Cosmetics Act 1940.
 - The medical & toilet Preparation Act 1955.
 - Factories Act 1948.
 - Prevention of cruelty to Animals Act 1960.
 - Drugs & Cosmetics Act 1940 by Vijay Malik, Seventh Edition.
 - Pharmaceutical Jurisprudence by N.K. Jain (Vallabh Prakashan).

PHARMACOLOGY - I

(General and Systemic Pharmacology)

- General Pharmacology : Introduction to Pharmacology, Sources of drugs, Dosage forms and routes of administration, Mechanism of drug action, Drug Receptor Interactions. Combined effect of drugs, Factors modifying drug action, Tolerance, Dependence, Pharmacogenetics.
- Absorption, Distribution, Metabolism and Excretion of Drugs, Principles of Basic and Clinical Pharmacokinetics, Adverse Drug Reactions and ADME Drug Interactions.

Treatment of Poisoning

General Principles of Bioassay and Biostatisticalization, Evaluation of Drugs in Man (Clinical Trials) Measurement of Toxicity, Discovery and Development of New Drugs.

- 2 Pharmacology of Peripheral Nervous System.
 - (a) Neurohumoral transmission (autonomic and somatic).
 - (b) Parasympathomimetics. Parasympatholytics. Sympathomimetics including Bronchodilators and Antispasmodics, Adrenergic Receptor and Neuronic Blocking Agents. Ganglionic stimulants and Blocking Agents.
 - (c) Neuromuscular Blocking Agents
 - (d) Local Anaesthetics
 - 3 Pharmacology of Central Nervous System
 - (a) Neurohumoral transmission in the CNS
 - (b) General Anaesthetics
 - (c) Alcohols and Disulfiram
 - (d) Sedatives, Hypnotics, Anti-anxiety Agents and Centrally Acting Muscle Relaxants.
 - (e) Psychopharmacological agents (antipsychotics) Drugs Used in Affective Disorders and Hallucinogens
 - (f) Anti-epileptic drugs
 - (g) Anti-Parkinsonian drugs
 - (h) Analgesics, Antipyretics, Anti-inflammatory and Anti-gout drugs.
 - (i) Narcotic analgesics and antagonists including antitussives and expectorants.
 - (j) CNS and Respiratory stimulants
 - (k) Drug Abuse
 - 4 Endocrine Pharmacology
 - (a) Hypothalamic and Pituitary hormones
 - (b) Thyroid and Antithyroid Drugs, Parathormone, Calcitonin and Vitamin D
 - (c) Insulin, Oral Hypoglycemic Agents and Glucagon
 - (d) ACTH and Corticosteroids
 - (e) Androgens and Anabolic steroids
 - (f) Estrogens, Progestagens and Oral Contraceptives
 - (g) Drugs Acting on the Uterus
 - 5 Autocodes
 - (a) Histamine, 5-HT and their Antagonists
 - (b) Prostaglandins, Thromboxanes, Leukotriens and PAF
 - (c) Pentagastrin, Cholecystokinin, Angiotensin, Bradykinin and Substance P
- Practicals : B.Pharm. II : Pharmacology I*
- 1 Introduction to Experimental Pharmacology : Preparation of different solutions for experiments Drug dilutions, use of molar and w/v solutions in experimental pharmacology. Common laboratory animals and anaesthetics used in animal studies. Commonly used instruments in experimental pharmacology. Some common and standard techniques. Bleeding and intravenous injection, intragastric administration. Procedures for rendering animals unconscious-stunning of rodents, pithing of frogs, chemical euthanasia.
 - 2 Experiments on intact preparations : Study of different routes of administration of drugs in mice/rats. To study the effect of hepatic microsomal enzyme inhibitors and induction on the pentobarbitone sleeping time in mice. Experiments on urinary excretion of drugs/their metabolites.
 - 3 Experiments on Central Nervous System : Recording of spontaneous motor activity, stereotypy, analgesia, anticonvulsant activity, anti-inflammatory activity, and muscle relaxant activity of drugs using simple experiments
 - 4 To study the effect of autonomic drugs and local anaesthetics on rabbits eye
 - 5 To study the effect of various agonists and antagonists and their characterization using isolated preparations like frog's rectus abdominis muscle and isolated ileum preparations of rat, guinea pig and rabbit, viz
 - (a) To record the concentration response curve (CRC) of acetylcholine using rectus abdominis muscle preparation of frog.

- (b) To study the effects of physostigmine and d-tubocurarine on the CRC of acetylcholine using frog rectus abdominis muscle preparation of frog.
- (c) To record the CRC of 5-HT on rat fundus preparation.
- (d) To record the CRC of histamine on guinea pig ileum preparation.
- (e) To record the CRC of noradrenaline on rat anococcygeus muscle preparation.
- (a) To record the CRC of oxytocin using rat uterus preparation.
- (a) To study the effect of adrenaline on rabbit duodenum.

BOOKS RECOMMENDED

(Latest edition of following books)

1. Goyal R.K. - Practicals in Pharmacology (1994-95) 1st Edn. M/s B.S. Shah Prakashan, Ahmedabad.
2. Sheth U.K. et al - Selected topics in experimental pharmacology (1972) 1st Edn. The Kothari Book Depot, Mumbai.
3. Kulkarni S.K. - Handbook of experimental pharmacology (1993) 2nd Edn. Vallabh Prakashan, New Delhi
4. Ghosh M.N. - Essentials of Experimental Pharmacology Scientific Book Agency, Calcutta, 1984.
5. Rang H.P., Dale M.M., et al - Pharmacology (1995) 3rd Edn. Churchill livingstone, USA.
6. Satoskar R.S., et al - Pharmacology and Pharmacotherapeutics (1999) 16th Edn. Popular Prakashan, Mumbai.
7. Harvel, R.A., Champe P.C. et al - Pharmacology (1997) 2nd Edn. Lippincott - Raven Company, Philadelphia, New York
8. Craig C.R., Stitzel, R.E. - Modern pharmacology (1994) 4th Edn. Little Brown and Company, USA.
9. Goodman and Gilman's - The pharmacological Basis of Therapeutics (1996) 9th Edn. Pergamon Press, Singapore.
10. Seth, S.D. Text Book of Pharmacology. B.I. Churchill, 1997.

B.PHARM. SECOND YEAR
PHARMACOLOGY II

THEORY :

1. Study of drugs containing Resins & Resin combinations. Colophony, Podophyllum Jalap, Cannabis, Capsicum, myrrh, Asafoetida, balsam of tolu & balsam of peru, Benzoin turmeric and Ginger
2. Study of tannins & tannin containing drugs like Gambir, black catechu, Gall & Myrobalans.
3. Volatile oils : General methods of obtaining volatile oils from plants, study of volatile oils of Mentha, Coriander Caraway, Dill, Fennel, Cinnamon, Cassia, lemon peel, orange peel, lemon grass, Citronella, Spearmint, palmarosa, Gaultheria, Clove, Nutmeg, Eucalyptus, Chenopodium, Cardamom, Valerian, Musk, Sandalwood
4. Phytochemical Screening
 - (a) Preparation of Extracts.
 - (a) Screening of Alkaloids, saponins, cardenolides, bufadienolides, flavonoids, leucoanthocyanidine, tannins, polyphenols, Anthraquinones, Cyanogenetic glycosides and Amino Acid in plant extracts.
5. Study of fibres used in pharmacy such as Cotton, Silk, Wool, Nylon, Glass Wool, Polyester & asbestos.
6. Study of pharmaceutical aids like Talc, Diatomite, Kaolin, Bentonite, Gelatin & Natural colors
7. Study of the biological sources, cultivation, collection, commercial varieties, chemical constituents, substitutes, adulterants, uses, diagnostic, macroscopic & microscopic features & specific chemical tests of following groups of drugs containing glycoside :
 - (a) Saponins - Liquorice, Ginseng, Dioscorea, Sarsaparilla, and Senega.

- (b) Cardioactive sterols Digitalis, Squill, Strophanthus & Thevetia.
 (c) Anthraquinone cathartics Aloe, Senna, Cassia pod, Rhubarb and Cascara.
 (d) Others - Psoralea, Ammi visnaga, Ammi majus, gentian, siffon, chirata, quassia, kalmegh, picrothiza.

PRACTICAL

1. Identification of crude drugs mentioned in theory.
2. Study of fibres & pharmaceutical aids
3. Microscopic studies of 7 selected drugs (crude) & their powders mentioned under the category of volatile oils in theory & their chemical tests
4. General chemical tests for Alkaloids, glycoside containing crude drugs as mentioned in theory Study of powdered drugs

BOOKS - RECOMMENDED

1. Trease and Evans - Pharmacognosy 14th Edition. W.B. Saunders Company 1997.
2. Wallis T.E. - Textbook of Pharmacognosy Fifth Ed. 1997. CBS Publishers Delhi.
3. Tyler, Brady, Robbers - Pharmacognosy 8th Edition. K.M. Varghese Company, Bombay.
4. Kokate C. K., Purohit A. P., Gokhale S. B. - Pharmacognosy 4th Ed. 1996. Nirali Prakashan, Pune.
5. Sim S.K. Medicinal Plant Alkaloids IInd Ed. 1966 University of Toronto Press, Toronto.
6. Sim S.K. Medicinal Plant Glycosides IInd Ed. 1966 University of Toronto Press, Toronto.
7. Kulkarni R.D. Principles of Pharmacology in Ayurved. First Ed. 1997. Ram Sangam Graphics, Mumbai.
8. Cultivation and Utilization of Medicinal Plants. Edited by Atal C.K. and Kapur B.M. 1982, R.R.L. Jammu Tawi.
9. Cultivation and Utilization of Aromatic Plants. Edited by Atal C.K. and Kapur B.M. 1982. R.R.L. Jammu Tawi.
10. Indian Herbal Pharmacopocia Volume - I 1998. R.R.L. Jammu Tawi.

સેકન્ડ એક્ઝમેલેશીનો નવો અભ્યાસક્રમનો અમલ જૂન, ૧૯૯૯થી કરવાનો રહેશે.
 થર્ડ એક્ઝમેલેશીના અભ્યાસક્રમ માટે વર્ષ ૧૯૯૯થી ૨૦૦૦ સુધી આ યુનિવર્સિટીના પરિપત્ર ક્રમાંક ૧૮/ એકે.બી/૧૯૯૯, તા. ૧૮-૬-૧૯૯૭ના પરિપત્રમાં ફરિયાદો પ્રમાણે (થર્ડ એક્ઝમેલેશીની)ની પરીક્ષા લેવામાં આવશે.
 જૂન, ૧૯૯૯થી અમલમાં આવેલ ફરકે એક્ઝમેલેશીનો નવો અભ્યાસક્રમ નવ પેપરનો છે. આ અભ્યાસક્રમમાં એ.ટી.કે.ટી.નો ક્ષામ આપવા માટે Reg. 5(3) નીચે મુજબ સુધારવામાં આવે છે :

Reg. 5(3) :

"A candidate who secured 50% Marks in each of the paper except two for the First L.L.B will be granted A.T.K.T for Second L.L.B. and he will have to clear the papers by getting 50% or more marks in which he has to appear before or at any time simultaneously he passes the Second L.L.B examination (Whole Exam)".

સેકન્ડ એક્ઝમેલેશી. પરીક્ષા (નવો અભ્યાસક્રમ) જૂન, ૧૯૯૯
 બોન્સુર સેમિસ્ટર

પેપર	માર્ક્સ
(૧) ફેમિલી લો - ૧ (Family Law-I)	૧૦૦
(૨) લેબર લોઝ (Labour Laws)	૧૦૦
(૩) ટેક્ષેશન લોઝ (Taxation Laws)	૧૦૦
(૪) યુદીવટી કાયદો (Administrative Law)	૧૦૦
(૫) માનવ અધિકારો અને આંતરરાષ્ટ્રીય કાયદો (Human Rights and International Law)	૧૦૦

વિનર સેમિસ્ટર

પેપર	માર્ક્સ
(૧) જ્યુડીસિયુઝ (Jurisprudence)	૧૦૦
(૨) ફેમિલી લો - 2 (Family Law - 2)	૧૦૦
(૩) લેન્ડ લોઝ (Land Laws including ceiling and any other local Laws)	૧૦૦
(૪) Interpretation of Statutes	૧૦૦

SECOND L.L.B.

(New Syllabus in force from June, 1999)

Marks : 100

Paper - I : Family Law-I :

Note:—Family Laws Paper-I is not to be taught as traditional papers on personal Laws i.e., Hindu Law, Mohammedan Law, Christian Law, Parsi Law etc., as separate distinct and compartmentalised systems of law based on different religions. Instead the various statutory provisions and customs are to be examined in the context of constitutional values of equality, fraternity, justice (including gender justice, non-discrimination and freedom from exploitation). The approach shall be informative, critical and comparative :

1. Nature and development of concepts of Family and Family Laws
2. Sources and Schools of various Family Laws.
3. Marriage.
4. Dissolution of marriage.
5. Alimony, maintenance of wife, children and parents
6. Custody of Children
7. Remarriage.
8. Marriage and dissolution under special Marriage Act.

Statutory Materials (Bare Acts) :

- (i) The Special Marriage Act, 1954
- (ii) The Hindu Marriage Act, 1955
- (iii) The dissolution of Muslim Marriage Act, 1939
- (iv) Muslim Women (protection of rights on Divorce Act, 1986)
- (v) Parsi Marriage and Divorce Act, 1936
- (vi) Indian Christian Marriage Act, 1972
- (vii) Indian Divorce Act, 1869
- (viii) Hindu Adoption and Maintenance Act, 1956
- (ix) The Family Courts Act, 1984

Paper - II : Labour Laws

Marks : 100

(a) Industrial Relations

50 marks

(1) Industrial Disputes Act, 1947

- (i) Concepts : Appropriate Govt. Industry, Industrial Dispute, Workman, Unfair Labour Practice.

(ii) Authorities for settlement and adjudication of disputes :

- Works Committee
- Conciliation Officers
- Boards of Conciliation
- Courts of Inquiry
- Labour Courts
- Industrial Tribunals
- National Tribunals

Procedure, Powers and
Duties of Authorities

(iii) Concepts of Settlement and award

- Provisions and procedure relating to settlement and award.

(iv) Concepts of Strike, Lock-out, Lay-off, Retrenchment and Closure.

- Provisions and Procedure relating to Strike, Lockout, Lay-off, Retrenchment and Closure.

(v) Miscellaneous

- Conditions of service etc. to remain unchanged during pendency of proceedings. Sec. 33, 33A.
- Recovery of money due from an employer. Sec. 33O.
- Representation of parties.
- Notice of change.
- Voluntary arbitration
- Protection of persons.

(2) Bombay Industrial Relations Act, 1946 :

- Application of BIT Act
- Approval of Unions & categories of Unions
- Change
- Joint Management Council Settlement/Adjudication of Authorities
- Conciliation
- Arbitration
- Labour Courts
- Wage Boards
- Arbitration Tribunal
- Legality of Strike/lockout.

(b) Working Conditions, Standing orders, Trade Unions, Social security

50 marks

(1) Factories Act, 1948 :

- Concepts of Factory, Worker, Occupier, Manufacturing process, Hazardous process.
- Approval, License and Registration of Factories General duties of the occupier.
- Enforcement - Factory Inspectors. Functions/powers

- Provisions relating to Health, Safety, Special provisions relating to hazardous process, welfare.
- Working hours, holidays of adults, Adolescent, women
- Provisions relating to annual leave with wages.
- Penalties.

(2) Industrial Employment (Standing Orders) Act, 1946 :

- Application of Act.
- Concepts-Industrial Establishment, standing orders, Model standing orders.
- Certification of standing orders
- Interpretation of standing orders.
- Misconduct
- Departmental enquiry for disciplinary action.
- Subsistence allowance.

(3) Trade Unions Act, 1926 :

- Concepts of Trade Union, Trade disputes.
- Registration of trade unions.
- Rights and Liabilities of Registered Trade Unions.

(4) Employees State Insurance Act, 1948 :

- Concepts of Employee, Dependant, Family, Principal employer, Contribution
- Application of Act.
- Constitution of ESI Corporation Standing Committee Medical Benefit Council
- Benefits
- ESI Fund
- Purposes for which the Fund may be expended.
- Adjudication of disputes and claims.

Marks : 100

Paper III : Taxation Laws :

* Income Tax	... 50 marks
* Sales Tax	... 35 marks
- Central Sales-tax	
- Gujarat Sales-tax	
* Wealth Tax	... 15 marks
	100 marks

Statutory Materials :

- (1) Income Tax Act
 - (2) Central Sales Tax Act, 1965
 - (3) Gujarat Sales Tax Act, 1969
 - (4) Wealth Tax Act, 1957
- Chapters : 1, 2, 3, 4, 5, 6 and 8 only.
Sections 35 and 43.

Marks : 100

Paper IV : Administrative Law :

- 1 Nature and Development of Administrative Law.
- 2 Basic Constitutional Principles :
 - (a) Rule of Law (b) Separation of powers.
- 3 Classification of Administrative actions :
 - (a) Legislative, Executive and Judicial functions
 - (b) Judicial and Quasi-judicial functions
 - (c) Administrative and Quasi-judicial functions.
 - (d) Admin. Instructions/Guide lines/Directives.
- 4 Delegated Legislation :
 - (a) General Principles (b) Control and Safe-guards.
- 5 Concept of Natural Justice : Need and Principles of natural justice
- 6 Judicial Review of administrative action :
 - (a) Grounds (b) Judicial and other remedies.
- 7 Administrative Tribunals (including Arts. 323 A-B of Constitution of India) and Commissions of Inquiry.

- 8 Liability of the State
(a) Contractual liability (b) Tortious liability (c) Liability under public trust
9 Public Corporations
10 Lokpal and Lokayukta

Paper V : Human Rights and International Law :

Marks : 100

Marks 50

- Human Rights : Nature, concept - Origin and Development Importance - Classification.
1 Human Rights : Nature, concept - Origin and Development Importance - Classification.
2 Civil and Political Rights : International Instruments-Part III of the Constitution of India.
3 Social and Economic Rights : International Instruments-Part IV of the Constitution of India.
4 Human Rights and Vulnerable Groups : Rights of women, children, disabled, tribals, Aged and minorities - National and International Legal Developments - Part IV A of the Constitution of India. (Fundamental duties).
5 Police and Prison : Organization, powers, Rights of accused and prisoners - Custodial violence.
6 Enforcement of Human Rights and Remedies thereof - (i) International Agencies (ii) Regional and National Agencies such as NHRC, National Commission for Minority, NCW and State Commission, if any. (iii) Role of Legal profession (Judicial activism) and NGOs (iv) Remedies - PIL Writs. Art. 142.

International Law :

Marks 50

- 1 Nature, origin, Basic, Source and Subjects of International Law.
2 Relation between International Law and State Law.
3 Nature of State at International Law and State Recognition.
4 The State and the Individual :
(i) Nationality
(ii) Rights and duties of State with regard to aliens
(iii) Extradition, Rendition and Asylum.
5 Treaties
6 Peaceful and Forcible means of settlement of International disputes :
(i) War and its effects
(ii) The Law of War - International Humanitarian Law
(iii) Modes of termination of war
7 International Institutions (Powers and Functions) UNO, General Assembly, Security Council, International Court of Justice, ILO, WHO.

પરિશિષ્ટ "૩/૧૦"

અમારી કમીસ ટી (૧૦)

સેકન્ડ બી.કોમ.ના ટેક્સેશન પેપરમાં અને થર્ડ બી.કોમ. એડવાન્સ સેક્રેટરીશિપ અને ઓરિજિન પેપર દ્વારા અભ્યાસક્રમમાં સુધરો કરવામાં આવ્યા છે, જેનો અમલ જૂન, ૧૯૯૯થી કરવાનો રહેશે.

સેકન્ડ બી.કોમ. ટેક્સેશન પેપરમાં સુધરો (પરિશિષ્ટ ૧૯)

- ફિસ્ટ ટેક એક્ટ નામક થયે હોવાથી ટેક્સેશનના પેપરમાં મૂલ કાયદોની નીચે મુજબ સુધરવામાં આવશે જે :
(I) (1) The Income-Tax Act, 1961 ના મૂલ કાયદોમાં છે તે પ્રમાણે ૪% 15%
(2) (a) Computation of Income ના મૂલ 60%
(b) Exemptions, Deductions etc ના મૂલ 10%
(II) (a) The Wealth Tax Act, 1957 ના મૂલ 15%
(b) The Gift Tax Act, 1958 થયે અભ્યાસક્રમમાં રહેતો નથી. 100%
એવાનું આંકડેશિપ એન્ડ ઓરિજિન પેપર-૪ (થર્ડ બી.કોમ.)માં એકના વાર્ષિક વિસ્તારોમાં વિદ્યુત્ત્વ નામક કારવાનું પણ આવરી લેવામાં આવેલ છે.

પરિશિષ્ટ "૩/૧૧"

અમારી કમીસ ટી (૧૧)

T.Y.B.A./B.Sc.

STATISTICS Theory & Practicals (new Course)

(To be effective from June, 1999)

There will be five theory papers and three practical papers the following table presents the work-load, title, Marking Scheme for these papers.

Sr. Paper	Title	Work load in hrs. per week		Marks
		3L	1T	
1. Theory Paper - VI	Mathematical Statistics	3L	1T	70
2. Theory Paper - VII	Statistical Inference and Design of Experiments	3L	1T	70
3. Theory Paper VIII	Sampling Technique and Statistical Quality Control	3L	1T	70
4. Theory Paper IX	Mathematical Methods	4L	1T	105
5. Theory Paper X	Optional Paper-I Computer Programming Mathematical Programming OR Optional Paper - II Computer Programming and Optimization Techniques	4L	1T	105
6. Practical Paper - I		3 hrs.	35+15-50 duration	
7. Practical Paper - II		—do—	35+15-50	
8. Practical Paper - III		—do—	35+15-50	

Head of Passing :

Minimum marks required for passing in this examination is 36% of the aggregate marks in theory papers as well as in practicals and Viva-Voce examinations taken as separate head of passing.

A candidate who secures 48% minimum marks in theory and practicals will be declared to have passed the examination in Second Class.

A candidate who secures 60% or more marks in theory and practicals will be declared to have passed the examination in First Class.

Statistics Paper VI

(Mathematical Statistics : 3L 1T per week)

- 1 Chebyshev's inequality and its uses, law of large numbers with know variance, characteristic function and its elementary properties, inversion theorem with proof, Statement of Central limit law, Central limit theorem, Proof of Lendberg - Levy form only and statement of Liapounoff's theorem. 20%
2 Review of general properties of bivariate distributions and regression as conditional expectation Detailed study of Bivariate Normal Distribution with properties. Definition of compound distribution, properties of compound distributions (Poisson gamma, Binomial Poisson). 20%
3 Power-series distribution : Moments, recurrence relations for moments, cumulants and factorial cumulants Unique determination of a distribution from the first moment of power-series distribution. Determination of Binomial, Poisson, Negative Binomial Geometric and log-series distributions as a particular case of power-series distributions Multinomial distribution with properties : Moments, marginal and conditional distribution, M.G.F. etc. 20%
4 Use of orthogonal transformation and distribution of sample mean & sample variance of univariate normal distributions Chi-square, Student's t, Snedcor's F distributions and bivariate normal distribution with properties. Distribution of sample correlation coefficient based on sampling from bivariate normal distribution when $p = 0$. 20%
5 Distribution of order statistics : Definition of order statistics Distribution of largest and smallest order statistics. 20%

Books

- Mukhopadhyay, P. *Mathematical Statistics* (1996) (New Central Book Agency (P) Ltd, Calcutta-9)
 - Ch. 3: 3.10, Ch. 4: 4.6, Ch. 7: 7.5, 7.6, 7.7, Ch. 9: 9.6, 9.7, 9.8, Ch. 11: 11.1, 11.4, 11.6, Ch. 12: 12.3.1, 12.3.2, 12.3.3, Ch. 13: 13.2.
- David, H. A. *Order Statistics* (2nd ed., John Wiley)
 - Ch. 1: 1.1, Ch. 2: 2.1, 2.2, 2.3.
- Freund, J. E.: *Mathematical Statistics* (5th ed., 1994) Relevant topics of Chs. 5, 6 & 8
- Mood, A. M., Graybill, F. A. & Boes, D. C.: *Introduction to the theory of Statistics* (3rd ed.) Relevant topics of Chs. II, III, IV & VI
- Bogg, R. V. & Graig, A. T.: *Introduction to Mathematical Statistics*. Relevant topics of Chs. 1 to 5
- Kenney, J. F. & Keeping E. S.: *Mathematical Statistics-II* Relevant topics of Chs. IV & VI (N.B. - Idea of power series and its radius of convergence should be given).

Statistics — Paper VII

(Statistical inference and Design of Experiments : 3L 1T per week)

- Statistical Inference I : 50%
 - Estimation - Point estimation : Properties of estimators Consistency, unbiasedness, efficiency and sufficiency Rao-Cramer Inequality and its use to obtain minimum variance unbiased estimators (MVUE), Factorization Theorem for discrete case only, Rao-Blackwell theorem & its applications. 20%
 - Methods of Estimation : Method of moments and method of maximum Likelihood, properties of M.L.E. Statement only and proof of consistency property]. Solving of likelihood equations by iterative procedure (Method of scoring). 10%
 - Testing of hypothesis: Formulation of statistical hypothesis, two kinds of errors, critical region, level of significance, power and size of the test. Neyman Pearson theory of testing simple hypothesis versus simple alternative, UMP test for simple hypothesis versus one sided alternative for regular family of distributions Binomial, Poisson, Geometric, Normal and Exponential distributions]. Elementary idea of Likelihood Ratio test confidence interval for the mean and variance of a Normal distribution using pivots. 20%
- Analysis of Variance & Design of Experiments : 50%
 - Theory of Linear Estimation : Full rank model with uncorrelated variables. Definition of Best Linear Unbiased Estimators BLUE] with properties and statement of Gauss-Markoff Theorem. 10%
 - Analysis of Variance and basic Designs : One way and two way classification with fixed effect model, Principles of design of experiments, Completely Randomized Design (CRD), Randomized Block Design (RBD), Latin Square Design (LSD) and their relative efficiencies, Missing plot technique upto two missing observations. 20%
 - Factorial Experiments : Idea of factorial designs involving at the most four factors at two levels only. Yates' method of analysis. Simple ideas of total and partial confounding. 20%

Books

- Freund, J. E.: *Mathematical Statistics* (5th ed., 1994) Chapter 10, 11, 12.
- Mood, A. M., Graybill, F. A. & Boes, D. C.: *Introduction to the theory of Statistics* (3rd ed.) Relevant topics of Chs. VII, VIII, IX & X.
- Hogg, R. V. & Graig, A. T.: *Introduction to Mathematical Statistics* (3rd ed.) Relevant topics of Chs. VI, VII, VIII, IX & X.
- Mukhopadhyay, P. *Mathematical Statistics* (1996) (New Central Book Agency (P) Ltd., Calcutta-9) Relevant topics of chapters
- Rohatgi, V. K.: *An Introduction to Probability Theory and Mathematical Statistics*. Relevant topics of chapters :
- Dude Witz, E. & Misra, S. N.: *Modern Mathematical Statistics* (1988, Wiley E.)
- Silvey, S. D.: *Statistical Inference* (Pangun books). Relevant topics of chapters : 2 to 6.
- Das & Giri : *Design and Analysis of Experiments* Wiley East 1979] Relevant topics of Chapters : 1 to 3.

- Joshi, D. D.: *Linear estimation and design of experiments* Wiley East. 1987. Relevant topics of Chapters 7 to 10, 14 & 15.

Other books for reference

- Dharmadhikari, S. W. and Patel, G. C.
- Shah, S. M.
- Federer, W. T.: *Experimental Design : Theory and Application* MacMillan, 1955
- Cochran and Cox: *Experimental Design* Wiley East, 1950]
- Cochran, F. S.: *Introduction to Statistical Inference* Van-Nostrand Co., Inc., 1962
- Wilks, S. S.: *Mathematical Statistics* Wiley, 1962.

Statistics — Paper VIII

(Sampling Techniques and Statistical Quality Control : 3L 1T per week)

- Sampling Techniques. 40%
 - Stratified random sampling Need for stratification and its principle. Estimation of population mean, total, proportion and their variances. Different types of allocation : Proportional, Neyman allocation for fixed cost and for fixed sample size. Gain due to stratification and its evaluation from the sample. Use of strata sizes for improving the decision of an unstratified sample. 20%
 - Systematic sampling. Two-stage sampling efficiencies with simple random sampling. Comparison of stratified, Systematic and two stage sampling. 20%
- Statistical Quality Control (SQC) 60%
 - Importance of statistical methods in industrial research and practice. Specification of item and lot qualities. 30%

Determination of tolerance limits. General theory of control charts. Causes of variation in quality control limits, subgrouping summary of out-of-control criteria and theory of runs. Specification and modified control limits. Control charts for attributes : np-chart, p-chart, c-chart and u-chart. Control charts for variables : $\bar{x}$ - and R charts (S-charts). Comparison of control charts

- Acceptance Sampling: Principles of acceptance sampling, stipulation of good and bad lots, probability of acceptance, risk, single and double sampling plans for attributes and then 5% defective lots only of 100, 1000, 10000, ASN, Rectification, AOQL, average amount of inspection, OCPI, Dodge-Romney tables. 20%
- Sampling Plans for Variables : Derivation of single sampling plans for variables under 100% upper limit is specified and lot standard deviation is known. (a) Lower limit is specified and lot standard deviation is known

Advantages and disadvantages of sampling inspection plans for variables compared to sampling inspection plans for attributes

Notes: (a) All the questions are to be taken from the contents of 2.1 and 2.3 jointly

Books

- Cochran, W. G.: *Sampling Techniques* (3rd ed.) Chs. 5, 8 (8.1 to 8.6), 10 (10.1 to 10.6)
- Duncan, A. J.: *Quality Control and Industrial Statistics* (3rd ed.) Chs. VII, VIII (1, XI [1, 2, 3, 4, 11, 12], XV, XVI (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100), XX (1, 2, 3, 4, 6) and XXI
- Burr, E. S.: *Elementary Statistical Quality Control*
- Bowker, J. E.: *Sampling Inspection Plans for Variables*
- Grant, E. I. and Leavenworth, H. S.: *Statistical Quality Control* (4th ed.)
- Dharmadhikari, S. W. & Patel, G. C.: *Statistical Quality Control*

Statistics — Paper IX

(Mathematical Methods : 4L 1T per week)

- Analysis. 80%
 - Mean and intersection and other operation on sets. Equivalence relation, order relation. Function and its properties, real and complex valued functions, indicator function. 10%
 - Algebra of real numbers, order and completeness in R. Upper and Lower bounds, least upper and greatest lower bounds, n-th root of a positive real number. Dense set and Archimedean property. Decimal representation of real numbers. Algebra of complex numbers, Bernoulli and Cauchy-Sevara inequality.

12. Convergence of real sequences, limit theorems, monotonic sequences, Cauchy's completeness principle, Statement of Bolzano-Weierstrass theorem without proof, Cluster points, Cauchy sequence and Cauchy's completeness principle, Limit superior and limit inferior of sequences. Series of real terms and its convergence, condensation test, Cauchy's root test and D'Alembert's ratio test, Definition of Absolute convergence of series and statement of related theorem without proof.
13. Metric space, open and closed sets, limit points, isolated points, closure, interior, boundary and compactness of a set and statements of relevant theorems without proofs. 10%
14. Limit of a function, Cauchy criterion of limit of a function left and right limit of a function, Right & left continuity of a function, Bounded function, Types of discontinuity of a function with examples, Properties of continuity with reference to monotonic function, Infinite limits and limit at infinity, Limit of exponential and logarithmic functions, Definition of uniform continuity. 10%
15. Differentiability of a function, left and right derivatives, mean value theorems, L'Hospital's rule, Higher derivatives and Taylor's theorem, Maxima and Minima. 10%
- II. Integration 40%
21. Riemann-Stieltjes Integrals : Definition and existence of Riemann-Stieltjes integral, Integration and differentiation fundamental theorem of calculus and integration by parts. 10%
22. Jacobian of transformations : Jacobian of transformation Co-ordinate and polar transformations, implicit function theorem (Statement only), Existence theorem for inverse transformations, Functional dependence, Leibniz theorem with proof relating to differentiation under integral signs and its applications. 10%
23. Multiple Integration : Dirichlet's integral in n-dimension and its use in obtaining the volume and surface area of an n-dimensional sphere of radius r and sampling distribution of some statistics and examples based on multiple integration.

Books

1. G. Das and S. Pattanayak : Fundamentals of Mathematical analysis Tata McGraw Hill, N. Delhi (1987).
Chapter — 1 : Full
— 2 : Articles 2.1 to 2.7, 2.9, 2.11
— 4 : Articles 4.1 to 4.8, 4.10 to 4.12 [Theorems 21 to 25 without proof]
— 5 : Articles 5.1 to 5.6
[Theorems 8 to 14 without proof]
— 6 : Articles 6.1 to 6.9
— 7 : Articles 7.1 to 7.7.
2. Walter Rudin : Principles of Mathematical analysis (3rd ed.) McGraw Hill International Book Co. International Ed.
Chapter — 1 : Full (without appendix)
— 6 : 6.1 to 6.11, 6.14 to 6.16 (statement of theorems without proof) 6.20 to 6.22.
3. Apostol, T. M. : Mathematical Analysis (Addison Wesley)
Chapter — 7 : 7.1 to 7.5
— 16 : 16.12 to 16.16.
4. Gramer, H. : Mathematical Methods for Statistics
Chapter — 11 : 11 & 12
— 12 : 29 & 30.
5. Olmsted John, M. H. : Advanced calculus (Eurasia Pub. House, Delhi, 1970)
Chapter — 9 : 9.21 to 9.23, 9.30, 9.32, 9.34
— 10 : 10.26 and 10.27.

Reference books

1. Goldberg, R. R. : Methods of real analysis (Oxford & IBH Pub. Co., Calcutta, Bombay, New Delhi)
2. Vasavda & Raval : Ganitik Vishleshan (in Gujarati) Gujarat University Granth Nirman Board, Ahmedabad.
3. Kreyzi, G. E. : Advance Engineering Mathematics (Wiley Eastern).

Statistics — Paper X (Optional Paper-I)

(Computer Programming & Mathematical Programming : II 11 per week)

- I. Computer Programming 50%
1. Preliminary concepts of algorithm, flowcharts & their execution traces, a simplified model of a computer, elementary ideas about compiler and operating systems, Representation for characters and numbers.
2. Basic representation for integers and real numbers, effect of finite representation on numbers on properties of arithmetic operations e.g. overflow, underflow, associativity and normalization, some elementary methods overcoming these limitations.
3. Programming Basic : Constants and variables, arithmetic expressions, I/O statements, control statements, subscripted variables, logical expressions, functions and procedures, examples on programming. 50%
- II. Mathematical Programming
1. Elementary idea of convex sets, formulation of a general linear programming problem, solution by graphical method, Basic concepts and properties of simplex method, Artificial variable technique, Concept of duality, formulation of primal-dual pairs, Statement of fundamental theorem on duality and related problems.
2. Transportation Problem and Assignment Problem : Mathematical formulation of the problem, finding initial basic feasible solution, degeneracy in transportation problems, transportation algorithms for obtaining optimal solution, unbalanced transportation problems, mathematical formulation of an assignment problem, assignment algorithm, unbalanced assignment problems.
3. Game Theory : Two person zero sum game, maximum-minimax principle, games without saddle points - mixed strategies solution of 2×2 rectangular games.

Books

1. Balaguru Swamy, E. : Programming in BASIC (3rd ed.) Tata McGraw Hill)
2. Gottfried W.S. : Theory and Problems of Programming with BASIC (3rd ed., Schaum's Outline series, McGraw Hill).
3. Grover, P. S. : Computer Programming in BASIC (Allied Pub. Ltd)
4. Hadley, G. S. : Linear Programming (Addison Wiley).
5. Shrivastava, J. K. : Mathematics, Models & R (Tata McGraw Hill)
6. Kanti Swaroop and Manohar : Introduction to O. R.
7. Gass, S. I. : Linear Programming

Statistics — Paper X (Optional Paper - II)

(Computer Programming and Optimization Techniques : 41, 11 per week)

- I. Computer Programming 50%
1. Preliminary concepts of algorithm, flowcharts & their execution traces, a simplified model of a computer, elementary ideas about compiler and operating systems, Representation for character and numbers.
2. Basic representation for integers and real numbers, effect of finite representation on numbers on properties of arithmetic operations e.g. overflow, underflow, associativity and normalization, some elementary methods overcoming these limitations.
3. Programming BASIC : Introduction to PASCAL, Programming, fundamental arithmetic operation, Input and Output, Control statements, Basic ideas of structured programming, arrays, character and string manipulations, further discussion of structured programming, Additional concepts, e.g. Files, PASCAL set manipulations, the record and variant, Dynamic data structure. 50%
- II. Optimization Techniques
1. Inventory control : Basic functions of inventory, various costs associated with inventory decisions, Deterministic inventory problems - F.O.Q. problems with no shortages and finite production run, E.O.Q. problems with shortages and instantaneous production, E.O.Q. problems with shortages and finite production run, F.O.Q. problems with two price breaks.
2. Replacement Problems : Replacement of equipment of Age x is determined Gradually - value of the Money remains same, value of the money increases.
3. Sequencing Problem : Problems with n jobs and 2 machines or k machines with n jobs and k machines.

14. Simulation: Introduction to simulation modeling Monte-Carlo Model
15. Decision Analysis: Decision under uncertainty - The Laplace criterion, the maximin of minimax criteria, the maximax or minimax criteria, the Savage criteria, the Hurwicz criteria, decision under risk - expected monetary value criteria (EMVC), expected opportunity loss (EOL) expected value of perfect information (EVPI), decision, tree analysis

Books

1. Paul Chirlan - An Introduction to PASCAL.
2. V. Rajaraman - Computer Programming in PASCAL
3. Schaol Series - Programming in PASCAL
4. Hamdy A Taha - Operations Research.
5. Hiller and Lieberman - Introduction to O.R. (Holden-Day)
6. Sharma, J. K. - Mathematical Models in O.R. (Tata McGraw Hill)

Statistics - Practicals (New Course)

Practical Paper I

(3 hours duration : 35 + 15 = 50 marks)

Drawing of random sample from geometric, negative binomial, trivariate normal distributions. Fitting of geometric, negative binomial, truncated Poisson, truncated binomial distributions

Problems relating to Chi-square, t & F distributions (other than large & small sample tests), order statistics. Problems of allocation in stratified sampling, gain due to stratification, systematic sampling and two-stage sampling.

Practical Paper - II

(3 hours duration : 35 + 15 = 50 marks)

Estimation of parameter(s) by method of moments and maximum likelihood based on random sample from theoretical distributions.

Computation of probability of two types of errors and size of a test of hypothesis. Power of a test and drawing of power curves of MP,UMP tests of hypothesis concerning parameters of binomial, Poisson, Geometric, Normal and Exponential distributions. Problems concerning confidence intervals of mean and variance of a Normal distribution. Use of Fisher's z-transformation

Anova for one-way and two-way classification. Analysis of CRD RBD and LSD. Efficiency of these designs. Missing plot technique upto two missing plots only. Analysis of 2, 3, 2) factorial designs, using Yates's method

Practical Paper - III (I)

(3 hours duration : 35 + 15 = 50 marks)

Drawing of n, np, C, X, R and S charts. Drawing of OC, AOQ, AOI, ASN curves for single and double sampling plans for attributes. OC curves for single sampling plans for variables.

Programming problems with BASIC, various algorithms in programming and related problems. Formulation of linear programming problems, their duals. Solving LP problems by graphical & simplex methods. Transportation and assignment problems, balanced and unbalanced both. Problems based on game theory.

Practical Paper - III (II)

(3 hours duration : 35 + 15 = 50 marks)

Drawing of n, np, C, X, R and S charts. Drawing of OC, AOQ, AOI, ASN curves for single and double sampling plans for attributes. OC curves for single sampling plans for variables.

Programming problems with PASCAL, various algorithms in programming and related problems.

Problems based on Inventory theory, replacement, sequencing and decision theory.

* Practical Paper III (I) for all those candidates who offer optional paper I as Paper X

** Practical Paper III (II) for all those candidates who offer optional paper II as Paper X

उत्तर "3/12"
समय 8 (12)

SECOND YEAR B.A. HOME SCIENCE

(New course effective from June, 1999)

Principal Subject — Paper III

Family Meal Management (Food & Nutrition)

Duration of Exam : 3 hours; Theory : 50, Practical : 20

Objectives :

- To make students aware of making meal as a Management Process
- To help students in saving their time, energy, money.
- To help students know and evaluate consumer information sources.
- To develop skills in handling household goods in better way.
- To develop knowledge in community nutrition.
- To develop knowledge in field of dietary modifications.

Family Meal Management

(Food and Nutrition — Paper III (Main))

Duration 3 hours

Total marks : 50

(20%)

Unit 1 :

- (1) What is meal management ? Importance of meal management, factors affecting meal management.

(2) Balanced diet

- (i) Constitution of balanced diet
- (ii) Basic meal patterns, number of serving etc.
- (iii) Planning the balanced diet using basic food groups for various ages, stages & Occupation

(20%)

Unit 2 :

- (1) Infant feeding (a) Breast feeding and Bottle feeding
(b) Weaning food, ARI 3-6 months, 6-12 months.
- (2) Meal planning for pre-schoolers and school children including school lunches and pack lunches.
- (3) Meal planning for adolescents to youth including Hostel diet.
- (4) Meal planning for adult Man and Women.
- (5) Meal planning after fifty including diet for menopause.
- (6) Meal planning during pregnancy and lactation, factors affecting milk output.
- (7) Meal planning for athlete.

(20%)

Unit 3 :

Meal planning for different occasions :

- (i) Birthday
- (ii) Wedding
- (iii) Tea party
- (iv) House warming
- (v) Festival dishes - Diwali, Utrayan, Holi
- (vi) Chinese, Punjabi and Mexican recipes.

(20%)

Unit 4 :

- (1) State, National and International agencies dealing with health and nutrition
- (2) National programmes for combating the same :
 - (i) Mid day meal
 - (ii) Vit A Prophylaxis Programmes
 - (iii) Nutritional Anemia Prophylaxis Programmes
 - (iv) Iodine Deficiency Prophylaxis Programmes.

Unit 5 :

- (1) Major nutritional deficiency diseases :
 - Symptoms, causes dietary requirement
 - diet ary modifications
- (2) Assessment of nutritional status :
 - (i) Anthropometric Measurement
 - (ii) Clinical Assessment
 - (iii) Bio-Chemical Assessment
 - (iv) Diet Surveys

Practicals

Meal Management

- 1 Standardization
- 2 Balanced diet
- 3 Planning for Infant including weaning Foods.
- 4 Planning for Preschoolers
- 5 Planning pack lunches
- 6 Planning for Adolescents
- 7 Planning for Adult man/women
- 8 Geriatric Nutrition
- 9 Planning for pregnancy/lactation
- 10 Planning for Athlete
- 11 Diet survey (any one)
- 12 Planning for Birthday
- 13 Planning for Wedding
- 14 Tea party planning
- 15 Planning for house warming Party
- 16 Planning for any One Festival Diwali, Utrayan, Holi
- 17 Major deficiency :
 - (a) Vitamin A
 - (b) Vitamin B1
 - (c) Vitamin B2
 - (d) Niacin
 - (e) Vitamin C
 - (f) Iron
 - (g) Calcium
 - (h) Protein

Books for reference

- 1 Hand book of Food and Nutrition by Dr. M. Swaminathan, Published by The Bangalore Printing and Publishing Co., Ltd., No. 88 Mysore Road, Bangalore-560018
- 2 Human Nutrition and Diet by Dr. M. Swaminathan, ditto
- 3 Essentials of Food and Nutrition Vol. 1 and 2 by Dr. M. Swaminathan, ditto
- 4 SCN News, Mid 1994 Number 11 Maternal and Child Nutrition, Published by Dr. John B. Mason, Technical Secretary, ACC/SCN C/o WHO headquarters Avenue, App 20 CH 1211, Geneva 27, Switzerland
- Fax - (41-22) 7988891
- Phone (41-22) 7910456

Principal Subject—Paper IV

Household Equipment and Consumer Education

Duration 3 hours, Total Marks : 70, Theory Marks : 50, Practical : 20

Objectives

- To make students aware of factors effecting buying
- To help students become good buyer
- To help students know and evaluate consumer information sources.

Total Marks ... 20

443/04 410/04 : 11. 12-11-1996
(20%)

443/04 410/04 : 11. 12-11-1996

- To help learner defect adulteration and learn preventive measures.
- To help learner know rights and responsibilities of consumer
- To develop skills in handling household equipment
- To help students know manufacturing techniques of household equipment
- To learn care, upkeep and maintenance of household gadget

Household Equipment and Consumer Education : Consumer Education

Unit 1 :

- 1 Understanding commonly used, terminologies in consumer education
 - (a) Consumer (b) Producer (c) Market (d) Consumption (e) Utility (f) Conspicue Consumption
 - (g) Consumerism (h) Profit (i) Loss (j) Advertisement
- 2 Importance of good buymanship
 - (a) Arts of good Buymanship
 - (c) Factors that affect family buying behaviour such as
 - (i) Size and type of family
 - (ii) Income
 - (iii) Stages of family life cycle
 - (iv) Goals and values of the family
 - (v) Time available at their disposal
 - (vi) Market availability
 - (vii) Knowledge and Past experience
 - (viii) Sex of the buyer
 - (ix) Place of residence

Unit 2 :

- 3 Consumer's source of information their merits and demerits :
 - (i) Printed sources (ii) Visual sources (iii) Audio-visual sources
- 4 (a) Consumer's rights and responsibilities
 - (b) Consumer's problems
 - (c) Agencies solving and helping consumers in problem
 - (d) Protective services and law
- 5 Adulteration, its detection and prevention

Household Equipment

Unit III :

- 1 Importance of learning household equipment as a course of study
- 2 Trends in household equipments
- 3 Household materials, their characteristics use, care and cleaning Natural Alloys and nonmetals
 - Brass, St. Steel, Copper, Aluminum, Iron, Plastic, Glassware, Poteries
- 4 Finishes for household equipment
- 5 Manufacturing and assembling methods : their merits and demerits
- 6 General selection care, upkeep and maintenance of household equipments

Unit IV :

- 7 Commonly used household equipments-their working, selection use, care and upkeep (electric and non-electric)
 - (i) Small tools and utensils (non-electric)
 - (ii) Cooking equipments Toaster, equity toaster, oven, mixer, fridge, cooking-range, solar cooker, pressure-cooker, microwave oven, hand-beater, Roti-maker, ice-cream maker, sodamaker, flour-mill, stoves, hot-plate
 - (iii) Laundry equipments Washing machines, irons, dryer, ironing board, water-heaters, solar water heaters
 - (iv) Cleaning equipments Vacuum-cleaner, Brushes, moppers, brooms, Dish-washer and other small accessories
 - (v) Serving equipments Plates, serving dishes, bowls, spoons, hot cases and casseroles, tongs

Unit V :

- (i) Importance of standardization for household equipment, standardization procedure, and role of BIS in standardizing equipment.
- (ii) Labels and label informations as an aid in purchase and use of household equipment.
- (iii) Table-setting (a) Formal (b) Informal Table-setting for different occasions such as Indian Festivals and Indian style arrangement, Western style - breakfast, lunch, tea dinner, flower - party arrangements such as Birthday, Buffet, tea-party, Children-party.
- (iv) Flower arrangement - Rules and regulations for flower arrangement, tools and equipments used for flower arrangements, preparations of flowers before arranging selection of flowers and vases for various styles of arrangements. Types of flower arrangement - line arrangement Mass arrangement, combination of Mass and line, diminutive arrangement, Hoisting arrangement, Dry arrangement (Ikebana styles).

Practical

1. Learning simple test to detect common adulteration in foods such as any readymade, masala like turmeric, milk, cereal, oil, ghee, Atta, tea-leaves.
2. Survey of market to find out brand popularity in consumable goods and equipments.
3. Consumer survey of household equipment with reference to selection criteria, metals preferred, brand preferred.
4. Household survey to know use and care of equipment.
5. Identification of utensils their material and method of assembling.
6. Use, care and cleaning of commonly used equipments; electrical and non-electrical.
7. Minor repair and maintenance of the equipment such as changing fuse, connecting plug and cord, lubricating, replacing valve and washer, etc.
8. Practical on electrical equipments.
9. Use of non-electrical equipments.
10. Metal cleaning - Gold, Silver, Aluminium, Brass, Copper, Iron, Tin, Bronze, Steel, Minikar, etc.
11. Table setting :
 - (a) Indian style dinner party
 - (b) Western style-formal and informal
 - (c) Children's Birthday party
 - (d) Tea-party
 - (e) Flower-arrangement, Fresh and Dry.

Reference books

1. Peet and Thye : "Household equipment", John Wiley Eastern and Company, N.Y 1981.
2. J. K. Dehai's : "Impreing household equipment", Punjab Agri. University, 1976.
3. Acharya, M. S. : "ମା ଗୃହାଣ୍ଡୋର ଉପକରଣ" ପଞ୍ଜାବୀ ଭାଷା, ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟ, କଟକ.
4. Ogte, Verghese and George : "Home Management", Willey Eastern Co., New Delhi, 1984.
5. ପ୍ରାଣୀମା ମହାପାତ୍ର : ଗୃହ.
6. Pramila Mehra's : "Good House Keeping".
7. Dr. Asha Jain, Dr. Nilima Nayal's : ଗୃହାଣ୍ଡୋର ଉପକରଣ.
8. Rakha Sarin's : "The Art of Flower Arrangement".
9. S. R. Sharma & Vishay Kaushik's : "Home Management and House Keeping".
10. Thurenkranz F. Inman N. : "Equipment in the Home", Harper & Row.
11. Philip Ketter's : "Principles and Practices of Marketing" 9th edition, 1998.
12. Dr. Joshi's : "Markets in India".
13. Sundaram : "Elementary Economics".
14. Dr. Surendra C. Patel : "ଗୃହାଣ୍ଡୋର ଉପକରଣ ଓ ସ୍ୱାସ୍ଥ୍ୟ ସ୍ୱାସ୍ଥ୍ୟ", ସମ୍ପାଦିତ, ୧୯୯୯.

Principal Subject — Paper V
Home Science Education

Duration : 3 hours, Total Marks : 70

Objectives :

- To know Philosophy, Concept and Objectives of Home Science Education.
- To make students aware of teaching methods of imparting Home Science Education.

- To develop the Skills of handling, preparing projected and non-projected teaching aids
- To make students aware of role of a Home Science Teacher.
- To make students aware of set up of Home Science Department
- To make students aware of various vocations open to Home Scientist.

Unit I :

1. (a) Importance and need of Home Science Education.
- (b) History, present status and scope of Home Science in India.
2. (a) Measuring present concept and Philosophy of Home Science Education.
- (b) Structure of Home Science Education.
3. (a) Major Areas of Home Science Education.
- (b) Broad and specific objectives of Home Science Education.

Unit II :

4. The set up of Home Science Department at School and College Level
5. Role of Home Science Teachers : Preparations, qualities and responsibilities
6. Various vocations open to Home Scientist.

Unit III :

7. Teaching Methods in Home Science Education :
 - (a) Concept of Method and need of various methods in Home Science.
 - (b) Criteria for selecting a method.
8. Various methods as applied to Home Science Education considering their advantages, limitations, planning, implementations and evaluations - Lecture Method, Demonstration Method and Field Trip Method.

Unit IV :

9. Teaching Aids as applied to Home Science Education with reference to their advantages, limitations and specific principles involved in selection, planning, preparing and presenting each and namely Black-board, Bulletin Board, Flannel board, Magnetic board, Chart, Poster, Flash Card, Graph, Pictures, Photographs, Models, Puppets, Slides, Transparencies, Radio and Television.

Unit VI :

10. Adult Education Programmes :
 - Meaning and Philosophy
 - Need and Objective of Adult Education
 - Functions of Adult & Education Programmes
 - Urban and Rural Adult Education Programmes

References books

- (1) Introduction to Home Science by Arvind Chandra, Metro Polition Book Out, 1978, New Delhi
- (2) Teaching of Home Science by R. R. Das and Binita Ray, Starling Publications, 1972.
- (3) Methods of Teaching Home Science by Devdas - New Delhi, 1978.
- (4) Education and Communication for Development by O. P. Dhama and Bhatnagar, Oxford IBH Publications, 1985.
- (5) Selecting and Developing Media for Curriculum by Anderson R. H. 1976.

Clothing and Textile

First Subsidiary — Paper III

Duration : 3 hours, Total Marks 70, Theory : 50, Practical : 20

Objectives :

1. To help students learn selection of Family Clothing
2. To enable students learn various method of embroidery.
3. To develop the skill in clothing stitching for family.
4. To help students learn clothing management

Unit I :

1. Basic human need in clothing - Psychological, Sociological and Physiological needs. Relation of Clothing with Social background.
2. Psychological effects of clothing and relation of clothing to health and environment.
3. Principles of design - Proportion, Balance, Rhythm harmony and emphasis, Lines in cloths and their effect on human figure.

4. Colour. Quality of colour, Warm, Cool, tints, Shades, various colour schemes. Use of colours in clothing for different age groups and occasions

Unit II :

- Clothing and family budget
- Clothing Management for different garments
- Storage of different clothes for the family

Unit III :

- Selection of clothing for different age group considering occasion, activity need of individual and family budget
- Selection and buying of readymade garments. Merits and demerits of readymade garments
- Selection of suitable fabrics for furnishing. The criteria to be considered while selecting these such as slip covers, Curtains, bed linen and other household linens

Unit IV :

- Traditional Textiles of India - Peculiarities of textiles from various states in India - Kashmir, M. P., Gujarat, Maharashtra, Orissa, Assam, Punjab, Bengal, South India.

Unit V :

- Indian Embroideries - Peculiarities of different region embroidery styles. Punjab, Kasoti of Karnataka, Lucknow, Kashmir, Gold and Silver, Kantha of Bengal, Kutch and Saurashtra
- Knitting - Types of Knitting, their use merits and demerits :
(a) Two needle Knitting
(b) One needle Knitting
(c) Tatting
* *Practicals*
Children Clothing
1. Saree (With Patch Work)
2. Umbrella Cover (With smocking/Honey Comb)
3. Night dress
4. Boy's Shirt
5. Boy's half Pant
6. Pairs Wear (for girl)
7. Making sample of fabric painting, Make Table cloth and napkins.
- Embroideries - Making sample of Kashmiri, Phulkari, Lucknow, Kutch, Gold and Silver, Dhurvadi, Mirror Work, Patch Work
Knitting - Making sample at least one from the following
Two needle - Muffler, a scarf, booties, sleeveless sweater
Crocket (wool) - Small Mat
Tatting - lace

Reference books

- Indian Embroidery, S. Pandit
- Costumes and Textiles of India, Juma Hoo
- Romance of Indian Embroideries
- Textiles of India
- Textiles of India
- Textiles of India
- Textiles of India
- Text book of Clothing and Textile

First Subsidiary — Paper IV General Science (Chemistry)

Duration : 3 hours, Total Marks 70, Theory : 50, Practical : 20

Objectives

- To make students aware of chemicals and their uses
- To develop skills in handling and making household goods in better way

- To develop knowledge in field of insecticides, fertilizers and medicines
To develop knowledge in science and Technology

General Science

Unit I :

- Explanation of element, mixture and compound, structure of atom (only Rutherford Model) Atomic weight molecule, molecular weight, equivalent weight, valency, symbol, chemical formula equation
- Physical and chemical changes. Types of chemical reactions, factors affecting chemical reactions
- Acid - definition, strength, properties and useful acids. Base - definition, strong and weak bases, properties, useful bases. pH-scale explanation-measurement of pH, Importance of pH scale

Unit II :

- Solutions - types, methods of preparing standard solutions (only definitions)
- Methods of laboratory preparations. Properties and uses of following gases H_2 , O_2 , CO_2 , SO_2 , Cl_2 , Nitrogen cycle
- Water - drinking water, Impurities in water and their effects on health

Unit III :

- Metals - their physical properties, selection of metals for various purposes, Properties and uses of the following metals - Cu, Zn, Ag, Al, Fe, Ni, their alloys and their uses. Cate of different metals
- Colloids - difference of true solution, colloid and suspension. The colloidal state-types of colloidal solution (hydrophilic-lipophilic colloids) and their properties. Properties of colloids (General light Electrical properties) gels and emulsions
- Introduction to organic chemistry - sources of organic chemicals. Fractional distillation of petroleum. Importance of Organic compounds

Unit IV :

- Classification of organic compounds with examples-functional groups. Homologous series
- Plastics - types, properties, uses
- Fuels - types of fuels, composition and uses of LPG, Coal gas, Producer gas, Water gas, Coal gas
- Introduction to Drug and Medicines

Unit V :

- Formula and uses of the following compounds
(a) Inorganic Compounds
(1) Sodium Chloride (2) Potash Alum
(3) Baking Soda (4) Potassium Permanganate
(5) Sodium Hydroxide (6) Boric Acid
(7) Washing Soda (8) Hydrogen Peroxide
(9) Ammonium Carbamate (10) Bleaching Powder
(b) Organic Compounds
(1) Acetic Acid (2) Aniline
(3) Citric Acid (4) Ethyl Alcohol
(5) Tartaric Acid (6) Vanillin
(7) Phenol (8) Glucose
- Fertilizers - Types, Efficiency effects N.P.K. Fertilizers
- Insecticides - Classification D.D.T. B.H.C. Prevention of insecticides

Practicals

- To determine the acid value in oil/grease
- To determine the dosage of bleaching powder required for disinfection of different samples of water taken from different sources
- Study of coagulable and non-coagulable milk protein
- Determine the pH value of the given solutions of Washing soda, Lemon juice, Vinegar, Milk, Tomato juice, Water

8. To analyse the various constituents present in fruit vegetable juices : Potato, lemon, carrot, pineapple, orange, radish, apple, cane-sugar.
 - Test for acidic basic solution
 - determine Ph-value
 - Test for starch, carbohydrate, protein iron, phosphorus, calcium, magnesium, sodium, potassium
 6. Inorganic qualitative analysis of compounds, containing the following ions : Cu^{+2} , Fe^{+3} , Ca^{+2} , Mg^{+2} , Zn^{+2} , Na^{+} , Cl^{-} , CO_3^{+2} , SO_4^{+2} , NO_3^{+} .
 7. Organic qualitative analysis of the following compounds : Acetic acid, Benzoic acid, Salicylic acid, Glucose, Nephthalene, Urea, Aniline
- Chemical Technology :
- To prepare detergent powder
 - To prepare detergent cake
 - To prepare the candle
 - To prepare tooth-powder
 - To prepare soap (Bath)

Reference books

1. *Chemistry* by Prof. A. K. Kazi
2. Chemical Technology by Chandrakant Mehta
3. Rasikbhai Suthar, Jasbhai Patel and Chandravadan Brahmabhatt of B. S. Shah Prakashan, Pankore Naka, Ahmedabad.
4. Practical Chemistry - Modern Book Publishers.

Second Subsidiary — Paper VII
Marriage and Family Relationship
 Duration : 3 hours, Total Marks : 70

Objectives :

1. To help students realise importance of marriage as an institution.
2. To understand importance of family interaction.
3. To make learner aware of forms of marriages and their importance in human relations.

Unit I :

- (a) Importance of family as a Social institution :
 - (1) Definition of family
 - (2) Function of family
 - (3) Characteristics of family
 - (4) Types of family (1) Joint (2) Extended (3) Nuclear.
- (b) Role and relationships within the family. Family interaction as a function of changing times. Intergenerational relationships, sex, role, differentiation. Hierarchy of age, and sex.

Unit II :

Concepts of Marriage :

1. Meaning of Marriage
2. Definition of Marriage
3. Function of Marriage - Importance of Marriage
4. Types of Marriage : (a) Arranged marriage and love marriage (b) Inter-cast. Inter-regional and International marriage.
5. Importance of certain essential ones e.g., permanence, fidelity, companionship, love, happiness, ego support, approved sexual expression.
6. Preparation for Marriage :
 - (i) Understanding and evaluating one's ownself
 - (ii) Achieving emotional maturity
 - (iii) Qualities which an individual should develop to achieve happiness in marriage life.
 - (iv) Characteristics of an Ideal life partner.

Unit III :

1. What is an engagement :

- (i) It's importance
- (ii) The courtship period
- (iii) The engagement period
- (iv) Factors for breaking of engagement
- (v) The problems arise due to break of engagement.

2. Wedding Ceremonies :

- (i) Types of ceremonies observed in different communities in India
- (ii) Ceremonies in the west
- (iii) Importance of wedding ceremonies
- (iv) Good and harmful ceremonies
- (v) Modern trends

Unit IV :

1. Happy Marriage :

- (a) Sacrifices, love, appreciation, democracy, devotion etc.
- (b) Sources of dissatisfaction in laws, economic status, religious, husband wife relation, sex emotion.

2. Achieving adjustment in Marriage life :

- (i) Way of achieving adjustment
- (ii) Sexual adjustment in Marriage
- (iii) Adjustment to parenthood
- (iv) Changing role of women and adjustment in marriage
- (v) Sexual adjustment for the new comer :
 - (a) Importance of sexual satisfaction
 - (b) Factors working behind it, sex before marriage.

Unit V :

1. Divorce :

- (i) Meaning of divorce
- (ii) Causes of divorce
- (iii) It's effects on children, society and individual.

2. Special problems :

- (i) The unmarried person
- (ii) The working mother
- (iii) Childless marriage
- (iv) Reasons for family crisis
 - (a) (1) Unemployment (2) Illness (3) Death (4) Separation (5) Divorce
 - (b) Mechanisms for resolution of crisis :
 - (1) Planning for the future (2) Family counselling service (3) Legal remedies.

Reference books

1. લગ્નના અર્થ અને સંજ્ઞાન - શ્રીમતી સી. મી. શાહ.
2. લગ્નના નીતિ સંકલન - શ્રીમતી સી. મી. શાહ.
3. લગ્નના નીતિ સંજ્ઞાન - અમર.
4. લગ્નના નીતિ - અમર.

પરિશિષ્ટ "૩/૧૩"

કામકાજ ક્રમકે (૧૩)

તબીબી વિદ્યાભ્યાસની એક સભા તા. ૨૮-૪-૧૯૯૮ના રોજ ૪-૦૦ વાગ્યે યુનિવર્સિટી કાર્યાલયમાં મળી હતી. તેમાં સભ્યોની હાજરી નીચે મુજબ હતી :

- | | |
|-----------------------------------|---------|
| ૧. ડૉ. સી. એ. દેસાઈ (પીનશી) | હાજર |
| ૨. ડૉ. કેનન દેસાઈ | હાજર |
| ૩. ડૉ. એમ. એ. પરીખ | હાજર |
| ૪. ડૉ. કીર્તિ પટેલ | હાજર |
| ૫. ડૉ. આર. કે. પટેલ | ગેરહાજર |
| ૬. ડૉ. નીતીન લોરા | હાજર |
| ૭. ડૉ. અનુષ્ઠ મુનશી | ગેરહાજર |
| ૮. ડૉ. એમ. એમ. પ્રભાકર (આમંત્રિત) | હાજર |
| ૯. ડૉ. કે. સી. દવે (આમંત્રિત) | હાજર |
| ૧૦. ડૉ. મહેશ પટેલ (આમંત્રિત) | હાજર |

સભાનું પ્રમુખસ્થાન ડૉ. સી. એ. દેસાઈ, ડી-૧સી, 'મેડિકલ કેસ્ટી'એ સંભાળ્યું. સભામાં પુનઃ ચર્ચાવિચારણા અને નીચે મુજબ કરાવ પસાર કર્યા :

૧. એમ.સી.આઈ.નાં સુધારેલાં ધોરણો પ્રમાણે એમ.બી./બી.એસ. (કર્ડે, સેકન્ડ, થર્ડ તથા ઇન્ટર્નશિપ)ના નવા અભ્યાસક્રમ મંજૂર કર્યા અને તાત્કાલિક અસરથી અમલમાં મુકવા બહામણ કરી.

(પરિશિષ્ટ "અ")

૨. ક્લિનિકોથેરાપીના નવા સુધારેલા (૪ ૧/૨) વર્ષના અભ્યાસક્રમ મંજૂર કર્યા અને તાત્કાલિક અસરથી અમલમાં મુકવા બહામણ કરી.

(પરિશિષ્ટ "બ")

૩. મેડિકલ કોલેજમાં શિક્ષકોની નિમણૂક માટેનાં એમ.સી.આઈ. (૧૯૯૮)નાં સુધારેલાં ધારાધોરણોનો સંપૂર્ણતઃ સ્વીકાર કર્યા અને તેને તાત્કાલિક અસરથી અમલમાં મુકવા બહામણ કરી.

(પરિશિષ્ટ "ક")

૪. મેડિકલ કેસ્ટીના નવા અભ્યાસક્રમને કારણે કેટલાક વિષયો નવા ઉમેરાયા છે. અલગ કેટલાક વિષયોના માસખાતાં વંદરાર થયાં છે. આ ઉપરાંત ગુજરાત યુનિવર્સિટીના પરિપત્ર નં. એફ/૭/૨૫.૧૭૭/૮૫, તા. ૧૭-૪-૧૯૮૫ અને નં. એફ/૭/૧૮૭/૧૯૮૫, તા. ૧૮-૪-૧૯૮૫ તથા અન્ય પરિપત્રો દ્વારા યુનિવર્સિટી દ્વારા લેવાની પરીક્ષાઓમાં મહેનતશાળી અને બહાસી દરમાં વોલ જણો વધારી તેનો અમલ માર્ચ, ૧૯૯૪થી કરવાનું જણાવેલ છે અને તે પ્રમાણે ચુકવણી શરૂ પણ કરેલ છે. પરંતુ મેડિકલ કેસ્ટીમાં અનુક્ર કક્ષામાં શરતચુકથી દરમાં સુધારો કરવાનો સી.એ.એ.એ. છે.

ઉપરાંત બાળોના અનુસંધાનમાં મેડિકલ કેસ્ટીની વિવિધ પરીક્ષામાં મહેનતશાળી તથા બહાસી દર આ સાથે પરિશિષ્ટ પ્રમાણે મંજૂર કર્યા અને તાત્કાલિક અસરથી અમલમાં મુકવા બહામણ કરી.

(પરિશિષ્ટ "૮")

૫. જે કે શિક્ષકોની નિમણૂક માટે ઓર્ડર, ૯૭ અન્વયે વરણીસંમિતિની રચના માટે જે આગ્રહ રાખવામાં આવે છે તેમાં કેટલાક શિક્ષકો કે જેઓ ૩૧ ડિસેમ્બર, ૧૯૮૫ પહેલાં નિમુક્ત થઈ ગયેલ હોય અને જે કે કોલેજમાં હાજર થયેલ હોય તેવા કેસમાં ઓર્ડર, ૯૭નો આગ્રહ નહીં રાખવા ગ્રાહ્ય રાખવું અને યુનિવર્સિટીની માનના આપવી. સરકાર સમુપચારક બાદ નીમણેલા શિક્ષકો માટે ઓર્ડર, ૯૭ અન્વયે વરણીસંમિતિનો આગ્રહ રાખવો. ત્યાર બાદ સભાનું કામકાજ પૂરું થયું હતું.

ડૉ. સી. એ. દેસાઈ

ડીન, મેડિકલ કેસ્ટી, ગુજ. યુનિ.

તબીબી વિદ્યાભ્યાસની એક સભા તા. ૨૫-૧૧-૧૯૯૮ના રોજ ૪-૦૦ વાગ્યે યુનિવર્સિટી કાર્યાલયમાં મળી હતી. તેમાં સભ્યોની હાજરી નીચે મુજબ હતી :

- | | |
|-----------------------------------|---------|
| ૧. ડૉ. સી. એ. દેસાઈ (પીનશી) | હાજર |
| ૨. ડૉ. આર. કે. પટેલ | હાજર |
| ૩. ડૉ. કેનન દેસાઈ | હાજર |
| ૪. ડૉ. અનુષ્ઠ મુનશી | હાજર |
| ૫. ડૉ. એમ. એ. પરીખ | હાજર |
| ૬. ડૉ. કે. એમ. પટેલ | ગેરહાજર |
| ૭. ડૉ. મહેશ પટેલ (આમંત્રિત) | હાજર |
| ૮. ડૉ. સી. કે. પુરોહિત (આમંત્રિત) | હાજર |
| ૯. ડૉ. એમ. એચ. મકવાણા (આમંત્રિત) | હાજર |

સભાનું પ્રમુખસ્થાન ડૉ. સી. એ. દેસાઈએ સંભાળ્યું હતું.

૧. રાષ્ટ્ર સરકારના પત્ર (પ્રથમ વર્ષ એમ.બી./બી.એસ.માં ચાર ટ્રાયલ પરીક્ષી જોગવાઈ ફર કરવા) પર ચર્ચા કરી નિર્ણય લેવા બાબત.

રાષ્ટ્ર સરકારના પત્રનો સમજાવનાં તબીબી વિદ્યાભ્યાસના પ્રથમ વર્ષ એમ.બી./બી.એસ.ની પરીક્ષામાં વિદ્યાર્થીઓને અપાતી તકની ધોરણો સમાન (બાર તકો) કરવા માટે નીચે મુજબ કરાવ કરવામાં આવ્યો :

No. of student shall be permitted to join the phase-II (Para-Clinical/Clinical) Group of subjects until he has passed in all the phase-I (Pre-Clinical) subjects for which he will be permitted not more than four trials provided four trials are completed in three years from the date of enrolment.

ઉપરોક્ત ઠરાવનો અમલ નવેમ્બર, ૧૯૯૮થી શરૂ થતા સત્તરી કરવામાં આવશે.

૨. ડૉ. એમ. આર. ડી. તથા ડી. પી. એમ. પાઠે-૧ અને ૨ના જૂનો કોર્સ નવા કોર્સમાં મંજૂર થઈ જવાથી જૂનો કોર્સ નાબુદ કરવા બાબત.

ડી.એમ.આર.ડી. અને ડી.પી.એમ. પાઠે-૧ અને ૨ની પરીક્ષાના જૂના અભ્યાસક્રમની છેલ્લી તક માર્ચ, ૧૯૯૯માં આપી જૂનો અભ્યાસક્રમ બંધ કરવાનું ઠરાવવામાં આવ્યું.

૩. ૪૦%થી ઓછા ઉપરતરલ કેસમાં ટ્રાયલ ગણવો કે કેમ ?

જે વિદ્યાર્થીને એમ.બી./બી.એસ.ની જે તે વિષયની પરીક્ષામાં ૪૦%થી ઓછા આંતરિક ગુણ અનામતવાળા ૭૫%થી ઓછી હાજરી હોય તે કેસો જે તે વિષયની પરીક્ષામાં એસવા દેવામાં આવ્યો ન હોય તો તે વિદ્યાર્થીને જે તે પરીક્ષાના ટ્રાયલ ગણાશે તેમ કરવામાં આવ્યું તથા ટ્રાયલની બહાસી નીચે મુજબ ગણવી :

First trial is deemed to take place when he is due to appear for the examination, irrespective of his actual appearance; provided that non-appearance is not a result of reasons beyond his control. Similarly 2nd, 3rd etc. trials relating to subsequent examination.

૪. પ્રમુખશ્રીની પરવાનગીથી નીચેની બાબત રજૂ કરવામાં આવી અને આંતરિક ગુણ પરીક્ષામાં બેઠક વિદ્યાર્થીઓ માટે દરાર કરવામાં આવ્યો.

જો કોઈ વિદ્યાર્થીને જે તે વિષયમાં ૪૦% કરતાં ઓછા આંતરિક ગુણ મેળવ્યા હોય અને/અથવા ૭૫%થી ઓછી હાજરી હોય તો તે વિદ્યાર્થી જે તે વિષયની પરીક્ષામાં મેસી શકશે નહીં; છતાં કોઈ કારણસર વિદ્યાર્થી જે તે વિષયની પરીક્ષામાં બેઠક હોય તો તે વિદ્યાર્થીને જે તે વિષયની પરીક્ષામાં ગેરહાજર ગણી પરિણામ જાહેર કરવામાં આવશે તેમ કરાવવામાં આવ્યું.

ત્યાર બાદ સભાનું કામકાજ પૂરું થયું હતું.

સી. અમલ

ડૉ. સી. એ. દેસાઈ
ડીન, મેડિકલ કેસ્ટી

FACULTY OF MEDICINE
DEGREE OF BACHELOR OF MEDICINE AND
BACHELOR OF SURGERY (M.B.B.S.)

Courses of studies prescribed
for the First, Second & Final M.B.B.S. Examinations
(in force for students admitted in August, 1997 and thereafter)

1. M.B.B.S. I :

- The Academic year for Undergraduate Medical students shall consist of two terms, viz.,
- The First term commencing from the 1st September and ending on 28th February, AND
 - The Second term commencing from the 1st March and ending on 31st August.

To derive maximum advantage out of this revised curriculum, the vacation period to students in one academic year should not exceed one month, during 4½ years M.B.B.S. course. Preferably 15 days summer vacation and 15 days Diwali vacation).

2. M.B.B.S. II :

Training Period and Time / phase distribution

- For the degree of Bachelor of Medicine and Bachelor of Surgery, every student shall undergo a period of certified study extending over 4½ academic years: divided in to 9 semesters (i.e. of 6 months each) from the date of commencement of his study for the subjects comprising the medical curriculum to the date of completion of Final M.B.B.S Part-II examination successfully and followed by one year of compulsory rotating internship "internship".

- The period of 4½ years is divided into three phases as follows :

- Phase-I** (1st and 2nd semesters)-consisting of pre-clinical subjects (Human Anatomy, Human Physiology, Biochemistry and Community medicine). Besides 60 hours for introduction to Community Medicine, rest of the time shall be somewhat equally divided between Anatomy and Physiology plus Biochemistry combined (Physiology 2/3 and Biochemistry 1/3).See Appendix A

- Phase-II** (3rd to 5th semesters)-Consisting of Paraclinical / clinical subjects. During this phase teaching of para-clinical and clinical subjects shall be done concurrently.

- * The Para-clinical subjects shall consist of Pathology, Microbiology, Pharmacology, Forensic medicine and community medicine.

- * The clinical subjects shall consist of all those detailed below in phase III.

- * Out of the time for Para clinical teaching approximately equal time may be allotted to Pathology, Microbiology, Pharmacology and Forensic medicine plus Community medicine combined (1/3 Forensic medicine and 2/3 Community medicine) See Appendix-A

- Phase III** (Continuation of study of clinical subjects for seven semesters after passing phase I) (3rd to 9th semesters).

The clinical subjects to be taught during phase II and phase III are Medicine and its allied specialties, Surgery and its allied specialties, Obstetrics and Gynaecology and Community Medicine.

Besides clinical posting rest of the teaching hours be divided for didactic lectures, demonstration, seminars, group discussion etc. in various subjects. See Appendix-A

The Medicine and its allied specialties training will include General Medicine, Paediatrics, Tuberculosis and chest , Skin and sexually transmitted diseases, Psychiatry, Radio-diagnosis, Infectious diseases etc. The Surgery and its allied specialties training will include General surgery, Orthopaedics, including physiotherapy, and rehabilitation, Ophthalmology, E.N.T.(Oto-laryngo-rhinology), Anaesthesia, Dentistry, Radio-therapy etc. The Obstetrics and Gynaecology training will include family medicine, family welfare, planning etc.

- The first 2 semesters shall be occupied in the Phase I preclinical subjects and introduction to a broader understanding of the perspectives of medical education leading to delivery of health care.
- After passing pre-clinical subjects, 1½ years (three semesters) shall be devoted to para-clinical subjects. Phase II will be devoted to para-clinical and clinical subjects along with clinical postings. During clinical phase(Phase II) pre clinical and para clinical teaching will be integrated in to teaching of clinical subjects where relevant
- Didactic lectures should not exceed one third of the time schedule; two third schedule should include Practicals, clinics or /and group discussions. Learning process should include living experience, problem oriented approach, case studies and community healthcare activities.
- Timing of University examinations :** University examination shall be held as under :
 - * First M.B.B.S. examination (First Professional examination) : at the end of second term in the subjects of Human anatomy, Human Physiology and Bio chemistry.
 - * Second M.B.B.S. examination (Second Professional examinations) : at the end of fifth term in the subjects of Pathology, Microbiology Pharmacology and forensic medicine.
 - * Final M.B.B.S. examination Part-I (Third Professional Part-I examinations) : at the end of seventh term in the subjects of Ophthalmology, E.N.T. & Community Medicine
 - * Final M.B.B.S. examination Part- II (Third Professional Part-II examinations) : at the end of ninth term in the subjects of Medicine, surgery, Obstetrics & Gynaecology and Paediatrics.
- Passing in 1st M.B.B.S. examination is compulsory before proceeding to Phase II training. No student shall be permitted to join the Phase II (Para-clinical/clinical) group of subjects until he has passed in all the Phase I (Pre-clinical) subjects for which he will be permitted not more than four trials provided four trials are completed in three years from the date of admission.
 - Passing in 2nd M.B.B.S. examination is not compulsory before entering for sixth and seventh semester training. However, passing in 2nd M.B.B.S examination is compulsory for being eligible for Final M.B.B.S. Part-I examination.
 - Passing in Final M.B.B.S. Part-I examination is not compulsory before entering for eighth and ninth semester training. However, passing in Final M.B.B.S. Part-I examination is compulsory for being eligible for Final M.B.B.S. Part-II examination.
 - Passing in Final M.B.B.S. Part-II examination is compulsory before proceeding to a compulsory rotating internship "internship" training.

R. M.B.B.S. I :

Syllabus

Following are the syllabus of various subjects of first, second and final M.B.B.S..

First M.B.B.S.

Human Anatomy "Anatomy"

- Goal :** The broad goal of the teaching of undergraduate students Anatomy aims at providing comprehensive knowledge of the gross & microscopic structure and development of human body to provide a basis for understanding the clinical correlation of organs or structures involved and the anatomical basis for the disease presentations.

2. Objectives :

- Knowledge :** At the end of the course the student shall be able to
 - * Comprehend the normal disposition, clinically relevant interrelationship, functional and cross sectional anatomy of the various structures in the body.
 - * Identify the microscopic structure and correlate elementary ultra structure of various organs & tissues and correlate the structure with the functions as a prerequisite for understanding the altered state in various disease processes.
 - * Comprehend the basic structure and connections of the central nervous system to analyse the integrative and regulative functions of the organs and system. He/She shall be able to locate the site of gross lesions according to the deficits encountered.
 - * Demonstrate knowledge of the basic principles and sequential development of the

of the body to facilitate an understanding of the physical world.

2. Objectives :

- (a) **Knowledge :** At the end of the course the student shall be able to
- explain the normal functioning of all the organ systems and their interactions for well coordinated total body function,
 - assess the relative contribution of each organ system to the maintenance of milieu interieur.
 - elucidate the physiological aspects of normal growth and development.
 - describe the physiological response and adaptations to environmental stresses.
 - list the physiological principles underlying pathogenesis and treatment of disease.
- (b) **skills :** At the end of the course the student shall be able to
- conduct experiments designed for study of physiological phenomena.
 - interpret experimental / investigative data
 - distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.
- (c) **Integration :** At the end of integrated teaching student shall acquire an integrated knowledge of organ structure and function and its regulatory mechanism.

Syllabus

General Physiology :

- Cell Physiology 1
- Maintenance of Milieu Interior 1
- Stress 1

BLOOD :

- Composition And function of blood 1
- plasma Proteins 1
- RBC-Erythropoiesis and functions of RBCs 2
- Hb 1
- Anaemias 1
- WBCs-Development and functions 2
- Platelets 1
- Blood coagulation disorders and mechanism of haemostasis 2
- Blood groups 1
- Blood volume 1
- Immunity 1
- R.E.System & Lymphatic system 1

MUSCLE NERVE :

- structure and function of skeletal muscle and smooth muscles 1
- Properties of skeletal muscle and generation of potentials 1
- Transmission across cell membrane 1
- Myasthenia gravis and Neuro transmitter, structure of neuron and its functions. 1
- Mechanism of skeletal muscle control 2
- Transmission of impulse in neuromuscular junction 2
- Origin and transmission of impulse in nerve fibre 1
- Degeneration and regeneration in nerve. Reaction of degeneration 2
- Neuromuscular blocking agents 2
- Digestive system 1
- Digestive tract and function of salivary gland 1
- Composition, function and mechanism of secretion of saliva 1
- Composition, function and mechanism of secretion of gastric juice 2
- Hypochlorhydria, Hyperchlorhydria, peptic and duodenal ulcers and their co-relation with stress phenomenon 1
- Composition, function and mechanism of secretion of pancreatic juice 1
- Composition, function and mechanism of secretion of bile 2
- Composition, function and mechanism of secretion of succus entericus 1
- Functions of large intestine 1

செயல் திட்டம் : ௨௦-௧௧-௧௯௯௭

- Functions of liver 1
 - Movements of Alimentary canal 2
 - Digestion and absorption of various food stuffs 1
- #### EXCRETION:-
- structure, blood supply and function of kidney 2
 - Mechanism of filtration and GFR. 2
 - Tubular function 1
 - Micturition and its control 1
 - Renal function test and Pathogenesis of renal function disorders 1
 - Functions of skin 1

RESPIRATION:

- Respiratory tract and function of respiratory system 1
- Lung volume and capacity 1
- Intrapulmonary and intrapleural pressure and surfactant 1
- Lung compliance 1
- Mechanics of breathing 1
- O₂ carriage 1
- CO₂ carriage 1
- Hypoxia 1
- Control of respiration 1
- Periodic breathing , dysbarism 1
- Cyanosis and Asphyxia 1

C.V.S :

- Structure and properties of cardiac muscle 1
- Generation of action potential and transmission of cardiac impulse in special conductive tissues of heart 2
- ECG 1
- Cardiac cycle with volume and pressure changes in atria and its correlation with ECG and phonocardiogram 2
- Heart sounds and murmurs 1
- Haemodynamics 1
- Cardiac output and its control 2
- Heart rate and its control, various arrhythmias 2
- Arterial B.P. and its control, Hypertension and hypotension 2
- Physiology of coronary circulation 2
- Other regional circulations 1
- Physiological basis of shock 1

ENDOCRINES

- General consideration of endocrine system 1
- Names, synthesis, actions, control of secretion, function tests and disorders of hormones of Pituitary(Anterior and Posterior) 1
- Thyroid gland 2
- Parathyroid gland 2
- Adrenal cortex 1
- Adrenal medulla 2
- Pancreas hormones 1
- Thyrox, pineal and local hormones 1

REPRODUCTION :

- Growth and development of body under the influence of various hormones. Puberty 2
- Male reproductive system and function and control of testes. 2
- reproductive cycles in females and disorders 1
- Physiology of pregnancy 2
- Parturition and physiology of lactation 2
- Pathogenesis and treatment of gonadal disorders in males and females 1

• Contraceptives	1
ANS and CNS :	
• General consideration of ANS and CNS	1
• Structure and properties of synapse and synaptic transmission	2
• Receptors, their function with physiology of pain in particular	2
• Reflexes, Reflex action and their properties	1
• Tracts of spinal cord, their functions and effects of hemisection and transaction of cord.	4
• Autonomic nervous system	2
• Normal functioning of following parts of the brain, their disorders and an outline of treatment	
(1) Hypothalamus	2
(2) Thalamus	2
(3) Reticular formation	2
(4) Basal ganglia	2
(5) Cerebellum	2
(6) Cerebral cortex	4
• Tone, posture and equilibrium	2
• Conditioned reflex	1
• Limbic system	1
• Physiology of sleep and speech with their disorders. E.E.G.	3
• Functions of C.S.F. and Lumbar puncture	1
SPECIAL SENSES :	
• Various parts of eyeball and their functions	1
• Refractive media and optic	1
• Errors of refraction	1
• Accommodation in eye	1
• Photochemistry of vision	1
• Acuity & field of vision with disorders	1
• Colour vision and Colour blindness	1
• Dark & light adaptation, monocular and binocular vision	1
• Visual pathway and lesions at different levels	1
• Functions of external ear, middle ear, cochlea	1
• Mechanism of hearing and endocochlear potentials	2
• Physiology of taste	1
• Physiology of smell	1
BIOPHYSICS LECTURES:-	
• Principles of Biophysics and its applied aspects	1
• Biopotential and its applied aspects	1
• Transport across cell membrane	1
ENVIRONMENTAL PHYSIOLOGY AND EXERCISE PHYSIOLOGY :	
• Physiology of high altitude, acclimatisation & effects of high atmospheric pressure	1
• Aviation and space Physiology	1
• Body temperature regulation, hypothermia and hyperthermia	2
• Physiology of exercise and Yoga	2

Syllabus for Practical HUMAN PHYSIOLOGY

1. Study of microscope and Haematocrit value
2. Estimation of haemoglobin.
3. Determination of total RBC Count
4. Determination of total WBC count
5. Differential WBC count
6. Estimation of coagulation time and bleeding time. Determination of ESR.

7. Determination of Blood groups and blood indices.
8. Effects of hypotonic and hypertonic saline solutions and Determination of fragility of RBCs
9. Clinical examination of pulse.
10. Measurement of Arterial blood pressure and effects of different postures and exercise on it
11. Determination of Cardiac efficiency test
12. Clinical examination of cardio vascular system
13. Determination of Lung volumes and capacities
14. Clinical examination of respiratory system.
15. Demonstration of artificial respiration and recording of body temperature and effects of exercise on it.
16. Examination of reflexes.
17. General examination of CNS and examination of I, III & IV AND V & VI cranial nerves
18. Examination of II cranial nerve
19. Examination of sensory system and examination of VII to XII cranial nerves
20. Examination of motor system.
21. recording of study of ECG, EEG, and EMG.

EXPERIMENTAL PHYSIOLOGY

1. Introduction and instruments
2. Quantal summation
3. simple muscle curve and strength duration curve
4. Effect of temperature on muscle contraction
5. Effect of free and after loading on the muscle and effect of increasing the load.
6. Velocity of the nerve conduction and its calculation
7. Phenomenon of fatigue and site of fatigue
8. tetanus and effect of two successive stimuli
9. formal myocardiogram of frog's heart and effect of temperature on frog's heart.
10. Innervation of frog's heart and vagal escape graph of mammalian blood pressure and respiration.
11. Effect of adrenaline on frog's heart. Effect of adrenaline on mammalian blood pressure and respiration
12. Effect of Pilocarpine and Mitocin on frog's heart.
13. Perfusion of isolated heart and effects of variation
14. photographs of gigantism, dwarfism and acromegaly
15. photographs of cretinism, myxoedema and grave's disease.
16. photographs of cushing's disease and Addison's disease
17. photographs of Adreno genital syndrome and signs of latent tetany
18. Comprehensive chart showing correlation of various events of cardiac cycle.
19. Charts of O_2 and CO_2 dissociation curve and of periodic breathing
20. Charts of menstrual cycle
21. Basal body temperature chart and measure of family planning

Biochemistry

1. **Goal :** The broad goal of teaching of undergraduate students in Biochemistry is to make them understand the scientific basis of the life processes at the molecular level and to orient them towards the application of knowledge acquired in solving the clinical problem.
2. **Objectives :**
 - (a) **Knowledge :** At the end of the course the student shall be able to
 - describe the molecular and functional organization of a cell and list its sub-cellular components
 - delineate structure, function and inter relationships of two molecules and consequences of deviations from normal
 - summarize the fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is involved.
 - describe digestion and assimilation of nutrients and consequences of malnutrition.
 - integrate the various aspects of metabolism and their regulatory pathways.
 - explain the biochemical basis of inherited disorders with their associated sequelae.

- describe mechanism involved in maintenance of body fluid and pH homeostasis.
 - outline the molecular mechanism of gene expression and regulation, principles of genetic engineering and their application in medicine.
 - summarize molecular concept of body defenses and their application in medicine.
 - outline the biochemical basis of environmental health hazards, biochemical basis of cancer and carcinogenesis.
 - familiarize with the principles of various conventional and specialized laboratory investigations and instrumentation analysis and interpretation of the given data.
 - suggest experiments to support theoretical concepts and clinical diagnosis.
- (b) **skills** : At the end of the course the student shall be able to
- make use of conventional techniques / instruments to perform biochemical analysis relevant to clinical screening and diagnosis;
 - analyze and interpret investigative data
 - demonstrate the skill of solving scientific and clinical problems and decision making
- (c) **integration** : The knowledge acquired in biochemistry shall help the student to integrate molecular events with structure and function of the human body in health and disease.

SYLLABU THEORY

INTRODUCTION :

Scope of Biochemistry, Bio technology, Molecular Biology, Medical Physics, Bio chemical concept of health and disease.

1. Chemical structure and subcellular composition of typical Eukaryotic cell. Special feature of nerve cell, liver cell, adipocyte. Gastric mucosal cell RBCs. (Biochemical cell type) Cell membrane structure, functional properties, receptors and membrane proteins.
2. Amino acids and Proteins :
 - (a) Classification and Properties of amino acids and proteins structures organisation of proteins (With special reference to insulin, haemoglobin, and collagen). Peptides of biochemical importance, plasma proteins, and Electrophoretic separation technique and it's diagnostic importance. Acute phase proteins.
 - (b) Digestion & absorption of proteins and related disorders, dynamic state of body proteins, protein turn over-rate, N2 balance. Biochemical transformation of amino acids, ammonia toxicity and fate of ammonia, urea cycle, and its disorders. Metabolism of individual amino acid, glycine, Phenylalanine, Tyrosine, Tryptophan, S-containing aminoacids and associated disorders. Creatine metabolism. Inborn error of aminoacid metabolism
3. Enzymology :
 - (a) Classification, properties and mechanism of enzyme inhibition and activation (Repression and Induction), Antimetabolites, isoenzymes and clinical Enzymology. Regulation of enzyme activity in normal and altered condition.
4. Carbohydrates :
 - (a) Chemistry of Carbohydrates (Structure and properties and functions of mono, di and poly saccharides) mucopolysaccharides and its disorders. Sugar derivatives & its biological importance.
 - (b) Digestion and absorption of Carbohydrates disorders associated with transport of glucose across membranes. Glycolysis and its regulation. TCA Cycle, Cori cycle, Neoglucogenesis, glycogen synthesis and breakdown, Pentose phosphate pathway (HMP Shunt) Uronic acid pathway (G-6-PD Deficiency) Inter-conversion of sugars, sorbitol pathway in lens, metabolism of Carbohydrates in diabetes. Regulation of blood sugar, hormonal control, GTT, Glycosuria, Carbohydrate metabolism in different tissues. Inborn errors of Carbohydrate metabolism.
5. Lipids :
 - (a) Definition, distribution, classification, properties and functions of fatty acids and triglycerides, Phospholipids, sterols, and other compounds, lipids related disorders, cholesterol chemistry, function and properties, Ecosanoids structure and functions, PUFA and its clinical importance. Lipids peroxidation.

- (b) Digestion, absorption of lipids. Role of bile salts disorders. Oxidation of fatty acids, synthesis of fatty acids, its regulation, synthesis of cholesterol, regulation & transport. Biologically important compounds formed from cholesterol. Blood cholesterol level and atherosclerosis. Metabolism of adipose tissue and of fat. Obesity. Fatty liver and Lipotropic factors. Ketone bodies, & ketosis. Antiketogenic mechanisms. Metabolism of plasma lipoproteins. Alcohol metabolism. Disorders of lipid metabolism & associated sequelae.
6. (b) Integration of various aspects of metabolism (Carbohydrates, fat & protein) metabolism in starvation.
7. (a) Body fluids distribution, composition & electrolyte balance, water metabolism & disorders Acid base balance and pH homeostasis, acidosis, alkalosis, blood gases, Blood buffers CSF. Urine analysis.
8. (a) Porphyrine home structure, Bio synthesis, catabolism, regulation of porphyrine (hemo) bile pigments, Jaundice Classification and clinical chemistry in blood and urine. Abnormal haemoglobin derivatives, Porphyrin.
9. (b) Biological oxidation, Mitochondrial function, structure, cytochromes P 450 High energy compounds. Organisation of electron transport chain, Oxidative phosphorylation inhibitors and uncouplers.
10. (a) Molecular biology. Genetic engineering. Bio technology: Purine, pyrimidine Nucleotides synthesis & breakdown of purine, pyrimidine & related disorders. Purine salvage pathway. Nucleic acids.
- (b) DNA, RNA, structure, functions, types, transcription, replication & translation (Protein biosynthesis) Genetic code, Post translation, processing, control of gene expression with molecular mechanism, Recombinant DNA technology in molecular analysis of disease. Genetic engineering, Gene therapy, DNA Hybridisation, techniques. Southern blot, northern blot, western blot, Polymerase chain reaction, Restriction fragment length polymorphism. DNA finger printing technique, hybridome, and monoclonal antibodies, antigens therapy, DNA sequencing gene mapping.
11. (b) Molecular concept of body defence & their application in medicine. Immunoglobulins, Immunity, Free radicals, Peroxidation, Super oxide dismutase detoxification, Xenobiotics.
12. (b) Environmental biochemistry, environmental imbalance, Pesticides, Effects of pollutants on health Radiation effects, Cold and Heat exposure, High and low pressure exposure, biochemical basis of cancer cell cycle. Mutagenic. Chemical carcinogens, viral carcinogenesis, oncogenes, tumor markers. Immunological aspects of cancer. Biochemistry of AIDS.
13. Nutrition : Vitamins-Minerals:
 - (a) Fat soluble & water soluble vitamins, requirements, chemistry, co-enzyme forms, biochemical functions, sources, deficiency diseases, antagonists and toxicity. Minerals: Sources, dietary requirements absorption, transport fate, metabolism, functions, excretion, deficiency manifestations of the followings: Calcium, Vitamin D (parathyroid, calcitonin) and phosphorus, Iron, Copper, Magnesium, Iodine, (thyroid hormone, thyroid function test), Zinc, Manganese, Selenium, Fluoride.
 - (b) Diet & Nutrition - Composition of diet, N2 balance, essential aminoacids, protein quality, requirements, BMR, SDA, RQ, RDA. Balanced diet protein calorie malnutrition disorders, Therapeutic diet parenteral nutrition, Toxic substances in food, Nutritive value of specific food. Nutrition during pregnancy, Lactation and infancy.
14. (b) Recent advanced techniques in detection of biochemical disorders, RIA, ELISA, etc. Medical physics, Radio isotope techniques for diagnosis and treatment of disorders.

The topics designated as (a) are to be taken during I semester and as (b) to be taken during II semester

PRACTICAL

Bio chemistry practical are designed to enable the student to understand the basic aspects of normal and abnormal conditions, and interpretation of the investigations so as to help in clinical

screening and diagnosis. Practicals will be followed by the discussion on the theoretical concepts of disease, different techniques employed and instrumentation.

Each of the practical will be of two hours duration and followed by one hour of the discussion on clinical significance.

List of Practicals

1. Familiarisation to laboratory, basic laboratory principles and analytical chemistry.
2. Reactions of Proximate principles of human body (tests for Carbohydrates, proteins, lipids etc.) Qualitative Analysis of Food.
3. (a) chemistry of milk and egg white
(b) Tests for Vitamin A and C.
Qualitative analysis of Body fluids:
4. composition of CSF, and saliva.
5. Study of composition of normal urine
6. Spectroscopic examination of haemoglobin, and its derivatives.
Gastric Function tests
7. composition of normal gastric juices & abnormal constituents of gastric juice.
8. Determination of total free and combined acidity of gastric juice. Kidney function test
9. (a) Urine analysis for albumin and blood.
(b) Determination of titrable acidity and ammonia in urine.
10. Estimation of serum creatinine
11. Estimation of serum urea.
Diabetic check up
12. (a) Urine analysis for sugar and acetone.
(b) Estimation of fasting and Post prandial blood sugar in serum
Lipid Profile tests
13. Estimation of concentration of total cholesterol in serum.
14. Estimation of HDL cholesterol and atherogenic indices
Liver function tests
15. (a) Urine analysis for bile salts and bile pigments
(b) Estimation of total direct and indirect bilirubin in serum.
16. Estimation of total protein albumin and albumin to globulin ratio in serum
17. Estimation of serum alanine transaminase enzyme.
18. Estimation of alkaline phosphatase in serum
Pancreatic function tests
19. Estimation of serum amylase
20. Estimation of serum iron
21. Estimation of serum electrolyte analysis
22. Estimation of uric acid in serum

DEMONSTRATION AND DISCUSSIONS

1. Newer specific biochemical techniques employed for detection of diseases.
2. Electrophoresis, chromatography and its importance in clinical biochemistry
3. Principles of colorimetry
(a) Colorimeter
(b) Spectrophotometer
(c) Automatic and semi automatic chemistry analyzer
4. Renal function tests and analysis of renal calculi.
5. Concept of normal and abnormal glucose tolerance test and GTT.
6. Cardiac profile.
7. Liver function tests and gall stone analysis
8. Concepts of pH and blood gas analyzer.
9. Tumor markers
10. Thyroid function tests
11. Investigation of suspected porphyria

12. Investigation of diseases of Iron metabolism

13. Investigation of gout.

Discussion on normal biochemical values and their interpretation- Interpretative clinical chemistry with case reports.

SECOND M.B.B.S.

Pathology

1. Goal : The broad goal of teaching of undergraduate students in Pathology is to provide the students with the comprehensive knowledge of the mechanisms and causes of disease in order to enable him/her achieve complete understanding of the natural history and clinical manifestations of disease.

2. Objectives :

- (a) Knowledge : At the end of the course the student shall be able to
 - * Describe the structure and ultrastructure of a sick cell mechanisms of cell degeneration, cell death and repair and be able to correlate structural and functional alteration.
 - * Explain the patho physiological process which govern the maintenance of homeostasis, mechanism of their disturbances and the morphological and clinical manifestations associated with it.
 - * describe the mechanism and patterns to tissue response to injury such that he/she can appreciate the patho-physiological process of disease process and their clinical manifestations.
 - * correlate normal and altered morphology (Gross and Microscopic) of different organ systems in common diseases to the extent needed for understanding of disease process and their clinical significance.
- (b) skills : At the end of the course the student shall be able to
 - * describe the rational and principles of technical procedure of diagnostic laboratory tests and interpretation of results.
 - * perform the simple bed-side tests on blood urine and other biological fluid samples.
 - * draw a rational scheme of investigations aimed at diagnosis and management of the cases of common disorders.
 - * understand the biochemical / physiological disturbances that occur as a result of disease in collaboration with pre-clinical departments.
- (c) integration : At the end of different etiological factors (social, economic and environmental) that contribute to the natural history of diseases most prevalent in India.

Syllabus

- (a) A course of Lectures, demonstrations and practical in general pathology and special pathology and morbid anatomy taught over period of three semesters (18 months)
- (b) A course of instructions in chemical pathology and clinical pathology.
- (c) A certificate of having attended and assisted in the conduct of atleast ten autopsies including medicolegal autopsies.
- (d) The candidate will be required to submit the journal of practical works and full record of ten autopsies which they have attended and which have been certified by the teachers in the subject.

1st Semester

Theory

- (a) General Pathology
- (b) Introduction of pathology, light and ultramicroscopic structure of a cell.
- (c) Cellular adaptation and injury.
- (d) Pathology of amyloidosis and other intracellular accumulations.
- (e) Inflammation and repair.
- (f) Normal and abnormal Homeostasis and hemodynamic derangement's, Thrombosis, Embolism, and Infarction.
- (g) Nomenclature, Classification, characteristics pathogenesis, clinical manifestations and

laboratory diagnosis of neoplasm.

- (b) Disturbances of pigment metabolism.
- (i) Deficiency disorders.
- (j) Occupational Diseases.

Practicals

(a) Clinical Pathology:

- (i) Rational use of Blood and Blood components.
 - (ii) Collection of Blood.
 - (iii) Hemoglobin estimation, RBC count, blood indices, ESR, Total and differential white cell count study of blood cells, normal and abnormal bone marrow.
 - (iv) Laboratory methods to study haemorrhagic disorders.
 - (v) Blood grouping, matching and blood transfusions.
 - (vi) Qualitative urine analysis.
 - (vii) Chemical examination of faeces.
 - (viii) Routine examination of common body fluids like CSF, ascitic fluid, peritoneal fluid and pleural fluid.
 - (ix) Role of automation in various diagnostic procedures in clinical pathology.
- (b) Histopathology: (Histopathology practical classes including general pathology only)
- (i) Microscopic study of cells, tissues, and demonstration of tissue processing sectioning and staining.
 - (ii) Recognition of cells in tissues, common cellular alterations and depositions.
 - (iii) Gross and microscopic pathology of acute and chronic inflammations.
 - (iv) Disturbances of pigment metabolism, and other intracellular accumulations.
 - (v) Circulatory disturbances like Thrombosis, Embolism, infraction, Hyperemia and edema.
 - (vi) Benign and malignant neoplasia of epithelial and connective tissues.

2nd Semester

Theory

SYSTEMIC PATHOLOGY :

- (a) Application of the principals of general pathology in the understanding of individual organs. This will cover only the important disease and Further study will continue in the clinical subjects.
- (b) Correlation of normal and altered morphology in common diseases of Following systems:
- (c) Gastrointestinal tract: Acute and chronic gastritis, peptic ulcers, Gastric cancer, inflammatory bowel disease, cirrhosis of liver, viral hepatitis.
- (d) Cardiovascular System: Cardiac failure, Ischemic Heart disease, Bacterial endocarditis, atherosclerosis and rheumatic heart disease.
- (e) Respiratory system : Emphysema, chronic bronchitis, bronchial asthma, Lobar pneumonia and Bronchogenic carcinoma.
- (f) Kidneys: Normal, light and ultramicroscopic structure and function, glomerulonephritis, Hypertension.

CLINICAL PATHOLOGY :

Practical

- (a) Common hematological disorders like anemia, leukemia and haemorrhagic disorders.
- (b) Liver function tests.
- (c) Renal function tests.
- (d) Rational use of blood.
- (e) Automation and Quality control in clinical pathology.
- (f) Pregnancy test, Laboratory investigations in infertility (male and female)
- (g) Laboratory investigations in PUO.
- (h) Endocrine function test.

HISTOPATHOLOGY : (Histopathology practical classes concerned with Systemic pathology)

- (1) Benign and malignant neoplasms of Breast,
- (2) Benign and malignant neoplasms of Lymph nodes.

laboratory diagnosis of neoplasm.

- (3) Common diseases (Including tumours of alimentary system, liver.)
- (4) Common diseases (including tumours of respiratory system, cardiovascular system and kidneys.)
- (5) Diseases of thyroid.
- (6) Tumours of male genital tract.
- (7) Diseases including tumours of Female genital tract.
- (8) Role of cytology and FNAC in diagnosis of various lesions.
- (9) Role of tumour markers and diagnostic procedures in histopathology.

3rd Semester

- * Autopsy work and tutorials.
- * Advancement in Laboratory techniques and its interpretation in various infectious diseases like - Tuberculosis, Leprosy, AIDS malaria, Hepatitis etc.
- * The principal of chemical pathology with knowledge of normal values and interpretation of abnormal findings.

Microbiology

1. **Goal :** The broad goal of teaching of undergraduate students in Microbiology is to provide the students an understanding of the natural history of infectious diseases in order to deal with the etiology, Pathogenesis, Laboratory diagnosis, treatment and control of infections in the community

2. Objectives :

- (a) **Knowledge :** At the end of the course the student shall be able to
 - * State the infective micro-organism of the human body and describe the host parasite relationship
 - * list the pathogenic micro-organisms (bacteria, viruses, parasites, fungi) and describe the pathogenesis of the disease produced by them.
 - * state or indicate the modes of transmission of pathogenic and opportunistic organisms and their sources, including insects vectors responsible for transmission of infection.
 - * describe the mechanisms of immunity to infections.
 - * acquire knowledge on suitable antimicrobial agents for treatment of infections and scope of immunotherapy and different vaccines available for prevention of communicable diseases.
 - * apply methods of disinfection and sterilization to control and prevent hospital and community acquired infections.
 - * recommend laboratory investigations regarding bacteriological examination of food, water, milk and air.
- (b) **skills :** At the end of the course the student shall be able to
 - * plan and interpret laboratory investigations for diagnosis of infectious diseases and to correlate the clinical manifestations with the etiological agent
 - * identify the common infectious agents with the help of laboratory procedures and use antimicrobial sensitivity tests to select the suitable antimicrobial agents.
 - * perform commonly employed bed-side tests for detection of infectious agents such as blood film for malaria, filaria, gram staining and Acid Fast Bacilli (AFB) staining and stool sample for ova, cyst etc
 - * use the correct method of collection, storage and transport of clinical materials for microbiological investigations.
- (c) **Integration :** The student shall understand infectious diseases of national importance in relation to the clinical, therapeutic and preventive aspects.

SYLLABUS

(a) GENERAL MICROBIOLOGY

1. Introduction and importance of subject, History and taxonomy of Microorganism
2. Morphology and structure of bacteria.
3. Physiology of bacteria including growth requirement of bacteria, their reproduction, viability and destruction, growth curve, metabolism etc.

4. Sterilization: Different methods used for aseptic disinfectant and antiseptics.
5. Bacterial Genetics: Includes basic principle of molecular biology, antibiotic sensitivity pattern, mechanism of drug resistance in bacteria.
6. Infection: Factors influencing the production of infection. Host factors, bacterial factor and environment factors.

(b) IMMUNOLOGY

1. Immunity: Host - parasite relationship. Innate and Acquired immunity.
2. Antigen and Antibody: With reference to their structure, function, classification.
3. Antigen-Antibody Reaction: General principles Different types of Ag-Ab reactions, e.g. Agglutination, precipitation, complement fixations, Neutralisation, Immunofluorescence, RIA, ELISA, Western blot and other blot etc.
4. Complement: Classification, structure and function.
5. Immune response, immuno competent cells and immune system.
6. Hypersensitivity and Autoimmunity: Their classification and mechanism with clinical examples
7. Immuno-prophylaxis of various diseases, vaccine.
8. Tumour Immunity and Transplantation Immunity.

(c) SYSTEMIC BACTERIOLOGY

A study of medically important bacteria in relation to their morphology, classification, biological and cultural characters, pathogenicity, laboratory methods for their detection, methods of their control and prevention. Their list is as follows.

1. Gram positive cocci : Staphylococcus, Streptococcus, Pneumococcus
2. Gram negative cocci : Neisseria : Meningococcus & Gonococcus
3. Gram Negative coccobacillus : Haemophilus, Brucella, Yersinia & others.
4. Gram positive bacillus
 - (a) Aerobic : Corynebacterium, Mycobacterium: Tuberculosis Lepae, Atypical, Anthrax, B subtilis & others
 - (b) Anaerobic : Proteolytic : Cl. Tetani & Other Saccharolytic : Cl. Welchii & other
5. Gram negative bacillus
 - Commensal : E.coli & other
 - Pathogenic : Salmonella, Shigella, Vibrio & Other, Campylobacter
 - Saprophytic : Pseudomonas, Proteus & other
6. Spirochaete
7. Rickettsiae
8. Mycoplasma, Chlamydiae
9. Bacteriological examination of food, water, Milk etc.

(d) MYCOLOGY :

Study of medically important fungus in reference to their identification, pathogenesis, and laboratory methods for their detection.

(e) VIROLOGY

- (a) General properties of viruses
- (b) Laboratory methods for diagnosis of viral infection
 - Study of morphology, growth requirement pathogenicity, epidemiology, immunoprophylaxis and laboratory methods for agents of the diseases caused by some of very important viruses. e.g. Hepatitis virus, HIV, Polio, Rabies, Arbovirus, Enterovirus etc.

(f) PARASITOLOGY :

A detailed study in relation to geographic distribution, habitat, morphology, life cycle pathogenesis, laboratory investigation and preventive measures of following parasites:

- Protozoa : Rhizopoda, Mastigophora, Sporozoa, Ciliate
- Metazoa :
 - (a) Platyhelminths (i) Cestoda, (ii) Trematoda
 - (b) Nematheminths (i) Intestinal (ii) Tissue nematodes, Arthropods

A study of arthropods which have important role in human disease Opportunistic Infections.

(g) MICROBIOLOGY PRACTICAL :

Practical exercises will cover the practical demonstration of various methods for diagnosis of bacterial, viral and parasitic infections. A detailed list is as follows.

* General

1. Microscope & Micrometry
2. Morphology of bacteria
3. Different staining methods for bacteria
4. Growth requirements of bacteria
5. Different Media
6. Sterilization
7. Isolation of bacteria
8. Antibiotic Sensitivity testing
9. Common serological reaction : Conventional, Rapid, Recent and Sophisticated methods like ELISA, Western Blot etc.
10. Laboratory Animals, their use, care.

* Systemic

1. Staphylococcus
2. Streptococcus & Pneumococcus
3. Neisseria
4. Clostridia
5. Enterobacteria
6. Yersinia
7. Salmonella & Shigella
8. V. Cholera
9. Mycobacteria
10. Bacillus
11. Clostridia
12. Spirochaetes
13. Rickettsia, Chlamydia, Mycoplasma
14. Viruses

(h) Parasitology :

- (a) Introduction : Various terminology used in parasitology
- (b) Protozoa : Rhizopoda Entamoeba
- (c) Mastigophora & ciliata : Leishmania & Trypanosoma
- (d) Sporozoa
- (e) Platyhelminths : Cestodes
- (f) E. granulosus
- (g) Trematodes : Schistosomes
- (h) Nematodes :
 - (i) A. duodenale, A. lumbricoides
 - (ii) E. vermicularis, T. spiralis, T. trichura
 - (iii) Syomatic Nematodes W. Bancrofti & other medinosis & other
- (i) Arthropods
- (j) Examination of stool for study of different ova & cysts of parasites.

Pharmacology

1. Goal : The broad goal of teaching of undergraduate students in Pharmacology is to inculcate a rational and scientific basis of therapeutics.

2. Objectives :

- (a) Knowledge : At the end of the course the student shall be able to
 - describe the pharmacokinetics and pharmacodynamics essential and commonly used medicines.
 - list the indications contraindications, interactions and adverse reactions of commonly used drugs.

- Indicate the use of appropriate drug in a particular disease after consideration of the cost, efficacy and safety for
 - (i) Individual needs
 - (ii) mass therapy under national health programmes.
 - describe the pharmacokinetic basis, clinical presentation, diagnosis and management of common poisoning
 - list the drugs of addiction and recommend the management.
 - classify environmental and occupational pollutants and state the management issue.
 - indicate causation in prescription of drugs in special medical situation such as pregnancy, lactation infancy and old age.
 - integrate the concept of rational drug therapy in clinical pharmacology
 - state the principles underlying the concept of **Essential Drugs**.
 - evaluate the ethics and modalities involved in the development and introduction of new drug
- (b) skills : At the end of the course the student shall be able to
- prescribe drugs for common ailments.
 - recognise adverse reactions and interactions of commonly used drugs.
 - observe experiments designed for study of effects of drugs, bioassay, and interpretation of the experimental data.
 - scan information on common pharmacological preparations and critically evaluate the drug formulations;
- (c) integration : Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments and pre clinical departments.

SYLLABUS

THEORY :

(Knowledge Area) : will include course of lectures, tutorials, discussions, seminars, and symposia on:

- General Principles of Pharmacology
 - Systemic Pharmacology - Drugs acting on physiological system and organs
 - Chemotherapy of infectious diseases and cancer.
- Note : Throughout the course of study emphasis will be laid on therapeutic aspects of the drugs.

PRACTICAL :

(Skills area) : will include course of practical classes, demonstration, small group teaching tutorials, discussions related to :

- Prescription writing for commonly occurring diseases and symptoms.
- Comments on prescription and suggestions.
- Dose calculations and dilutions etc.
- Experimental pharmacology - experiments to study effects of drugs on animals and human volunteers.
- Dispensing pharmacy and study of drug formulations.

1. PHARMACOLOGY THEORY :

Theory topics are divided into two main areas. These are not the absolute divisions and are likely to change from time to time.

- (1) **CORE AREAS** : Include topics which are essential to learn to enable the student to function as a **FIRST CONTACT DOCTOR** and hence are expected to be **LEARNED THOROUGHLY** and are **EVALUATED ACCORDINGLY**.
- (2) **ADDITIONAL AREAS** : include remaining drugs belonging to specialist usage which require **MODERATE COVERAGE** so as to provide **AWARENESS** about them.

1.1 GENERAL PRINCIPLES OF PHARMACOLOGY AND THERAPEUTICS :

(a) CORE AREA :

- History of pharmacology (Important milestones). Sources and uses of drugs.
- Administration of drugs.
- Pharmacokinetics - Processes, first order and zero order kinetics, plasma half-life and steady state concentration.

- Pharmacodynamics - Basic mechanisms of drug action and selectivity of action
 - Factor influencing drug effects and drug dosages, drug interactions, drug combinations.
 - Principles of drug usage in paediatrics, elderly, during pregnancy and lactation.
 - Toxicology adverse drug reactions, drug overdose, poisoning antidotes, principles of management of a poisoned patient and common poisoning, poison control.
 - Drug abuse - drugs of addiction, principle of management of drug addiction.
 - Development of new drugs, stages ethics of clinical trials.
 - Concept of essential drugs and rational drug use.
 - National drug policy
- (b) **ADDITIONAL** or Good to know areas.
- Clinical Pharmacokinetics, therapeutic drug monitoring.
 - Adverse drug reaction monitoring details of phases of clinical trials.
 - Less common poisonings (which are more likely to be covered in Forensic medicine and toxicology).

1.2 SYSTEMIC PHARMACOLOGY :

Note : **EMPHASIS** should be laid on commonly used **ESSENTIAL DRUGS/ PROTOTYPE DRUGS**

(1) CENTRAL AND PERIPHERAL NERVOUS SYSTEM:

(a) CORE AREA:

- Local anaesthetics
- Sedative, hypnotics and drug treatment of insomnia
- Analgesics - opioid analgesics, Analgesic antipyretics and nonsteroid anti-inflammatory drugs, Pharmacotherapy of pain and rheumatic disorders.
- Centrally acting muscle relaxants.
- Drugs used in epilepsies, Drug treatment of convulsive disorders.
- Alcohols - ethanol and methanol including alcohol dependence and methanol poisoning.
- Psychopharmacological agents, drug treatment of anxiety disorders and mood disorders.
- Drugs of abuse, prevention and management of drug dependence.

(b) ADDITIONAL AREAS

- General anaesthetics
- Drug therapy of psychoses
- Drugs for parkinsonism
- Drugs for CNS degenerative disorders
- Drugs for Myasthenia gravis
- Neuromuscular blocking drugs
- Drugs for treatment of migraine

2. AUTONOMIC NERVOUS SYSTEM:

(a) CORE AREA:

- General Principles of drug action on autonomic nervous system, neurotransmitters, receptors, agonists, antagonist and partial agonists.
- Sympathomimetics including adrenaline, noradrenaline, dopamine and beta 2 adrenergic agonists, phenylephrine.
- Beta adrenoceptor blockers.
- Parasympathomimetics - acetylcholine and its clinically useful substitutes.
- Antimuscarinic drugs (atropine like), treatment of organophosphorus insecticides poisoning.
- Drug used for extrapyramidal reactions.

(b) ADDITIONAL AREA:

- Alpha - Adrenoceptor blockers, ganglionic
- Stimulants and blockers, adrenergic neurone blockers

(3) CARDIOVASCULAR SYSTEM AND DRUGS ACTING ON KIDNEYS:

(a) CORE AREA:

- Drugs used in hypertension and drug therapy of essential hypertension.
- Drugs used in angina pectoris and drug therapy of angina pectoris and myocardial infarction.
- Drugs used in cardiac failure
- Drugs for treatment of hypovolemia and shock.
- Diuretics
- Antiplatelet agents and thrombolytics, anticoagulants.

(b) ADDITIONAL AREA:

- Drugs for cardiac arrhythmias
- Drugs for hyperlipidaemias

(4) RESPIRATORY DRUGS AUTACOIDS AND THEIR ANTAGONISTS:

(a) CORE AREA:

- Drug used to control cough
- Drug used in bronchial asthma and drug treatment of bronchial asthma.
- Antihistamines and drug treatment of allergic disorders.

(b) ADDITIONAL AREA:

- Autacoids - Histamine, 5HT and its antagonists, Prostaglandins etc.

(5) GASTROINTESTINAL DRUGS:

(a) CORE AREA:

- Antiemetics and gastric prokinetic drugs
- Drugs used to control gastric acidity, drug therapy of peptic ulcer, gastroesophageal reflux, dyspepsia.
- Purgatives, Drug treatment of diarrhoeas.

(b) ADDITIONAL AREAS:

- Cholera, Pancreatic enzymes
- Anorectic drugs and appetite stimulants.

(6) BLOOD AND BLOOD FORMING AGENTS:

(a) CORE AREA:

- Drug treatment of iron deficiency and folate deficiency anaemias.
- Other vitamins and minerals

(b) ADDITIONAL:

- Growth factors, blood transfusion.

(7) HORMONES AND HORMONE ANTAGONISTS, DRUGS ACTING ON UTERUS:

(a) CORE AREA:

- Thyroid hormones, Antithyroid drugs
- Drugs used in the control of diabetes mellitus pharmacotherapy of diabetes mellitus.
- Adrenal corticosteroids - glucocorticoids
- Estrogen and Progestins
- Hormonal contraceptives, chemical contraception
- Oxytocics and uterine relaxants.

(b) ADDITIONAL AREAS:

- Androgens
- Sex hormone antagonists
- Ovulation inducing drugs gonadotropins
- Anterior pituitary and hypothalamic releasing hormones.
- Mineralocorticoids, adrenocorticoid antagonists
- Parathyroid and related hormones

13. CHEMOTHERAPEUTIC DRUGS - DRUGS USED FOR TREATMENT OF INFECTS, ANTICANCER DRUGS AND IMMUNOMODULATORS:

(a) CORE AREA:

- General principles of chemotherapy

• CHEMOTHERAPY AND DRUGS USED IN:

(i) BACTERIAL INFECTIONS:

- Respiratory infections, urinary tract infections gastrointestinal bacterial diarrhoea, food poisoning and dysentery, cholera, typhoid fever common infections of eyes and ears.

- Tuberculosis, Leprosy

- Sexually transmitted diseases.

(ii) PROTOZOAL INFECTIONS:

- Malaria, Amoebiasis, Giardiasis, Kala-azar, Trichomoniasis.

(iii) HELMINTHIC INFESTATIONS:

- Intestinal nematodes and tapeworms, Filariasis.

(iv) FUGAL INFECTIONS:

- Skin, Vagina, Candidiasis
- VACCINES AND SERA:
- Commonly used vaccines, antisera, antivenoms, immunization schedule for children.

- Antiseptics and Disinfectants - commonly used.

(b) ADDITIONAL AREA:

Drugs for infections:

- Less commonly used antibacterials
- Drugs for trypanosomiasis, pneumocystosis etc.
- Drugs for schistosoma, toxoplasmosis and trematode (flake) infestations.
- Systemic antifungal drugs
- Antiviral drugs
- Drugs used treatment of neoplastic diseases, principles of use, basic mechanisms, other uses.
- Immunomodulators.

1.4 MISCELLANEOUS AREAS:

(a) CORE AREA:

- Ocular pharmacology - glaucoma, common infections
- Dermatological pharmacology - Drug therapy of common skin disorders.

(b) ADDITIONAL AREA

- Environmental and occupational pollutants

2. SYLLABUS FOR PRACTICALS AND SKILLS IN PHARMACOLOGY

The syllabus is designed to enable the student to:

- Select and prescribe drugs rationally for common ailments.
- Critically evaluate the drug therapy in given situations.
- Understand and interpret the effects of drugs on living tissues and animals.
- Dispense simple dosage forms, comment upon different drug formulations and evaluate drug literature.

The training in practical and skills will be imparted during practical/demonstration classes in laboratories, and also in forms of tutorials and small group teaching/discussions. The practical teaching is divided as follows:

- Prescription writing and comments/criticism/evaluation of drug therapy in given situation - to be taught by tutorials or group discussions in small groups.
- Practical classes in dispensing pharmacy, drug formulations, calculations/dilutions evaluation of drug literature to be taught as laboratory exercises, demonstration, group work.

Practical classes in experimental/clinical pharmacology. The experiments will be either performed by students or in form of demonstrations to a small group. The students are expected to observe and interpret the data of these experiments.

Forensic Medicine XE "Forensic Medicine" with Toxicology

- Goal: The broad goal of teaching of undergraduate students in Pharmacology is to produce a physician who is well informed about medicolegal responsibilities in practice of medicine. He/she will also be capable of making observations and inferring conclusions by logical

deductions to set inquiries on right track in criminal matters and connected medicolegal problems. He/she acquires knowledge of law in relation to medical practice, medical negligence and respect for the codes of medical ethics.

2. Objectives :

- Knowledge : At the end of the course the student shall be able to
 - identify the basic medicolegal aspects of hospital and general practice;
 - define the medicolegal responsibilities of a general physician while rendering community service either in a rural primary health center or an urban health center;
 - appreciate the physician's responsibilities in criminal matters and respect for codes of medical ethics;
 - diagnose manage and identify also the legal aspects of common acute and chronic poisoning;
 - describe the medicolegal aspects and findings of post-mortem examinations in case of accidental death due to common unnatural conditions and poisoning;
 - detect occupational and environmental poisoning, prevention and epidemiology of common poisoning and their legal aspects, particularly pertaining to Workmen's Compensation Act;
 - describe the general principles of analytical toxicology
- Skills : At the end of the course the student shall be able to
 - make observations and logical inferences in order to initiate inquiries in criminal matters and medicolegal problems;
 - diagnose and treat common emergencies in poisoning and manage chronic toxicity;
 - make observation and interpret findings at post-mortem examination;
 - observe the principles of medical ethics in the practice of his profession.
- Integration : The department shall provide an integral approach towards allied disciplines like Pathology, radiology, forensic sciences, hospital administration etc. ; impart training regarding medicolegal responsibilities of physicians at all levels of health care. Integration with relevant disciplines will provide scientific basis of clinical toxicology e.g. medicine, pharmacology etc.

SYLLABUS

(A) FORENSIC MEDICINE

- Legal procedures and inquiries, Criminal and Civil courts and their powers, Medical evidences, Medicolegal reports, Dying Declaration, Medical witness and evidence in courts, Consumer Disputes Redressal Forum at district and national levels, (If possible the students should be taken to the courts where the teachers are on courts duty to introduce them to the elements of legal aspects of medicine)
- Identity of the Living and the Dead; Determination of race, sex, age and their medicolegal aspects; DNA Fingerprinting and Superimposition techniques for identification.
- Medicolegal Postmortem examination: related rules and regulations etc., examination of the decomposed and mutilated bodies, fragments and bones examination, Exhumation.
- Examination of bloodstains, saliva, seminal stains, Hair, weapon and clothes etc., Role of Forensic Science Laboratory in crime detection.
- Modes and time since death; presumption of death and survivorship, Concept of Brain death and its relation to Organ Tissue Donation and Transplantation.
- Violent deaths from Asphyxia, hanging, strangulation, throttling, suffocation and drowning.
- Forensic Histopathology and its uses in crime detection. Use of Radiography and Videography in Forensic Practice.
- Deaths from starvation, cold, heat burns, electricity and lightning.
- Mechanical injuries, classification of injuries, regional injuries; Examination and reporting of injuries, Medicolegal aspects of injuries, different types of weapons and their medicolegal significance.
- Impotence, Sterility, Virginity, Pregnancy and delivery; M.T.P. Act, Criminal abortions, abortifacients, with medicolegal aspects.

- Sexual Offences, Rape and Unnatural sexual offences, sexual perversions etc.
- Infanticide and Battered Baby syndrome.

(B) TOXICOLOGY & LAW IN RELATION TO MEDICAL MEN. FORENSIC PSYCHIATRY SYLLABUS

- Law and Ethics in the conduct of medical practitioner, certificates, infamous conduct, Professional secrets and Privileged communications; Medical Negligence;
Voluntary and compulsory duties of medical practitioner, Medical Council of India and State Medical Council; Consumer Protection Act in Relation to medical practitioners, Law in relation to Medical Officers practicing and serving in Rural areas and Primary/Community Health Centers etc.
- Medicolegal aspects of Insanity, Civil and Criminal Responsibilities; Use of Lie Detector in Crime detection.
- Introduction to Human Rights, Custodial crimes, Duties of Medical men in cases of violation of human rights, torture, custodial deaths; Role of a doctor in cases of harassment and torture to women, deaths related to dowry etc.
- General considerations of poisons in relation to different Acts, Classification of poisons, actions of poisons etc., its diagnosis, treatment and postmortem appearances of different poisoning cases, Duties of medical officer in a suspected poisoning case, Rules regarding the preservation and forwarding of the viscera etc. for chemical analysis, Role of Forensic Science Laboratory in poisoning cases, Medicolegal aspects of common human, cattle and arrow poisons.
- Detailed study of Acids: Sulfuric, Nitric, Hydrochloric, Oxalic, Carbolic (including Cresols etc.) and Salicylic acid, Alkalies Sodium, Potassium and Calcium Salts, Ammoniac Salts etc.,
- Inorganic Irritants: Organophosphorus Compounds, Halogens, Mercury, Lead, Copper, Barium, Radioactive substances, Naphthalene, Antismoothening substances etc.,
- Organic Irritants: Castor, Croton, Abrus, Ergot, Capsicum, Calabaropsis, Plumbago, Oleander, Marking nut, Corbera, Nerium etc., Irritants of animal origin including Snakes, scorpion, poisonous insects and mechanical irritants.
- Neurotoxic Poisons, Opium, Alcohols, Aniline Compound, Barbiturates, Kerosene and Petrol, Dhatura, Atropine, Cannabis, Cocaine, Nux vomica, Mandrax, Diazepoxide etc.
- Drugs causing dependence, N.D.P.S. Act, introduction and contents in brief, drug abuse, treatment and rehabilitation of drug addict, Nicotine, Gutkha eating etc.
- Some poisons like war gases, carbon dioxide and carbonmonoxide, methane, quinine, cyanides, Conium and Curare, Common arrow poisons etc.
- Industrial poisonings, Environmental toxicology and Medicolegal aspects, prevention of different pollutions, Organic gases like Methane, Hydrogen sulfide etc. Uses of insecticides and pesticides, their medicolegal aspects, preventive measures.
- Anaesthetic agents, medicolegal aspects of deaths related to anaesthesia, Common surgical procedures and their medicolegal aspects, deaths related to operative procedure, deaths and disabilities following medical and surgical procedures.

FINAL M.B.B.S. Part-I Otorhinolaryngology (E.N.T.)

- Goal :** The aim of teaching of undergraduate students in otorhinolaryngology is to impart adequate knowledge and skills for optimally dealing with common disorders and emergencies and principles of rehabilitation of the impaired hearing.
- Objectives :**
 - Knowledge : At the end of the course the student shall be able to
 - describe the basic pathophysiology of common ear nose and throat (ENT) diseases and emergencies
 - adopt the rational use of commonly used drugs, keeping in mind their adverse reactions.
 - suggest common investigative procedures and their interpretation.

- ਅੰਤ: ਮੁਕਤ ਸ਼ਤਾਬਦੀ - ਐ 16-18 1992

- 1) Diseases of the respiratory tract including conditions, and ailments. Acute and chronic infections including fungal infections, viral, bacterial, techniques and complications of diagnosis and adenoidectomy, benign and malignant tumors
- 2) Diseases of larynx including congenital diseases and management of stridor, in a child. Acute and chronic including acute epiglottitis, acute laryngeal tracheobronchitis, diphtheria of the throat, infection, non-specific and specific infections, Kikuchi's oedema, benign diseases including vocal cord polyps, papilloma, and granulomas etc. Malignant tumors, vocal cord paralysis, etc. methods of larynx, etc. including malignant diseases, etc.
- 3) Diseases of trachea, bronchial tree with special reference to foreign body, in food passage and other diseases, etc.
- 4) Diseases of lungs including management of Aspergillus, foreign body, etc. in passages and in pleural cavity, PA System, etc. pharynx, malignant tumors, etc. pleural cavity, etc.
- 5) Deep neck space infections with emphasis on acute pharyngitis and parapharyngeal abscesses and Ludwig's angina
- 6) Swallowing and Reflux in the neck and their management
- 7) Disorders of the thyroid and parathyroid glands, the PA system, etc. in detail

1. INTRODUCTION AND RECENT ADVANCES IN THE STUDY OF

1. $\text{C}_2\text{H}_5\text{Br}$ and $\text{C}_2\text{H}_5\text{I}$ are soluble in water.

3. Cells are cultured in FCS.
4. Cells are trypsinized and replated.
5. Radiotherapy and chemotherapy principles.
6. F.F.S.S. principles only.

4. Goal: To find the value of λ such that λ is a limit point of the set $\{x \in \mathbb{R} : x \text{ is a limit point of } \{x_n\}\}$.
 To do this, we need to find the value of λ such that λ is a limit point of the set $\{x \in \mathbb{R} : x \text{ is a limit point of } \{x_n\}\}$.
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• **Hyperkalemia**

[illegible]
$$x_1 = \frac{1}{2} \left(\frac{1}{2} + \frac{1}{2} \right) = \frac{1}{2}$$

2. Clinical examination of pharynx, larynx and neck etc. with emphasis on indirect laryngoscopy, symptomatic.
3. Diseases of oral cavity and salivary glands, pharyngitis, stomatitis, oral sub mucous fibrosis, salivary calculus, benign and malignant tumours of the salivary glands, snoring and sleep apnoea, carcinoma of oral cavity, tongue etc.

- provide first aid in major ophthalmic emergencies.
- assist to organise community surveys for visual check ups.
- assist to organise primary eye care service through primary health centres.
- use effective means of communication with the public and individual to motivate for surgery in cataract and for eye donation.
- establish rapport with his seniors, colleagues and para medical workers, so as to effectively function as a member of the eye care team.

- (c) integration: The undergraduate training in ophthalmology will provide an integrated approach towards other disciplines especially neurosciences, ENT, general surgery and medicine.

SYLLABUS

1. Didactic Lectures :

- Refraction: Vision testing, physiology of accommodation, Type of refractive error (Myopia, Hypermetropia, Astigmatism), its clinical presentation, diagnosis and management. Presbyopia: Contact lens & Types, Advantages and Disadvantages of each type.
- Conjunctiva: All the types of Conjunctivitis (in detail): Bacterial, Viral, Allergic, Chemicals, Pterygia, Chemosis of conjunctiva; Sub conjunctival Haemorrhage.
- Cornea: All the types of Corneal ulcers, Keratomalacia, Arcus juvenilis, Band shape Keratopathy, Eye donation and Eye banking, Keratoplasty, Enucleation, Exenteration. Principles of R.K.P.R.K. and Lasik.
- Uvea: Acute and Chronic, Endophthalmitis, D/D of unilateral Red Eye.
- Lens: Types, Etiology and signs of Cataract, signs, symptoms, diagnosis and management, Complications of Cataract surgery, Principles of Optical correction.
- Glaucoma: Congenital, Angle Closure and Open Angle Glaucoma, different stages, signs, symptoms, diagnosis, investigation and management.
- Retina: Vitreous and Optic Nerve: Normal fundus examination, Retinal Detachment signs, symptoms, diagnosis and principles of management. Papilloedema, Papillole, Retinoblastoma, Vit Opacities, Retinitis pigmentosa in brief. Fundus findings of diabetic mellitus and hypertension.
- Ocular Injury and Emergency: Conjunctiva and Corneal Foreign body, Butenolol, Alkalies and Thermal: Causes of sudden loss of vision.
- Ocular Motility disorders: Anatomy of extra ocular muscles, its action and its examination. Cover test, Phoria, Tropia, Convergence insufficiency. Types of Squint.
- Lid: Blepharitis, Sty, Chalazion, Trichiasis, Entropion, Ectropion: Clinical picture, signs, principles of management. Prosis: types clinical picture and principles of management.
- Lacrimal Apparatus: Anatomy of lacrimal gland and lacrimal passage. Acute and chronic congenital dacryocystitis clinical picture, investigation and management.
- Orbit: Proptosis: causes and investigation. Orbital cellulitis.

2. Ward Clinics :

1. General orientation of the ophthalmic department routine and special examination of facilities including tonometry, sac stripping removal of foreign body after staining of cornea and conjunctiva.
2. History taking and various tests-external eye examination and visual function test with emphasis on vision and anterior segment examination-oblique refraction, pinhole test, placido's disc test, cover test, maddox wing and maddox red tests - vision vision testing.
3. Examination of fundus of eye preliminary examination with a plane mirror, anterior chamber and 22 cms, principles of indirect ophthalmoscopy and direct ophthalmoscopy.
4. Refraction principles and practice of refraction and presbyopia, astigmatism.
5. Ocular therapeutics systemic, subconjunctival and local drugs.
6. Pre-operative and post-operative care of eye cases including anaesthesia, eye dressings. Routine use of instruments.
7. Common eye diseases and ocular emergencies: corneal ulcers, keratomalacia, degeneration, diseases of sclera and iris, ciliary body and choroid, optic neuritis, glaucoma and inflammation, retinopathy, retinal detachment, Ocular injuries: perforating and non-perforating, blunt trauma, Ocular motility disorders: squint, paralytic and concomitant diseases of ocular motility. Adnexa lids, sac, and other medical ophthalmology and community ophthalmology including the organizing and conducting Eye Camps in rural areas.

- Visual acuity testing, pinhole test, cycloplegic refraction and vision of common refractive errors, visual field testing, pupillary reflexes, extra ocular muscles, Judds, Astigmatism and refraction, cycloplegic refraction, primary and secondary glaucoma and its management.

on the basis of optical medical college hospital.

Recent advances in ophthalmic diagnosis and treatment with special emphasis on the use of modern instruments and techniques for the diagnosis and treatment of cataract, glaucoma, retinal diseases, corneal diseases and ocular motility disorders.

Community Medicine

1. Goal: The training in community ophthalmology will be designed to provide the student with the necessary background knowledge and experience with community ophthalmology.

2. Objectives :

- a. Knowledge:
 - Visual acuity testing, pinhole test, cycloplegic refraction and vision of common refractive errors, visual field testing, pupillary reflexes, extra ocular muscles, Judds, Astigmatism and refraction, cycloplegic refraction, primary and secondary glaucoma and its management.
 - Recent advances in ophthalmic diagnosis and treatment with special emphasis on the use of modern instruments and techniques for the diagnosis and treatment of cataract, glaucoma, retinal diseases, corneal diseases and ocular motility disorders.
 - Visual acuity testing, pinhole test, cycloplegic refraction and vision of common refractive errors, visual field testing, pupillary reflexes, extra ocular muscles, Judds, Astigmatism and refraction, cycloplegic refraction, primary and secondary glaucoma and its management.
 - Recent advances in ophthalmic diagnosis and treatment with special emphasis on the use of modern instruments and techniques for the diagnosis and treatment of cataract, glaucoma, retinal diseases, corneal diseases and ocular motility disorders.
- b. Skills:
 - Visual acuity testing, pinhole test, cycloplegic refraction and vision of common refractive errors, visual field testing, pupillary reflexes, extra ocular muscles, Judds, Astigmatism and refraction, cycloplegic refraction, primary and secondary glaucoma and its management.
 - Recent advances in ophthalmic diagnosis and treatment with special emphasis on the use of modern instruments and techniques for the diagnosis and treatment of cataract, glaucoma, retinal diseases, corneal diseases and ocular motility disorders.
 - Visual acuity testing, pinhole test, cycloplegic refraction and vision of common refractive errors, visual field testing, pupillary reflexes, extra ocular muscles, Judds, Astigmatism and refraction, cycloplegic refraction, primary and secondary glaucoma and its management.
 - Recent advances in ophthalmic diagnosis and treatment with special emphasis on the use of modern instruments and techniques for the diagnosis and treatment of cataract, glaucoma, retinal diseases, corneal diseases and ocular motility disorders.

- diagnose and manage maternal and child health problems and advise a couple and the community on the family welfare planning methods available in the context of national priorities
- diagnose and manage common nutritional problems at the individual and community level;
- plan, implement and evaluate a health education program with skill to use simple audio-visual aids.
- interact with other members of the health care team and participate in the organisation of health care services and implementation of National Health Programmes.

- (c) integration : Develop capabilities of synthesis between cause of illness in the environment or community and individual health and respond with leadership qualities to institute remedial measures for this.

SYLLABUS

The entire curriculum of community medicine has been split to be taught into broad groups. First group of curriculum will be covered during Phase - I (First and second semesters) while second group of curriculum will be covered during Phase II & III (Third semester through Seventh Semester). Accordingly breakup of curriculum is shown as under:

First Group of Curriculum to be Covered during phase I (First and Second semester)

(a) Class-room Teaching:

1. *Introduction to Humanities and Community Medicine* : History of Medicine, Definition of Health, Concept of Health, Spectrum of Health Determinants of Health, Indicators of Health.
2. *Demography & Population Dynamics* : Definition, Collection of Demographic Data, Population census, records of vital statistics, Demographic cycle, Demographic Trends in India, Definitions of Vital Events, Collection of Vital Statistical Data, Compilation, Tabulation & Presentation.
3. *Health Economics* : Introduction, Natural Economical resources of the Country, Economic Levels, Health Planning & Budgeting.
4. *Social Science & Health* :
 - (a) Medical Sociology : Concept & Principles of sociology, Social sciences, Social Classification, Social Factors related to Health & Diseases, Social Organizations, Urban and Rural Societies, Family Types, Functions and Role of Family in Health & Disease, Society & Culture, its functions, role of Culture in Health & Disease
 - (b) Behavioural Sciences : Community behaviour & Ecology, Interaction of Human being to Human Environment, Social Psychology, Impact of Psychology on Health, Impact of Urbanisation on Health and Disease, Medico-social Problems.
5. *Hospital Management* : Principles of practice of medicine including visits to the hospital for familiarisation with elementary nursing practices, practices of sterilisation, injection and dressing techniques, necessity for record keeping, art of communication with patients including history taking, medico-social work and immunisation against diseases and health check-up.
6. *Health care Delivery System* : Health care delivery system at Central State, District and Local Levels. Rural Health services, Health Care of the Community, Primary Health care, Comprehensive Health care, Basic Health Care, Health Care Delivery, Health Status and Health Problems of India and Gujarat.

(b) Field Visits to Health Establishments.

Following health establishments have been considered for field visits. In these establishments health intervention programme are operative. Total 15 visits will be planned. Each visit will cover two hours of demonstrations, participation etc.

1. Urban Health Center
2. Family Visit in the Community
3. Anganwadi Centre
4. Immunization Clinic

5. Malaria Clinic (NMEP)
6. Curative and Preventive General Practice Clinic
7. Family Welfare Planning and Training Centre.
8. Post partum unit
9. District T.B. Clinic
10. S.T.D. Clinic
11. Medical Record section of Hospital
12. Hospital setup - visit to learn autoclaving, sterilization, Incineration, Organization etc.

Second group of curriculum to be covered during phases II & III
(THIRD TO SEVENTH SEMESTER):

(a) Class room Teaching (Theory):

Following subjects will be covered through class room teaching which will involve lectures, seminars, symposium etc.

1. Environmental Health :

- (a) Air and Ventilation : Atmospheric air - its composition, effects of vitiated air, over crowding, Indices of thermal comfort, Natural and Artificial ventilation, Air Pollution, Air borne diseases, disinfection of air, Air Conditioning measurements of air temperature, humidity & velocity, Indices of heat stress, effect of heat on health
 - (b) Lighting : Requirements, Sources, Measurements, Normal standards, Health effects of poor lighting.
 - (c) Noise : Sources, Properties, Measurements, Effect on human health, Noise control.
 - (d) Radiation : Sources, type of radiations, measurements, Effect on health, Radiation protection and control.
 - (e) Housing in Relation to health : Criteria for healthful housing ; House standards over crowding, Housing and Health.
 - (f) Disposal of Wastes : Collection, Removal, disposal of refuse, night soil and sewage sanitary barrier, fecal - borne diseases, Various methods of disposal of dead
 - (g) Village Sanitation : Housing, Provision of safe water supply, sanitary disposal of refuse and excreta, village latrines, Manure pit.
 - (h) Sanitation of Camp & Fair : Site, water supply, control of food establishments, Disposal of refuse and excreta, Control of communicable diseases.
2. *Nutrition & Health* : Importance of safe milk and other food stuffs, Adulteration, Preservation, food poisoning, food and milk borne diseases, Role of nutrition in various diseases, Diets - nutritional surveys, National Nutritional programme.
 3. *Genetics and Health* : Principles, Heredity, Chromosomal disorders and abnormalities, Population genetics, General Epidemiology and Control of genetic disorders, Genetic counselling.
 4. *General Epidemiology* : Definition, Epidemiologic methods, uses of epidemiology, screening of disease, Epidemic investigation, Infectious disease Epidemiology, Disease transmission, Nature of reservoir of infection, Immunity, Immunoprophylaxis, National Immunization Programmes, Non-communicable disease epidemiology, Disease control and Immunization Programmes, Health advice to travellers, Hospital acquired infection, Notification, Isolation, Quarantine, Surveillance, Disinfection & Sterilization
 5. *Systemic Epidemiology* : Communicable disease
 - (a) Problem, Epidemiology, prevention, control and national control and eradication programmes of common communicable disease such as small pox, chickenpox, measles, Rubella, Mumps, Influenza, Diphtheria, Whooping cough, Meningococcal infections, Viral hepatitis, Cholera, Enteric Fever, Tuberculosis, Acute Respiratory infections, Polio myelitis, Food poisoning Amoebiasis, Bacillary dysentery, Diarrhoeal infections, Helminthic infestations, Guinea worm, Yellow fever, Dengue fever, KFD, Japanese encephalitis, Rickettsial diseases, Plague, malaria, Filariasis, Leishmaniasis, Rabies, Trachoma, Tetanus, Leprosy, STD, AIDS, Yaws etc.
 - (b) Non-communicable Disease : Problem, Epidemiology, Prevention, Control and national control programmes of common non-communicable diseases such as Cancer, Cardio Vascular disease, Rheumatic fever and heart disease, Hypertension, Diabetes, Obesity, Blindness, Accidents etc.

6. **Occupational Health** Occupational environment, Interaction of Physical, Chemical, Biological, Mechanical and Social agents with man, Occupational hazards and disease of importance and their presentation and control such as Pneumoconiosis, Lead poisoning, Occupational Cancers, Occupational dermatitis, Radiation hazards, Hazards of Agricultural workers, Accidents in Industry, Industrial Toxicology, sickness Absenteeism, Health Problems and General measures of prevention and control of industrial problems, prevention and control of occupational diseases, Indian Factory Act and ESIS Act, Industrial Social Security.
7. **Maternal and Child Health & Family Planning** : Maternal & infant mortality and morbidity in the country, Causes and schemes for its prevention, Measures for promotion of maternal and child well fare, Prevention of pre-natal, Neonatal and Infant Deaths, Care of the pre-school child, Various National, State and Voluntary agencies for child and maternal protection, Socio-economic and educational aspects of the problem.
8. **School Health** : School premises and environmental sanitation, periodic medical inspections, Early detection of ailments, Defects and their treatment, correction of deformities, Mid-day meal programme, care of the backward child, health education.
9. **Family Planning** : Medico-social and Health aspects of Family Planning, Contraceptives, National Family welfare programme, Post Partum Programme, Medical Termination of Pregnancy Act.
10. **Geriatrics & Health** : Problems of Aging, Health Status of aged persons, Measures to Solve problems of aged persons.
11. **Mental Health** : Mental Deficiency, Care and control of mental Health, Child Guidance Clinics, Drug dependence and its control.
12. **Health Education** : Principles of Health Education, Health and personal Habits, Various Methods for the dissemination of the knowledge.
13. **Public Health Administration** : Health planning, Health Management, Health Planning in India, Bhore committee, Mudali Committee, Other Health committee reports for Health planning in India, Five year Health plans, Health for all by 2000 AD, Health status and Health manpower, Manpower Material etc. to improve Health status of People, Hospitals, Health Insurance, Government & Non-Governmental Health Agencies.
National Health Programmes of India, ROME, ICDS etc., International Health Organizations like WHO, UNICEF, FAO, ILO, CARE and others.

(B) Field visit/Practicals/Clinics/National Demonstrations/Community Posting etc.

Following subjects will be covered through teaching methods using field visits, Practicals, Clinics, Tutorials, Demonstrations, Community Posting, workshops etc. students will be posted for 4 weeks each during third, fourth and sixth semesters (Total posting period will be 12 weeks). If required additional periods of two hours each will be arranged depending upon subject and suitable community hour exposure.

1. Training in Hospital : Hospital visit will be arranged to demonstrate following :

- (a) Nursing including bed making
- (b) Techniques of disinfection and dressing
- (c) Management of hospital including clean linen
- (d) Bedside Manners and Medical ethics
- (e) Art of communication, history taking, winning the confidence of the patient
- (f) Keeping - Completeness and reliability
- (g) Patient psychology - understanding the patients perception his problem.
- (h) Medico - Social work
- (i) Principles of health education - Doctor's Role

2. Field Visits : Field Visits will be arranged to demonstrate following:

- (a) Factors determining health and disease including environmental influences
- (b) Applied Sociology - importance of community participation.
- (c) Limited resources - Necessity of maximization of utilization.
- (d) Importance of nutrition on Health & Disease.
- (e) Acute infectious diseases and other local endemic diseases, for example, trachoma, goitre, filariasis etc.
- (f) Tuberculosis

- (g) Preventive aspects of psychological medicine and psychiatry.
- (h) Preventive aspect of Leprosy
- (i) V.D. Control
- (j) Preventive aspects of dietetics and Nutrition information on all National Health Programmes and the role of International Health Organization
- (k) Family welfare planning and community Medicine.
 1. The need for Family planning.
 2. Organization of Family planning service.
 3. Health Education in relation to Family planning
 4. Nutrition
 5. Psychological needs of the mother, the child and the family.
 6. Demography and vital statistics.
3. **Health Information and Basic Medical Statistics** : Sources and presentation of data, sampling, measures of Central Tendency, Variability, Normal Distribution and Normal Curve, Sampling Variability and significance, Demography and Vital Statistics, Life table etc.
4. **Environment Health** :
 - (a) Role of environment in health and disease. Components of environmental health and their impact on health and disease.
 - (b) Water : Sources, Collection, Storage and Distribution of water, impurities and their relation to health, purification, importance of safe water supply. Collection and forwarding of sample of water, analysis of water, standards of purity, public swimming bath sanitation, National Water & Sanitation programme, Water Borne Diseases.
 - (c) Medical Entomology : Life history, role in disease transmission and control of common vectors of medical importance such as mosquitoes, housefly, housefly, louse, rat flea, bedbugs, ticks, mites, cyclops etc.
 - (d) Rodents : Role in disease transmission habituates and control of common rodents of medical importance.
 - (e) Insecticides : Classification, resistance and toxicity
 - (f) Demonstrations on insects, micro-organisms, parasites, insects, rodents, ticks, instruments, food stuffs, immunological substances etc.
5. **Epidemiological Exercises and statistical Exercises** : Students will be trained for epidemiological and statistical exercises through class room exercises, field visit demonstrations etc.
6. **Family health and Clinics** : Social case study.
7. **National Health Programmes and Epidemic Situations**
8. **Visit to an Industry** and class room demonstrations on occupational health relevant to state.
9. **Project Work** : Candidate would be assigned a project to learn Epidemiology and management on specific of Health and Disease subjects in community medicine. A report on it will be prepared and evaluated at the level of University examination.

Books and periodicals Recommended for Reading

1. Park's textbook of Preventive & Social Medicine by K. Park
2. Epidemiology & management for health care for all by P. V. Sathe & A. P. Sathe
3. Methods in Biostatistics by B.K. Mahajan
4. Maxey - Resenau - public Health & Preventive Medicine by John M. Last
5. Health in Industry by Donald Hunter
6. Introduction to Biostatistics by H. Banerjee
7. Indian and foreign Journals relevant to community Medicine/ P.S.M
8. WHO Miscellaneous Publications.
9. I.C.M.R. Bulletin
10. N.I.N. Periodicals.
11. Other reference books & periodicals.

Final M.B.B.S. Part-II Medicine

1. **Goal :** The broad goal of teaching of undergraduate students in Medicine is to have knowledge, skills and behavioral attributes to function effectively as the first contact physician.

2. **Objectives :**

- (a) **Knowledge :** At the end of the course the student shall be able to
- diagnose common clinical disorders with special reference to infectious diseases, nutritional disorders, tropical and environmental diseases.
 - outline various modes of management including drug therapeutics especially dosage, side effects, toxicity, interactions, indications and contraindications;
 - propose diagnostic and investigative procedures and ability to interpret them
 - provide first level management of acute emergencies promptly and efficiently and decide the timing and level of referral, if required.
 - recognise geriatric disorders and their management.
- (b) **skills :** At the end of the course the student shall be able to
- develop clinical skills (history taking, clinical examination and other instruments of examination) to diagnose various common medical disorders and emergencies;
 - refer a patient to secondary and/or tertiary level of health care after having instituted primary care.
 - perform simple routine investigations like haemogram, stool, urine, sputum and biological fluids examination
 - assist the common bed side investigative procedures like pleural tap, lumbar puncture, bone marrow aspiration/biopsy and liver biopsy.
- (c) **integration :**
- (a) With community medicine and physical medicine and rehabilitation to have the knowledge and be able to manage important current national health programmes, also to be able to view the patient in his/her total physical, social and economic milieu.
- (b) With other relevant academic inputs which provide scientific basis of clinical medicine e.g. anatomy, physiology, biochemistry, microbiology, pathology and pharmacology.

SYLLABUS

Syllabus for Internal Medicine including skin and sexually transmitted diseases, T.B. and Chest diseases, Psychiatry diseases etc.

GENETIC FACTORS IN DISEASES :

Introduction :

- Basic of cell division and reproduction, mutation.
- molecular genetics and medicine
- Common genetic diseases, genetic counselling.
- Gene replacement therapy, oncogenes.

IMMUNOLOGY : Normal immune system in human and mechanism of immune response and immunoglobulins, AIDS.

DISTURBANCES IN WATER, ELECTROLYTE AND ACID BASE BALANCE :

1. Normal distribution of water and electrolytes.
2. Disturbances in water and electrolytes balance and acid base imbalance

NUTRITIONAL FACTORS IN DISEASES.

- Protein, carbohydrate and Fat deficiency disorders.
- Minerals and trace elements.
- Vitamins and its disorders, vitamin/A deficiency.
- Essential aminoacids.
- Nutritional therapy.

INFECTION AND DISEASES :

Epidemiology and spread of infection

Approach to infective disease

Clinical features, diagnosis and treatment and prevention of infection.

INFECTIOUS DISEASES :

- Infection due to various gram positive and gram Negative organisms.
- mixed anaerobic infection
- Fungal, protozoal, helminthic diseases.
- Bacterial, fungal, protozoal, Rickettsial and viral infection.

CARDIOVASCULAR DISEASES :

- Physiology, symptomatology and epidemiology of cardiovascular disorders.
- Physical examination and investigations in cardiovascular system.
- investigative procedures like 2D-echo, Catheterisation, Other new investigative modalities.
- Disorders of cardiac rhythm, and conduction.
- Cardiac failure (LVF, CHF, RVF)
- IHD, ischaemic myocardium, Hypertension, Pulmonary Hypertension, Pulmonary embolism.
- Acute rheumatic fever, Rheumatic Heart disease, Valvular diseases, Infective endocarditis, Congenital heart diseases.
- Surgical treatment of heart diseases, Heart diseases in pregnancy, Diseases of arteries and veins Cardiac tumours.

DISEASES OF RESPIRATORY SYSTEM, INCLUDING T.B. AND CHEST DISEASES :

- Anatomy, Physiology and symptomatology and physical examination of respiratory system
- Infection and various infective diseases of respiratory tract.
- Investigations, treatment and complication of respiratory diseases.
- Allergic diseases of respiratory tract, Occupational Lung diseases.
- Diseases of Pleura, Larynx and Bronchus
- Acute and Chronic respiratory failure and its management.
- Neoplasms of Lungs.
- Prevention of respiratory diseases and ventilatory support.

DISEASES OF DIGESTIVE SYSTEM :

- Physiology, Symptomatology physical examination of Gastro Intestinal Tract
- Diseases of Mouth, Oesophagus, Stomach, Duodenum, Small and Large intestine
- Psychogenic disorders and vascular diseases of Gastro Intestinal Tract, Motility disorders, and diseases of Pancreas.

Investigative procedures in Gastro Intestinal Tract.

DISEASES OF LIVER AND BILIARY TRACT :

- Anatomy and physiology of liver and symptomatology of liver disorders, Liver function tests
- Various types of Jaundice.
- Acute and chronic parenchymal diseases of liver
- Serological markers, Passive and active immunization against Hepatitis.
- Acute massive necrosis of liver and new growths of liver.
- Diseases of gall bladder and biliary tract.

DISEASES OF KIDNEY AND URINARY SYSTEM :

- Anatomy and physiology of kidney, mode of action of kidney.
- Infective, metabolic, congenital and neoplastic diseases of kidney.
- Acute and chronic renal failure (Nephrotic syndrome), Glomerulonephritis.
- Renal function tests and investigative procedures in urinary system.
- Benign enlargement of prostate and various diseases of Genito-urinary tract.
- Renal transplant.

DISEASES OF ENDOCRINE SYSTEM :

- Anatomy and physiology and various disorders of endocrine glands.
- Relevant clinical manifestations, diagnosis and management of various disorders.
- Male and female sexual disorders.

DISEASES OF BLOOD AND BLOOD FORMING ORGANS :

- Physiology of blood formation and destruction.
- Blood cells disorders
- Blood transfusion, Blood component transfusion, and Bone marrow transplantation

DISEASES OF CONNECTIVE TISSUE :

- Collagen disorders and others.

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DISEASES OF NERVOUS SYSTEM :

Anatomy and Physiology of Cerebral, cerebellar and spinal and peripheral nerve lesions.

Recent investigations and management for Cerebral, cerebellar and spinal and peripheral nerve lesions.

Extra pyramidal system- Anatomy and physiology of the disorders.

DISORDERS OF MUSCLES :

POISONING

All common poisoning including insects, animals and snake bite.

Clinical manifestation, diagnosis and management along with universal antidote of poisoning.

TROPICAL DISEASES :

R.E.S.Y.S.T.E.M.S :

Psychiatry:(Mental Disorders)

Syllabus

Historical survey of the attitude to mental disorders. The application of the knowledge of Psychiatry at the present time of such condition - the psychoses, the psychoneuroses and character disorder; behaviour disorders of children; criminality, industrial inefficiency.

1. Psychopathology: the unconscious mind; mental conflict; repression; symptom formation; some common mental symptoms; mental mechanisms.
2. The Neuroses - hysteria, anxiety states, anxiety hysteria, anxiety neuroses; obsessional neuroses; neurasthenia, hypochondria.
3. The Psychoses - the biogenic Psychoses, the manic depressive reaction type; the schizophrenic - paranoid reaction types, the schizophrenias, the paraphrenias, the paranoid, the organic psychoses with special emphasis on the commoner types such as senile and presenile psychoses; arterio sclerotic psychoses, General paralysis of insane, The various types of psychoses associated with alcoholism. Confusional syndromes, Feigned lunacy, Indian Lunacy Act and New Mental Health Act.
4. Mental retardation - mental health in childhood, Introductory remarks on the behaviour disorders of childhood, personality disorders, Habit disorders, Intellectual retardation.

Note : The course of psychiatry shall consist of 23 didactic lectures during Fifth clinical term

Dermatology (including S.T.D.)

Syllabus

Lectures :

1. Anatomy and Physiology - Structure and function of skin
2. Infections- Bacterial, fungal, viral
3. Parasitic infestation - Scabies and pediculosis.
4. Papillo-squamous diseases - psoriasis, Seborrheic dermatitis,
5. Vesiculo bullous dermatosis .
6. Acne
7. Eczema
8. Leprosy
9. Sexually transmitted diseases : Syphilis, Gonorrhoea, Chancroid, I.G.V. and AIDS

Paediatrics

1. Goal : The broad goal of teaching of undergraduate students in paediatrics is to acquire adequate knowledge and appropriate skills for optimally dealing with major health problems of children to ensure their optimal growth and development.
2. Objectives :

- (a) Knowledge : At the end of the course the student shall be able to
 - describe the normal growth and development during foetal life, neonatal period, childhood and adolescence and outline deviations thereof.
 - describe the common paediatric disorders and emergencies in terms of epidemiology, aetiology, pathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation.

- state age related requirements of calories nutrients, fluids drugs etc in health and disease
 - describe preventive strategies for common infectious disorders malnutrition genetic and metabolic disorders poisoning, accidents and child abuse
 - outline national programmes relating to child health including immunization programmes
- (b) skills : At the end of the course the student shall be able to
- take a detailed paediatric history conduct an appropriate physical examination of children including neonates make clinical diagnosis conduct common bedside investigative procedures interpret common laboratory investigation results and plan and institute therapy
 - take anthropometric measurements resuscitate newborn and infants at birth prepare oral rehydration solution perform tuberculin test, administer vaccines available under current national programmes, perform venesection, start an intravenous saline and provide nasogastric feeding
 - conduct diagnostic procedures such as lumbar puncture liver and kidney biopsy bone marrow aspiration pleural tap and ascitic tap
 - distinguish between normal newborn babies and those requiring special care and institute early care to all new born babies including care of preterm and low birth weight babies, provide correct guidance and counselling in breast feeding.
 - provide ambulatory care to all sick children identify indications for specialized inpatient care and ensure timely referral of those who require hospitalization
- (c) integration : The training in paediatrics should prepare the student to deliver preventive promotive curative and rehabilitative services for care of children both in the community and at hospital as part of a team in an integrated form with other discipline e.g. Anatomy Physiology forensic medicine community medicine and physical medicine and rehabilitation.

SYLLABUS

1. GENERAL : INTRODUCTION TO PEDIATRICS :

Importance, History of pediatrics, vital statistics related to child health WHO goals for child health by 2000 A.D.

2. GROWTH & DEVELOPMENT :

Factors affecting, Assessment in an individual child, Anthropometry & interpretation, Monitoring, Growth Charts

3. NUTRITION : Breast feeding, Infant feeding including complementary feeding, Normal nutrition, Principles of diet planning in health & disease, Assessment of nutritional status, Diagnosis & management of common nutritional deficiencies in children (I.P.M.)

Vitamin & Mineral deficiencies & other micronutrient deficiencies including Vit A,B,C,D, Fe, Ca, Zn, & Iodine) Nutrition rehabilitation

4. NEWBORNS

Classification - FT, PT, LBW

Assessment of gestation by modified Ballard score

Essential care of normal newborn (oxygenation, thermal control feeding, prevention of infections, & diagnosis & immediate care of high risk newborns and fetal-al) of infections, & diagnosis & management of high risk cases like LBW, Birth asphyxia

Diagnosis & primary management of high risk cases like LBW, Birth asphyxia (resuscitation), Septaemia, RDS, Neonatal sepsis, Jaundice, Late threatening congenital defects.

5. PREVENTIVE & COMMUNITY PEDIATRICS

Immunization programmes
Disease surveillance (A.F.P.)
National M.C.H. programmes (ICDS/CSSM/RCH etc.)
Anti-natal pediatrics
Postpartum care
Personal hygiene and care
Prevention of accidents and poisoning

6. COMMON CHILDHOOD INFECTIONS :

- (a) Diarrhoeal Disease
 - Diagnosis and management of dehydration
 - use of ORS
- (b) Acute Respiratory infections
- (c) Vaccine preventable disease (Tuberculosis, Diphtheria, Polio, Tetanus, Measles)
- (d) Other common infections (Malaria, Enteric, Hepatitis, Pyogenic meningitis, Viral encephalitis etc.)
- (e) Exanthemata and viral infections (Mumps, Chicken-pox, Rabies, GBS, Dengue, HIV, Rubella)
- (f) Parasitic infestations (Amoebiasis, Round Worm, Hookworm, Tapeworm, giardiasis)

COMMON PROBLEMS -SYSTEMIC :

- (a) CVS :
 - Rheumatic fever and cardiac disease
 - Congenital heart defects (VSD, ASD, PDA, Pulm. Stenosis, Fallot/Os tetralogy)
 - Congestive cardiac failure
- (b) BLOOD AND RELATED:
 - Anemias - congenital (Thalassemia, Sickle cell)
 - Acquired (Iron deficiency, Folic acid, Haemorrhages.)
 - Haemophilia
 - I.T.P.
- (c) RESPIRATORY
 - URT
 - Pneumonias
 - Bronchial Asthma
 - Pneumothorax
 - Empyema
- (d) CNS
 - Mental retardation cerebral palsy
 - Hydrocephalus Meningitis - SOL (intracranial lesions)
 - Coma, Convulsions, Epilepsy (in short)
- (e) ABDOMEN
 - Hepatomegaly
 - Cirrhosis/Acute and chronic hepatitis
 - Splenomegaly
 - Hepatosplenomegaly
 - Ascitis
 - Jaundice
- (f) GENITO - URINARY
 - A.G.N.
 - U.T.I.
 - Nephrotic Syndrome
 - ARF/CRF
- (g) CHILDHOOD MALIGNANCIES
 - Leukemias
 - Lymphomas
- (h) COLLAGEN DISORDERS
 - S.L.E.
 - J.R.A.
- (i) ENDOCRINE
 - Thyroid
 - Diabetes

(j) MISCELLANEOUS

Common pediatric surgical problems (Cleft lip, Cleft palate, TEV, hypertrophic pyloric stenosis, megacolon/lumps in abdomen, hydrocephalus)
Common Skin - ENT-Ophthalmic Problems in children.
Chromosomal anomalies like Down's Syndrome.
Metabolic problems like Macropolysaccharidosis

K. COMMON PSYCHOLOGICAL AND PSYCHIATRIC PROBLEMS IN CHILDREN.

CLINICAL CASES TO BE KEPT IN PRACTICAL EXAM.

- (a) NEWBORN
 - Full term healthy with or without some minor problem
 - L.B.W.
- (b) CHILD WITH SHORT STATURE
- (c) Delayed development
- (d) Protein Caloric Malnutrition (Grade-III/IV) Marasmus, Kwashiorkor
- (e) Rickets
- (f) Vitamin A deficiencies
- (g) Obesity
- (h) Severe Anemia
- (i) Child with either Hepatomegaly, Splenomegaly or Hepato-splenomegaly with or without Ascites.
- (j) Rheumatic heart diseases/ Valvular disease
- (k) Anasarca, Nephrotic Syndrome
- (l) Thalassemias
- (m) Haemophilia
- (n) Meningitis.

Surgery

1. Goal : The aim of teaching of undergraduate students in surgery is to produce graduates capable of delivering efficient first contact surgical care.

2. Objectives :

- (a) Knowledge : At the end of the course the student will be able to
 - * describe aetiology, pathophysiology, principles of diagnoses and management of common surgical problems including emergencies, in adults and children
 - * define indications and methods for fluid and electrolyte replacement therapy including blood transfusion.
 - * define asepsis, disinfection and sterilization and recommend judicious use of antibiotics.
 - * describe common malignancies in the country and management including prevention
 - * enumerate different types of anaesthetic agents, their indications, mode of administration, contraindications and side effects.
- (b) skills
 - * At the end of the course the student shall be able to
 - * diagnose common surgical conditions both acute and chronic in adult and children
 - * plan various laboratory tests for surgical conditions and interpret results.
 - * identify and manage patients of haemorrhagic, septicæmic and other types of shock
 - * be able to maintain patent air-way and resuscitate
 - * a critically injured patient
 - * patient with cardio-respiratory failure
 - * a drowning case
 - * monitor patients of head, chest, spinal and abdominal injuries both in adults and children
 - * provide primary care for a patient of burns

- * acquire principles of operative surgery, including pre-operative operative and post operative care and monitoring
- * treat open wounds including preventive measures against tetanus and gas gangrene.
- * diagnose neonatal and paediatric surgical emergencies and provide sound primary care before referring the patient to secondary/ tertiary centres
- * identify congenital anomalies and refer them for appropriate management
- * in addition to the skills referred in items 1 to 10 he would have observed/ assisted/ performed the following :
 - (a) incision and drainage of abscess
 - (b) debridement and suturing open wound
 - (c) venesection
 - (d) excision of simple cyst and tumours
 - (e) biopsy of surface malignancy
 - (f) catheterisation and nasogastric intubation
 - (g) circumcision
 - (h) meatotomy
 - (i) vasectomy
 - (j) peritoneal and pleural aspirations
 - (k) diagnostic proctoscopy
 - (l) hydrocele operation
 - (m) endotracheal intubation
 - (n) tracheostomy and cricothyroidotomy
 - (o) chest tube insertion
- (c) integration : The undergraduate teaching in surgery shall be in various stages with different pre and para and other clinical departments.

SYLLABUS

Response to injury- wound healing and management of wounds ; wound infections.
 Fluid and electrolyte and acid balance and nutrition
 Burns- shock; haemorrhagic ; blood transfusion; plasma volume expanders, pain relief.
 Pre and post operative techniques.
 Management of surgical patients in intensive care units.
 Injury-cold; bites; stings, immunology and allergy.
 Infections-acute and chronic.
 Tumours- benign and malignant; ulcers and sinuses and cancer biology.
 Hospital sepsis-sterilisation, sepsis and antisepsis.
 Lymphatics and lymph glands-obstructions and tumours of lymphatics and lymph glands.
 Hand and foot diseases.
 Diabetes mellitus-surgery on the patients of diabetes mellitus.
 Vascular diseases- veins and arteries; gangrene and venous thrombosis; varicose veins; venous and arterial anastomosis.
 Tropical diseases-surgical aspects of tuberculosis, amoebiasis, filariasis, hydatid diseases; ascariasis, dracunculosis, mycetoma; leprosy, typhoid, tetanus.
 Salivary gland- infections and neoplasms.
 Jaw and oral cavity-non malignant and malignant lesions.
 Neck- branchial cyst, cystic hygroma, thoracic outlet syndrome.
 Teeth and gums- infections and tumours.
 Thyroid gland-thyroglossal cyst; goiter; thyrotoxicosis and tumours; hypo and hyper thyrotoxicosis.
 Parathyroid; adrenals and pituitary gland diseases.
 Breast- gynecomastia; fibroadenoma, fibroadenosis; infections and malignancy of breast.
 Cardiac arrest.
 Common malignancies.
 AIDS and general surgery.
 Radio diagnosis and radio therapy: principles of CT Scan and MRI.

Common paediatric surgical problems.

Oesophagus- congenital lesions; achalasia cardia, injuries, stricture, diaphragmatic hernias, and carcinomas.

Stomach and duodenum- hypertrophic pyloric stenosis, peptic ulcers, gastric ulcer and malignancy; Perforation and G.I.Haemorrhage.

Small intestine- congenital anomalies, injuries, typhoid, tuberculosis, intestinal obstruction and strangulation; perforation and tumours; resection, anastomosis and bypass.

Vermiform appendix- appendicitis and tumours.

Peritoneum- ascitis, peritonitis, tumours, omentum, and mesentery and retro peritoneal space.

Hernias- inguinal; femoral; midline and other hernias of abdominal wall and incisional hernia.

Male genital system - congenital anomalies, hydrocoele, varicocele, Epididymo-orchitis, tuberculosis, benign and malignant enlargement of prostate, tumors of testis, urethra and penis, stricture and phimosis, paraphimosis, and hypospadias and tumours.

Family planning procedures - vasectomy, vaso vasal and vaso epididymal anastomosis, organ transplantation - kidney transplantation, immuno suppression , haemo and peritoneal dialysis, surgical aspects, chronic renal failure.

Neuro surgery - head injury.

Anaesthesiology Syllabus

1. Didactic Lectures :
 1. Introduction-History and evolution of anaesthesia.
 2. Principles and stages of anaesthesia.
 3. General anaesthetics-inhalational and intravenous.
 4. Muscle relaxant.
 5. Local and spinal anaesthesia and epidural analgesia.
 6. Pre anaesthetic evaluation and medications.
 7. CPBR (Cardio-pulmonary brain resuscitation) and anaesthesia. Monitoring course of anaesthesia.
2. Clinical posting
 1. Practical demonstration of the various anaesthetic techniques and equipments.
 2. Simple procedures like preparation of drugs, intubations and L.P.
 3. Cardio-pulmonary resuscitation - with training on model
 4. Demonstration of the care of the unconscious, critically ill and seriously injured patients.
 5. Preoperative assessment and medication.
 6. monitoring of the patient during anaesthesia.
 7. Airway management
 8. postoperative care.

Orthopaedics

1. Objectives :

- (a) Knowledge : At the end of the course the student shall be able to
 1. explain the principles of recognition of bone injuries and dislocation;
 2. apply suitable methods to detect and manage common diseases of bone and joints
 3. identify congenital skeletal anomalies and their referral for appropriate correction or rehabilitation.
 4. recognize metabolic bone diseases as seen in this country
 5. explain etiogenesis, manifestations, diagnosis of neoplasms affecting bones.
- (b) skills : At the end of the course the student shall be able to
 - (i) detect sprains and deliver first aid measures for common fractures and sprains and manage uncomplicated fractures of clavicle, Colles/Es forearm, phalanges etc.
 - (ii) use techniques of splinting, plaster immobilization etc.
 - (iii) manage common bone infections, learn indications for sequestration, amputations and corrective measures for bone deformities;
 - (iv) advise aspects of rehabilitation for Polio, Cerebral Palsy and Amputation

- (c) application : Be able to perform certain orthopaedic skills, provide sound advice of skeletal and related conditions at primary or secondary health care level.
- (d) integration : Integration with Anatomy, surgery, pathology, radiology and forensic medicine be done.

SYLLABUS Bone injuries

GENERAL :

- Sprains, fractures, dislocations and fracture dislocations.
- Definition and classification of fractures.
- Diagnosis, management and complications of fractures.

FRACTURES :

Clavicle, supracondylar fracture of humerus, fractures of forearm bones (Monteggia and Galeazzi), fractures of lower end of radius, scaphoid, fractures of upper end of femur (transcervical and intertrochanteric fractures), fracture shaft femur, intraarticular fractures around knee (intercondylar fractures of femur, tibia and patella), tibia, ankle fractures.

DISLOCATIONS :

- Shoulder, elbow, hip, injuries to spine, pelvis, chest wall.
- Haemogenous osteomyelitis (acute pyogenic)
- Acute septic arthritis.
- Tuberculous infection
- spine: hip, knee, carpal, scia,
- C.T.E.V., C.D.H., Syndactyl
- Polydactyl
- Scurvy nutritional, rickets, osteomalacia, osteoporosis
- Giant cell tumour, osteogenic sarcoma, Ewing's tumour, myeloma, exostosis, (Solitary and multiple.)

Skill :

- Axillary sprain
- skin and skeletal traction.
- First aid treatment of closed and open (Compound) fractures
- Splints (Wooden and plaster)
- In orthopaedics include:
- Peripheral nerve injury
- Saturday night palsy (radial nerve), tardy ulnar nerve palsy,
- Foot drop, median nerve injury.
- Frozen shoulder
- DeQuervain's tenosynovitis
- Carpal tunnel syndrome
- Mallet finger
- Pulled elbow.
- Sudek's osteodystrophy
- V.I.C.
- P.I.D. and Sciatica
- Arthroscopy
- Arthrodesis
- Arthroplasty
- Tuberculous dacrylitis
- Diabetic foot
- Böhler's splint
- Thomas's splint
- Skin and skeletal traction
- B.K. Amputation
- A.K. Amputation.

Obstetrics and Gynaecology

Obstetrics and Gynaecology to include family welfare and family planning.

1. **Goal :** The broad goal of the teaching of undergraduate students obstetrics and Gynaecology is that he / she shall acquire an understanding in anatomy, physiology and pathophysiology of the reproductive system and gain the ability to optimally manage common conditions affecting it.

2. Objectives :

- (a) **Knowledge :** At the end of the course the student shall be able to
- * Outline anatomy physiology and pathophysiology of the reproductive system and common conditions affecting it.
 - * detect normal pregnancy labour, puerperium and manage the problems he / she is likely to encounter therein.
 - * list the leading causes of maternal and perinatal morbidity and mortality
 - * understand the principles of contraception and various techniques employed, methods of medical termination of pregnancy; sterilisation, and their complications.
 - * identify the use, abuse and side effects of drugs in pregnancy, pre-menopausal and post menopausal periods;
 - * describe the national programme of maternal and child health and family welfare and their implementation at various levels;
 - * identify common Gynaecological diseases and describe principles of their management.
 - * state the indications, techniques and complications of surgeries like caesarian section, lapotomy, abdominal and vaginal hysterectomy, Fothergill's operation and vacuum aspiration for medical termination of pregnancy (MTP).
- (b) **skills :** At the end of the course the student shall be able to
- * examine a pregnant woman, recognise high risk pregnancies and make appropriate referrals;
 - * conduct a normal delivery, recognise complications and provide post natal care
 - * resuscitate the newborn and recognise congenital anomalies.
 - * advise the couple on the use of various available contraceptive devices and assist in insertion and removal of intra uterine contraceptive devices.
 - * perform pelvic examination, diagnose and manage common Gynaecological problems including early detection of genital malignancies;
 - * make a vaginal cytological smear perform a post coital test, wet vaginal smear examination for Trichomonas, monilia and grain stain for gonorrhea.
 - * interpretation of data of investigations like biochemical, histopathological, radiological ultrasound etc.
- (c) **integration :** The student shall be able to integrate clinical skills with other disciplines and bring about co-ordination of family welfare programme for the national goal of population control.
- (d) **General Guidelines for Training :**
- attendance of a maternity hospital or the maternity wards of a general hospital including (a) antenatal care (b) the management of puerperium and (c) a minimum period of 5 months; inpatient / an outpatient training including family welfare planning;
 - of this period of clinical instruction, not less than one month shall be spent as a resident pupil in a maternity ward of a general hospital.
 - during this period the student shall conduct at least 10 cases of labour under the adequate supervision and assist 10 other cases.
 - a certificate showing the number of cases of labour attended by the student in the maternity hospital and / or patient homes respectively, shall be signed by a responsible medical officer on then staff of the hospital and shall state:
 - that the student has been present during the course of the labour and personally conducted each case making the necessary abdominal and other examinations under the supervision of the certifying officer who shall describe his official position.

- (b) that satisfactory written histories of the cases conducted including wherever possible antenatal and postnatal observations were presented by the student and initiated by the supervising officer.

FAMILY WELFARE PLANNING

Training in Family Welfare planning shall be emphasized in all the three phases and during internship as per guidelines provided in Appendix A

Obstetrics :

SYLLABUS

- * Anatomy of female genital organs
- * Physiology of conception.
- * Congenital anomalies of female genital organs, its clinical application and obstetrics importance
- * Diagnosis of pregnancy during 1st, 2nd and 3rd trimester
- * Antenatal care
- * Hyperemesis gravidarum
- * Hemorrhage during 1st trimester
- * Abortions
- * Hydatidiform mole
- * Ectopic pregnancy
- * Recurrent pregnancy loss
- * Diseases during pregnancy:
 - Anaemia
 - Toxaemia
- * Abnormal presentations, positions and lie of fetus,
 - Occipito posterior
 - Breech
 - Face
 - Brow
 - Transverse
 - Compound
 - Cord
- * Multiple pregnancy.
- * Contracted pelvis
- * Hydramnios
- * Haemorrhage during 2nd & 3rd trimester
 - Placenta Previa
 - Accidental Haemorrhage
- * Rh immunization
- * Intrauterine death
- * Medical Disorders and pregnancy
 - Heart diseases
 - Diabetes
 - Infections (Malaria, Tuberculosis, Viral Hepatitis, Aids)
 - High-risk pregnancy: Diagnosis and referral
 - Drugs during pregnancy
 - Congenital Anomalies of fetus
 - Intrauterine growth retardation
 - Laboratory investigations during pregnancy.
 - Ultrasonography in obstetrics.
 - Medical termination of pregnancy
 - Normal Labour
 - Pareograph
 - Resuscitation of newborn
 - Newborn care
 - Intranatal diagnosis, management and referral for abnormal presentations e.g.
 - Occipito posterior position.
 - Breech
 - Face, Brow
 - Transverse

- * Multiple pregnancy
- * Preterm delivery
- * Prolapsed
- * Induction of labour
- * Obstructed labour
- * Rupture Uterus
- * Obstetrics injuries (Tears, fistulas)
- * Operative procedures (Minor, Major)
 - Dilatation & Evacuation
 - Termination of pregnancy by suction Evacuation
 - Episiotomy
 - Vacuum Extraction
 - Forceps
 - Cesarian Section
 - Laparotomy
- * Postpartum hemorrhage
- * Obstetric Shock
- * Retained placenta
- * Inversion of uterus
- * Breast Feeding practices
- * Normal puerperium
- * Puerperal complications (causes, diagnosis and referral)
 - Puerperal sepsis
 - Secondary post partum haemorrhage
 - Thrombophlebitis
- * Maternal Mortality
- * Perinatal mortality
- * National programmes for MCH care
 - ICDS
 - CSSM
 - RH
- Post partum programme.

Gynaecology SYLLABUS

- * Physiology of ovulation
- * Physiology of menstruation
- * Congenital anomalies of female genital tract and its Gynecological importance
- * Adolescent Gynaecology
- * Puberty and its disorders
- * Menstrual disorders
 - Amenorrhoea
 - Dysmenorrhoea
 - Polymenorrhoea
 - Oligomenorrhoea
 - Dysfunctional uterine bleeding
- * Hormones in Gynaecology
- * Retroversion of uterus
- * Reproductive tract infections
- * Infertility
- * Prolapsed
- * Endometriosis
- * Adenomyosis
- * Fibromyoma
- * Carcinoma of cervix

- Carcinoma body uterus
- Ovarian tumors
- Carcinoma vulva
- Choriocarcinoma
- Complete perineal tear
- Vesio vaginal & Recto vaginal fistula
- Preoperative & postoperative care
- Ultrasonography in Gynaecology
- Gynecological investigations
- Semen examination
- Smear preparation for various vaginal infections
- Pap's smear
- Endometrial biopsy
- Tests for ovulation
- Tubal patency tests
- Gynecological operations
- Dilatation & curettage
- Abdominal & vaginal hysterectomy
- Laparoscopy
- Laparotomy
- Myomectomy
- Fothergill's operation
- National Programmes
- Aids control program

Family planning SYLLABUS

- Family planning counselling
- Various contraceptive technology
- Natural methods of contraception
- Barrier Methods
- Oral contraceptive pills
- Intrauterine devices
- Lactational Amenorrhoea Method
- Male and Female surgical methods
- Newer Contraceptive Technologies
- Emergency contraception
- Injactable contraceptives
- Implants
- Hormonal IUDs, Vaginal rings
- Female Condoms
- Male Methods
- Male involvement
- Family Welfare Program

O. M.B.B.S. 3 :

1. *Essentials for qualifying to appear in professional examinations* - Fresh Appearing Candidates before presenting themselves for the university examination shall have :
 - (a) attended 75% of the total number of the days in each term
 - (b) attended 75% of the minimum prescribed teaching hours as per Appendix A.
 - (c) Lectures and Practical including clinics, seminars, group discussions, tutorials, demonstrations, etc. in concerned and allied subjects
 - (d) secured atleast 40% marks of the total marks fixed for the internal assessment in particular subject

N.B. For definition of term, refer O. M.B.B.S. 1.
2. If a student is found appearing in the university examinations without fulfilling the conditions in O. M.B.B.S. 3, (d) his university result of the concerned subject/ subjects should be cancelled

R. M.B.B.S. 2 :

EXAMINATION REGULATION

First M.B.B.S.

Anatomy

Marks scheme

Theory :		
Paper - I	50 marks	3 hours duration
Paper - II	50 marks	3 hours duration
Internal assessment	20 marks	
	120 marks	
Practicals		
Oral viva/Soft parts	20 marks	
Spotting	20 marks	
Skeleton	10 marks	
Surface anatomy	10 marks	
Internal assessment	20 marks	
Total	80 marks	
• Distribution of Marks in Parts of the examiners		
Part I	Oral viva/Soft parts	20 marks
Part II	Skeleton	10 marks
	Spotting	10 marks
Part III	Surface anatomy	10 marks
	Spotting	10 marks
• Topics division		

Paper I - General Anatomy, General Embryology, Upper Limb, Neuro-anatomy, Head & Neck
Paper II - Family welfare, Genetics, Lower Limb, Thorax, Abdomen, Pelvis, Perineum

- Structure of Question paper

Paper 1

Section I

1. Applied Anatomy (Topics covered in Paper I) Two short notes out of three (2 x 5 marks) = 10 marks
2. a) Neuro-anatomy Two short notes out of three (2 x 5 marks) = 10 marks
 b) Systemic Histology & Histo-embryology (2 x 5 marks) = 10 marks
 c) Neck & neuro-anatomy One short note out of two (2 x 5 marks) = 10 marks
3. a) General Anatomy One short note out of two (2 x 5 marks) = 10 marks
 b) General Embryology One short note out of two (2 x 5 marks) = 10 marks
4. Head & Neck Two short notes out of three (2 x 5 marks) = 10 marks
5. a) Upper Limb Two short notes out of three (2 x 5 marks) = 10 marks
 b) Systemic Histology & Histo-embryology (2 x 5 marks) = 10 marks
 c) Head & Neck & Neuro-anatomy One short note out of two (2 x 5 marks) = 10 marks
6. a) Lower Limb Two short notes out of three (2 x 5 marks) = 10 marks
 b) Systemic Histology & Histo-embryology (2 x 5 marks) = 10 marks

Paper 2

Section I

1. Applied Anatomy (Topics covered in Paper II) Two short notes out of three (2 x 5 marks) = 10 marks
2. a) Thorax Two short notes out of three (2 x 5 marks) = 10 marks
 b) Systemic Histology & Histo-embryology (2 x 5 marks) = 10 marks
 c) Abdomen and Pelvis One short note out of two (2 x 5 marks) = 10 marks
3. a) Genetics One short note out of two (2 x 5 marks) = 10 marks
 b) Family Welfare One short note out of two (2 x 5 marks) = 10 marks

Section-II

- 4 Abdomen, Pelvis and Perineum Two short notes out of three 2x5 marks = 10 marks
5 (a) Lower Limb Two short notes out of three 2x3 marks = 6 marks
(b) Systemic Embryology of Abdomen & Thorax One short note out of two 1x3 marks = 3 marks
6 Objectives from Abdomen, Pelvis, Six out of eight 6x1 mark = 6 marks
Perineum & Lower limb 25 marks
- * Instructions :
1. Time duration : 3 hours for each paper.
2. Each paper should contain one applied anatomy question of 10 marks (Question no. 1).
3. Total marks 50 for each paper.

Physiology :

* Marks scheme :

1. Theory :
Paper-I 50 marks three hours duration
Paper-II 50 marks three hours duration
Internal assessment 20 marks
120 marks
2. Practicals :
Oral Viva 20 marks
Haematology 15 marks
Clinical physiology 10 marks
Calculations, graphs, charts, photographs etc. 10 marks
Instruments 5 marks
Internal assessment 20 marks
80 marks
- * Division of Marks in Pairs of the examiners
Pair I Oral viva 20 marks All candidates
Pair II Haematology 15 marks All candidates
Instruments 5 marks All candidates
Pair III Clinical physiology 10 marks All candidates
Calculations, graphs, charts etc. 10 marks All candidates
- * Topics division

Paper I :

General Physiology, Bio physics, Blood, Excretory system including skin, Cardio-vascular system and Respiratory system environmental Physiology and Exercise Physiology

Paper II :

Nerve muscle physiology, Special senses, Central Nervous System including Autonomic Nervous System, Digestive system, Endocrine system and reproductive system.

* Structure of Paper

- Paper I**
Section I
- Q.1 Applied Physiology of systems covered in paper I 2 short note out of three 2x5 marks = 10 marks
Q.2 (a) Blood 2 short note out of three 2x3 marks = 6 marks
(b) General physiology and Bio physics 1 short note out of two 1x3 marks = 3 marks
Q.3 Excretory system including skin 2 short note out of three 2x3 marks = 6 marks
25 marks
- Section 2**
- Q.4 Cardiovascular System 2 short note out of three 2x5 marks = 10 marks
Q.5 (a) Respiratory system 2 short notes out of three 2x3 marks = 6 marks
Environmental Physiology and Exercise Physiology
Q.6 Objective questions from systems covered in paper I 1 short notes out of two 1x3 marks = 3 marks
6 out of eight 6x1 mark = 6 marks
25 marks

Paper II

Section I

- Q.1 Applied Aspects of systems covered in paper II 2 short notes out of three 2x5 marks = 10 marks
Q.2 (a) Endocrines 2 short notes out of three 2x3 marks = 6 marks
(b) Reproductive system 1 short note out of two 1x3 marks = 3 marks
Q.3 Digestive system 2 short notes out of three 2x3 marks = 6 marks
25 marks

Section 2

- Q.4 Central Nervous system including autonomic nervous system 2 short note out of three 2x5 marks = 10 marks
Q.5 (a) Special senses 2 short note out of three 2x3 marks = 6 marks
(b) Nerve muscle physiology 1 short note out of two 1x3 marks = 3 marks
Q.6 Objectives questions from systems covered in paper II 6 out of eight 6x1 mark = 6 marks
25 marks

* Instructions :

1. Time duration : 3 hours for each paper.
2. Each paper should contain one applied question of 10 marks (Question no. 1).
3. Total marks 50 for each paper.

Bio-Chemistry :

Scheme of marks: "Bio chemistry: marks scheme"

Theory :

- Paper-I 50 marks three hours duration
Paper-II 50 marks three hours duration
Internal assessment 20 marks
120 marks

Practicals :

- Oral Viva 20 marks
Exercise-1 20 marks
Exercise-2-a 14 marks
- b 6 marks
Internal assessment 20 marks
80 marks

Practical I :

(One hour) Quantitative estimation of Urea, creatinine, sugar, cholesterol, bilirubin, total protein, Alanine transaminase, alkaline phosphatase, amylase, iron, electrolyte etc.

Practical-II :

- (a) qualitative test for carbohydrates, proteins, reaction of milk, egg white, composition of gastric juice, saliva, C.S.F., normal urine, estimation of free and total acidity in gastric juice, titrable acidity, ammonia in urine and abnormal urine.
(b) Interpretation of bio chemical findings of patient (Case report)

OR

Spotters

OR

Selected tests

* Division of Marks in Pairs of the examiners

- Pair I Oral viva 20 marks Half candidates
Exercise-1 20 marks All candidates
Pair II Exercise-2 20 marks All candidates
Oral viva 20 marks Half candidates

• Topics division

Paper I :

Cell, Chemistry and metabolism of Fat and of Carbohydrates and of porphyrines, Enzymes, Body fluids, pH buffers, Acid base balance and regulation, Biological oxidation, Body defence mechanism and its application in medicine. Environmental Bio-chemistry and cancer Bio-chemistry, Organ function tests, Newer techniques.

Paper II :

Protein-chemistry and metabolism, nucleic acid, transcription, replication and translation, molecular biology, genetic engineering, bio-technology, integration of metabolism, Purine, Pyrimidine, chemistry and metabolism, vitamins, minerals and nutrition.

• Structure of Paper

Paper-I			
Section I			
Q.1	Applied aspects of topics covered under Paper I course.	2 short notes out of three	2x5 marks =10 marks
Q.2	Enzymes, Porphyrines, Carbohydrates and Fat chemistry	3 short notes out of five	3x3 marks =9 marks
Q.3	pH, Homeostasis, body fluids cell, organ function tests, newer techniques	2 short notes out of three	2x3 marks = <u>6 marks</u> 25 marks
Section II			
Q.4	Fat and carbohydrate metabolism	2 short notes out of three	2x5 marks =10 marks
Q.5	Body defence mechanism, Biological oxidation, environmental Bio-chemistry Cancer Bio-chemistry	3 short notes out of five	3x3 marks =9 marks
Q.6	Interpretative clinical chemistry with case report OR Short explanatory objective questions	6 out of eight	6x1 mark = <u>6 marks</u> 25 marks
Paper-II			
Section I			
Q.1	Applied aspects of topics covered under Paper II course	2 short notes out of three	2x5 marks =10 marks
Q.2	Nucleic acids, Chemistry and metabolism, molecular Biology	3 short notes out of five	3x3 marks =9 marks
Q.3	Integration of metabolism and nutrition	2 short notes out of three	2x3 marks = <u>6 marks</u> 25 marks
Section II			
Q.4	Protein metabolism, Minerals and Protein chemistry	2 short notes out of three	2x5 marks =10 marks
Q.5	Vitamins, Purine, Pyrimidine, chemistry and metabolism	3 short note out of five	3x3 marks =9 marks
Q.6	Interpretative clinical chemistry with case report OR Short explanatory objective questions	6 out of eight	6x1 mark = <u>6 marks</u> 25 marks

• Instructions :

1. Time duration three hours.
2. Each paper should contain one applied question of 10 (ten) marks (Question no. 1.)
3. Total marks 50 for each paper.

Second M.B.,B.S.

Pathology :

Marks scheme :

Theory :		
Paper-I	40 marks	two hours duration
Paper-II	40 marks	two hours duration
Internal assessment	<u>20 marks</u> 100 marks	

Practicals :

Oral Viva	15 marks
Exercise (Clinical pathology & Histopathology)	15 marks
Spotting (10 spots x1 minute)	10 marks <u>10 marks</u>
Internal assessment	50 marks

•Division of Marks in Pairs of the examiners

		All candidates
Pair I	Oral viva	15 marks Half candidates
Pair II	Exercise	15 marks Half candidates
	Spotting	10 marks Half candidates
Pair III	Exercise	15 marks Half candidates
	Spotting	10 marks

•Topics division

Paper - I : *General Pathology

*Haematology

Paper - II : *Systemic Pathology

* Clinical Pathology (Body fluids, function test.)

•Structure of question paper

Paper I & Paper II :			
Q.-1	Write notes on	any two out of three.	2x5 marks =10 marks
Q.-2	Write short notes on	any three out of four	3x4 marks =12 marks
Q.-3	Write short notes on	any three out of four	3x4 marks =12 marks
Q.-4	Write answers to the point in two or three sentences	Any six out of eight	6x1 mark = <u>6 marks</u> 40 marks

•Instructions :

1. No sections
2. Each paper should contain one applied question of 10 (ten) marks. (Question no 1)
3. Time duration 2 (two) hours.

Microbiology :

Marks scheme :

Theory :		
Paper-I	40 marks	two hours duration
Paper-II	40 marks	two hours duration
Internal assessment	<u>20 marks</u> 100 marks	

Practicals :

Oral Viva	15 marks
Exercise (staining & stool)	15 marks
Spotting (10 spots x1 minute)	10 marks <u>10 marks</u>
Internal assessment	50 marks

* Division of Marks in Pairs of the examiners	15 marks	All candidates
Pair I Exercise	10 marks	Half candidates
Spotting	15 marks	All candidates
Pair II Oral viva	10 marks	Half candidates
Spotting		

* Topics division

Paper I : *General Bacteriology. *Systemic Bacteriology *Immunology
 Paper II : * Parasitology * Mycology * Virology * Immunology

* Structure of Paper

Paper I & Paper II

Q-1 Write notes on	any two out of three	2x5 marks = 10 marks
Q-2 Write short notes on	any three out of four	3x4 marks = 12 marks
Q-3 Write short notes on	any three out of four	3x4 marks = 12 marks
Q-4 Write answer to the point in two or three sentences	Any six out of eight	6x1 mark = 6 marks 40 marks

* Instructions :

1. No sections
2. Each paper should contain one applied question of 10 (ten) marks. (Question no.1.)
3. Time duration 2 (two) hours.

Pharmacology

Marks scheme :

Theory :		
Paper-I	40 marks	two hours duration
Paper-II	40 marks	two hours duration
Internal assessment	20 marks	
	100 marks	

* Practicals :

Oral Viva	15 marks
Prescription writing & criticism	10 marks
Mixture/dispensing pharmacy	05 marks
Spotting (10 spots x 1 minute)	10 marks
Internal assessment	10 marks
	50 marks

* Division of Marks in Pairs of the examiners

Pair I Oral viva	15 marks	All candidates
Pair II Prescription	10 marks	All candidates
Mixture	05 marks	Half candidates
Pair III Mixture	05 marks	Half candidates
Spotting	10 marks	All candidates

* Topics division

Paper I :

1. General principles of pharmacology, essential drugs, rational therapy.
2. Drugs acting on autonomic nervous system and neuromuscular junction.
3. Drugs acting on Central and peripheral nervous system, including drug abuse and addiction
4. Antacids, drug therapy of inflammation.
5. Drugs acting on respiratory system
6. Drugs acting on renal and cardio vascular function
7. Ocular pharmacology
8. Toxicology

Paper II :

1. Drugs affecting gastrointestinal function.

2. Drugs affecting uterine motility.
3. Chemotherapy of microbial diseases and parasitic infections.
4. Chemotherapy of cancer, immunomodulators (basic aspects and selected drugs.)
5. Drugs acting on blood and blood forming organs.
6. Hormones and Hormone antagonists.
7. Vitamins
8. Pharmacology of skin

* Structure of Paper

Paper I & Paper II :

Q-1 Write notes on	any two out of three	2x5 marks = 10 marks
Q-2 Write short notes on	any three out of four	3x4 marks = 12 marks
Q-3 Write short notes on	any three out of four	3x4 marks = 12 marks
Q-4 Write answers to the point in two or three sentences	Any six out of eight	6x1 mark = 6 marks 40 marks

* Instructions :

1. No sections
2. Each paper should contain one applied question of 10 (ten) marks. (Question no.1.)
3. Time duration 2 (two) hours.

Forensic Medicine

Marks scheme :

Theory :		two hours duration
One Paper	40 marks	
Internal assessment	10 marks	
	50 marks	

Practicals :

Oral Viva	30 marks
Spotting	
(10 spots x 1 minute)	10 marks
Internal assessment	10 marks
	50 marks

* Division of Marks in Pairs of the examiners

Pair I Oral viva	15 marks	All candidates
Spotting	10 marks	Half candidates
Pair II Oral viva	15 marks	All candidates
Spotting	10 marks	Half candidates

* Structure of Paper :

Q-1 Write notes on	any two out of three	2x5 marks = 10 marks
Q-2 Write short notes on	any three out of four	3x4 marks = 12 marks
Q-3 Write short notes on	any three out of four	3x4 marks = 12 marks
Q-4 Write answers to the point in two or three sentences	Any six out of eight	6x1 mark = 6 marks 40 marks

Instructions :

1. No sections
2. The question paper should contain one applied question of 10 (ten) marks. (Question no.1.)
3. Time duration 2 (two) hours.

Final M.B.,B.S. Part-I examination Ophthalmology

Marks scheme :

Theory :		two hours duration
One Paper	40 marks	
Internal assessment	10 marks	
	50 marks	

Practicals :

Oral viva	15 marks
One clinical case	25 marks
Internal assessment	10 marks
	50 marks

- * Time duration : examination time assessment time
 Particulars 20 minutes 10 minutes
 Clinical case 5 minutes
 Viva (table) -----

* Division of Marks in Pairs of the examiners

Pair I Oral (viva)	15 marks	All candidates
Pair II Clinical case	25 marks	Half candidates
Pair III Clinical case	25 marks	Half candidates

* Structure of Paper :

- Q-1 Write notes on any two out of three 2x5 marks =10 marks
 Q-2 Write short notes on any three out of four 3x4 marks =12 marks
 Q-3 Write short notes on any three out of four 3x4 marks =12 marks
 Q-4 Write answer to the point in two or three sentences any six out of eight 6x1 mark =06 marks
 Total 40 marks

* Instructions :

- No Sections
- Time duration Two hours
- The question paper should contain one question of 10 marks on pre-clinical and para-clinical aspects. (Q. no. 1)

E.N.T. (Otolaryngorhinology)

Marks scheme

Theory :

One Paper	40 marks	two hours duration
Internal assessment	10 marks	
	50 marks	

Practicals :

Oral viva	15 marks
One clinical case	25 marks
Internal assessment	10 marks
	50 marks

- * Time duration : examination time assessment time
 Particulars 20 minutes 10 minutes
 Clinical case 5 minutes
 Viva (table) -----

* Division of Marks in Pairs of the examiners

Pair I Oral (viva)	15 marks	All candidates
Pair II Clinical case	25 marks	Half candidates
Pair III Clinical case	25 marks	Half candidates

* Structure of Paper :

- Q-1 Write notes on any two out of three 2x5 marks =10 marks
 Q-2 Write short notes on any three out of four 3x4 marks =12 marks
 Q-3 Write short notes on any three out of four 3x4 marks =12 marks
 Q-4 Write answer to the point in two or three sentences any six out of eight 6x1 mark =06 marks
 Total 40 marks

* Instructions :

- No Sections
- Time duration Two hours
- The question paper should contain one question of 10 marks on pre clinical and para clinical aspects. (Q. no. 1)

Community Medicine

Marks scheme

Theory :

Paper-I	60 marks	three hours duration
Paper-II	60 marks	three hours duration
Internal assessment	20 marks	
	140 marks	

Practicals

Oral viva	10 marks
Epidemiological exercise	10 marks
Statistical exercise	10 marks
Spotting exercise	10 marks
Internal assessment	20 marks
	60 marks

* Division of Marks in Pairs of the examiners

Pair I Statistics	10 marks	All candidates
Oral (viva)	10 marks	1/3 candidates
Pair II Epidemiology	10 marks	All candidates
Oral viva	10 marks	1/3 candidates
Pair III Spotting	10 marks	All candidates
Oral viva	10 marks	1/3 candidates

* Topics division :

PAPER -I (BASIC COMMUNITY MEDICINE)

- Concept of Health and Disease
- Environment & health
- Nutrition and Health
- Social Sciences & nutrition & health
- Health information and Basic medical statistics
- General Epidemiology
- Systemic Epidemiology
- Entomology

PAPER -II (APPLIED COMMUNITY MEDICINE)

- Demography & Family Planning
- School health
- Preventive medicine in Obstetrics, paediatrics and geriatrics
- Occupational health
- Mental health
- Genetics & health
- National Health Programme
- Health education & communication
- Health planning and management
- Health care of the community
- International health

* Structure of Question Paper :

Paper-I and Paper-II :

	Section-I	
Q-1 Write notes on any two out of three	2x6 marks =12 marks	
Q-2 Write short notes on any three out of four	3x4 marks =12 marks	
Q-3 Write short notes on any two out of three	2x5 marks =06 marks	
	30 marks	

	Section-II	
Q-4 Write notes on any two out of three	2x6 marks =12 marks	
Q-5 Write short notes on any three out of four	3x4 marks =12 marks	
Q-6 Write answer to the point in two or three sentences any six out of eight	6x1 mark =06 marks	
	Total 30 marks	

Instructions :

1. Time duration Three hours for each paper
2. Total marks 60 for each paper

Final M.B.,B.S. Part-II examination
Medicine

* Marks scheme :

Theory :

Paper-I	60 marks	three hours duration
Paper-II	60 marks	three hours duration
Internal assessment	30 marks	
	150 marks	

Practicals :

One long clinical case	50 marks
Two short clinical cases (25 x 2 = 50)	50 marks
Oral viva	20 marks
Internal assessment	30 marks
	150 marks

* Time duration :

Particulars	Examination time	Assessment time
Long case	20 minutes	10 minutes
Short case	10 minutes	5 minutes
viva	-----	10 minutes

* Division of Marks in Pairs of the examiners

Pair I and II	Long case	25 x 2 = 50 marks	half candidates
Pair III and IV	Long case	25 x 2 = 50 marks	half candidates
Pair V	Short case I	25 marks	All candidates
Pair VI	Short case II	25 marks	All candidates
Pair VII	Oral viva	20 marks	Half candidates
Pair VIII	Oral viva	20 marks	Half candidates

* Topics division :

Paper-I :

- * respiratory system, including diseases of chest and T.B.
- * Cardiovascular system
- * Alimentary system
- * Endocrine & Metabolic diseases
- * Water & electrolytes balance
- * Infectious and tropical diseases
- * Nutrition
- * Symptomatology, investigations and pharmacology related to above mentioned systems of paper-I.

Paper-II :

- * Central Nervous system
- * Kidney & urinary system
- * Hemopoietic system
- * Rheumatology & connective tissue disorders
- * Poisoning and toxicology
- * Immunology
- * Genetics
- * Dermatology including S.T.D.
- * Psychiatry
- * rest of the topics not covered in both papers
- * related symptomatology, investigations, and related pharmacology to above mentioned subjects in paper-II

* Structure of Question Paper
Paper-I & Paper-II :

Section-I

Q-1	Write notes on	any two out of three	2x6 marks = 12 marks
Q-2	Write short notes on	any three out of four	3x4 marks = 12 marks
Q-3	Write short notes on	any two out of three	2x3 marks = 06 marks
			Total 30 marks

Section-II

Q-4	Write notes on	any two out of three	2x6 marks = 12 marks
Q-5	Write short notes on	any three out of four	3x4 marks = 12 marks
Q-6	Write answer to the point in two or three sentences	any six out of eight	6x1 marks = 06 marks
			Total 30 marks

* Instructions

1. Each question paper should contain one question of 12 marks on basic sciences and allied subjects. (Question no. 1)
2. Time duration : 3 hours
3. Total marks of each paper : 60 marks

Surgery

Marks scheme :

Theory :

Paper-I	60 marks	three hours duration
Paper-II (one section of orthopaedics)	60 marks	three hours duration
Internal assessment	30 marks	
	150 marks	

Practicals :

One long clinical case	50 marks
One short clinical case	25 marks
One short case (Orthopaedics)	25 marks
Oral viva	20 marks
Internal assessment	30 marks
	150 marks

Note : The paper setter, Theory examiner and practical examiner for Orthopaedics section / short case should be from the teachers in orthopaedics.

* Time duration :

Particulars	Examination time	Assessment time
Long case	20 minutes	10 minutes
Short case	10 minutes	5 minutes
viva	-----	10 minutes

* Division of Marks in Pairs of the examiners

Pair I and II	Long case	25 x 2 = 50 marks	half candidates
Pair III and IV	Long case	25 x 2 = 50 marks	half candidates
Pair V	Short case I	25 marks	All candidates
Pair VI	Short case II	25 marks	All candidates
Pair VII	Oral viva	20 marks	Half candidates
Pair VIII	Oral viva	20 marks	Half candidates

* Topics division :

Paper-I :

- * Gastro-intestinal tract
- * Genito-urinary tract
- * Thyroid, Breast
- * Limbs
- * Recent advances

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- * Anaesthesia
- * Radio therapy and Radio diagnosis
- * Dentistry
- * Paediatric surgery
- * Miscellaneous

Paper-II :

- * Section-I
General Surgery
Head and Neck
- * Section-II
Orthopaedics only

Structure of Question Paper

Paper I & Paper-II

Section-I			
Q-1	Write notes on	any two out of three	2x6 marks =12 marks
Q-2	Write short notes on	any three out of four	3x4 marks =12 marks
Q-3	Write short notes on	any two out of three	2x3 marks =06 marks
			Total 30 marks

Section-II			
Q-4	Write notes on	any two out of three	2x6 marks =12 marks
Q-5	Write short notes on	any three out of four	3x4 marks =12 marks
Q-6	Write answer to the point in two or three sentences	any six out of eight	6x1 mark =06 marks
			Total 30 marks

Instructions :

1. Each question paper should contain one question of 12 marks on basic sciences and allied subjects (Question no. 1)
2. Section II of Paper-II should cover the orthopaedics only.
3. Time duration : 3 hours for each paper.
4. Total marks of each paper : 60 marks

*** Marks scheme :**

Theory:

Paper-I	40 marks	two hours duration
Paper-II	40 marks	two hours duration
Internal assessment	20 marks	
		100 marks

Practicals :

One long clinical case	40 marks
Oral viva(Obst.)	20 marks
Oral viva (Gynaec.)	20 marks
Internal assessment	<u>20 marks</u>
	100 marks

*** Time duration :**

Particulars	Examination time	Assessment time
Clinical case	20 minutes	10 minutes
Oral viva(Obst.)	-----	5 minutes
Oral viva(Gynaec.)	-----	5 minutes

*** Division of Marks in Pairs of the examiners**

Pair I and II	Long case	20x2 =40 marks	half candidates
Pair III and IV	Long case	20x2 =40 marks	half candidates
Pair V	Oral viva(Obst.)	20 marks	All candidates
Pair VI	Oral viva(Gynaec.)	20 marks	All candidates

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*** Topics division :**

- Paper-I :** Obstetrics
- Paper-II :** Gynaecology and Family welfare

*** Structure of Paper**

Paper I & Paper-II

Q-1	Write notes on	any two out of three	2x5 marks =10 marks
Q-2	Write short notes on	any three out of four	3x4 marks =12 marks
Q-3	Write short notes on	any three out of four	3x4 marks =12 marks
Q-4	Write answer to the point in two or three sentences	any six out of eight	6x1 mark =06 marks
			Total 40 marks

*** Instructions :**

1. No Sections
2. Time duration Two hours
3. Each paper should contain one question of 10 marks on basic sciences and allied subjects (Question no. 1)

Paediatrics

*** Marks scheme**

Theory : One Paper 40 marks duration two hours

Internal assessment	10 marks
	50 marks

*** Practical :**

Oral viva	15 marks
One clinical case	25 marks
Internal assessment	10 marks
	50 marks

*** Time duration :**

Particulars	examination time	assessment time
Clinical case	20 minutes	10 minutes
Viva(table)	-----	5 minutes

*** Division of Marks in Pairs of the examiners**

Pair I	Oral (viva)	15 marks	All candidates
Pair II	Clinical case	25 marks	Half candidates
Pair III	Clinical case	25 marks	Half candidates

*** Structure of Paper :**

Q-1	Write notes on	any two out of three	2x5 marks =10 marks
Q-2	Write short notes on	any three out of four	3x4 marks =12 marks
Q-3	Write short notes on	any three out of four	3x4 marks =12 marks
Q-4	Write answer to the point in two or three sentences	any six out of eight	6x1 mark =06 marks
			Total 40 marks

*** Instructions :**

1. No Sections
2. Time duration Two hours
3. The question paper should contain one question of 10 marks on basic sciences and allied subjects (Q. no. 1)

M.B.B.S. 3 :

GENERAL INSTRUCTIONS FOR UNIVERSITY PRACTICAL EXAMINATIONS

1. Practical examination should be taken and marks should be given by a pair of the examiners only, not by a single examiner.
2. One pair should not know or interfere in the marks of another pair.
3. Marks should be put directly to the mark sheet. No rough mark sheet should be allowed.

4. Scaled Original and Duplicate mark sheets should be submitted at the end of each session to the special supervisor of the university.
5. Examiner shall not keep any kind of rough or fair copy of any mark sheet with him.

M.B.,B.S. 4 :**Internal Examination**

Scheme of break-up of marks in internal examination in each subject

First M.B.,B.S.

For Human Anatomy, human Physiology, Biochemistry :

Test	Theory marks	Practical marks
1st internal test	5.0	5.0
Preliminary test	7.5	7.5
Day to day evaluation	2.5	2.5
	20	20

Second M.B.,B.S.

For Pathology, Microbiology and Pharmacology :

Test	Theory marks	Practical marks
1st internal	4	2
2nd internal	4	2
Preliminary	8	4
Day to day evaluation	4	2
	20	10

For Forensic medicine :

Test	Theory marks	Practical marks
1st internal	2	2
2nd internal	2	2
Preliminary	4	4
Day to day evaluation	2	2
	10	10

Final M.B.,B.S. Part-I

For E.N.T. and Ophthalmology :

Test	Theory marks	Practical marks
Preliminary	10	6
Day to day evaluation	0	4
	10	10

For Community medicine :

Test	Theory marks	Practical marks
1st internal	10	0
Preliminary	10	8
Day to day evaluation	0	12
	20	20

Final M.B.,B.S. Part-II

For Medicine and Surgery :

Test	Theory marks	Practical marks
1st internal	10	0
Preliminary	20	10
Day to day evaluation	0	20
	30	30

For Obstetrics and Gynaecology :

Test	Theory marks	Practical marks
1st internal	10	0
Preliminary	10	10
Day to day evaluation	0	10
	20	20

For Paediatrics :

Test	Theory marks	Practical marks
1st internal	3	0
Preliminary	7	6
Day to day evaluation	0	4
	10	10

- Note :** 1. One retest will be taken for those candidates who cannot appear at internal examination due to medical illness provided candidate produce medical certificate from a registered medical practitioner.
2. Internal marks should be submitted to the university one week prior to the university examinations.

O.M.B.,B.S. 4 :**Standard of passing**

To pass any M.B.,B.S. Examination a student must obtain at least 50 % marks in the theory examination and 50% marks in practical examination in each of the subjects separately in concerned examination

O. M.B.,B.S. 5 :**Definition of Trial**

First trial is deemed to take place when the candidate is due to appear for the examination irrespective of his/her actual appearance ; provided that non-appearance is not a result of reasons beyond his control. Similarly 2nd, 3rd, etc. trials relating to subsequent examination.

If a candidate does not fulfil the criteria (b) (c) of O. M.B.,B.S. 3, it should be considered as trial.

O. M.B.,B.S. 6 :

- * **Exemption :** Candidates who have passed in any of the subject / subjects may at their option, be excused from appearing in that subject / subjects at a subsequent examination, but they should not be declared to have passed the whole examination until they have passed in all subject / subjects in the particular examination.
- * University examinations will be held twice during the year ; at the end of each term, notwithstanding anything contained in O.M.B.,B.S. 2(i) (a). Failure to pass the examination will not debar the candidate from appearing at subsequent examinations. On the submission of a new application, and the payment of a fresh fee.

O. M.B.,B.S. 7 :

1. **Awards and Prizes :** The following shall be eligible for the University awards and prizes : Those who appear and pass the First, Second and Third M.B.,B.S. Examinations at their first attempt in a regular batch.
2. **Distinction Marks :** The subject or subjects in which successful candidates may have distinguished themselves will be shown on the list. In order to obtain distinction in any subject, the candidate should pass the examination at the first attempt in all the subjects and obtain 75% of the full marks in the subject/subjects.

O. M.B.,B.S. 8 :

In order to qualify for M.B.,B.S. degree, every student after passing final M.B.,B.S. part-II examination shall do compulsory rotating internship "internship" training for a period of one year in a recognised institute recognised by the Gujarat University and Medical Council of India for the purpose.

R. M.B.,B.S. 5 :

The concerned college authorities shall do the posting of the successful candidates, for internship "internship", within 15 days of declaration of the result of Final M.B.,B.S. part II examination.

R. M.B.,B.S. 6 :

The detailed scheme and guidelines of compulsory rotating internship "internship" training is as follows.

1. **General :** Internship is a phase of training wherein a graduate is expected to conduct actual practice of medical and health care and acquire skills under supervision so that he / she may become capable of functioning independently.

2. **Specific objectives :** At the end of internship "internship" training, the student shall be able to
- diagnose clinically common diseases/conditions encountered in practice and make timely decision for referral to higher level.
 - use discreetly the essential drugs, infusions, blood or its substitutes and laboratory services;
 - manage all types of emergencies- medical, surgical, obstetric, neonatal and paediatric, by rendering first level care;
 - demonstrate skills in monitoring of the National Health Programmes and schemes, oriented to provide preventive and promotive health care services to the community;
 - develop leadership qualities to function effectively as a leader of health team organised to deliver the health and family welfare services in existing socio-economic, political and cultural environment;
 - render services to chronically sick and disabled (both physical and mental) and to communicate effectively with patient and the community.
3. Time allocation to each discipline is approximate and shall be guided more specifically by the actual experience obtained. Thus a student serving in a district or Taluk hospital emergency room, may well accumulate skills in surgery, orthopaedics, medicine, Obstetrics and Gynaecology and paediatrics during even a single night on duty. Responsible authorities from the medical college shall adjust the intern experience to maximise intern's opportunities to practice skills in patient care in rough approximation of the time allocation suggested.

4. INTERNSHIP-TIME DISTRIBUTION :

Compulsory :

Community Medicine	3 months
medicine	2 months
surgery including orthopaedics	2 months
Obstetrics and Gynaecology including family welfare and family planning	2 months
Paediatrics	15 days
Ophthalmology	15 days
Otorhinolaryngology	15 days
Casualty	15 days
Elective Posting	One month

Elective subjects—

Elective posting will include two of the following for 15 days or one of the following for one month in the following subject :

- Dermatology and sexually transmitted diseases,
- Psychiatry
- Tuberculosis and respiratory diseases.
- Anaesthesia.
- Radio-diagnosis.
- Physical medicine and rehabilitation.
- Forensic medicine and toxicology
- Blood bank and transfusion department.

The entire batch of the students will be divided in to four batches to accommodate and co-ordinate subject posting. This distribution will be as follows :

Batch	Group of posting	subject of posting	period of training
A	Community medicine	community medicine	3 months
B	Medicine and allied	(i) Medicine	2 months
		(ii) Elective posting	1 month
C	Surgery and allied	(i) Surgery including orthopaedics	2 months
		(ii) ophthalmology	15 days
		(iii) otorhinolaryngology	15 days
D	Obst. Gynae. and allied	(i) obst. & Gynae. Including family welfare and family planning	2 months
		(ii) Paediatrics	15 days
		(iii) casualty	15 days

In each group of posting of internship, 75% presence is compulsory, failing which an intern will have to repeat the concerned group of posting.

5. OTHER DETAILS

- All parts of the internship "internship" shall be done as far as possible in the institutions of India. In case of any difficulties, the matter may be referred to the Gujarat University and Medical Council of India to be considered on individual merit.
- The University shall issue a provisional M.B.B.S. pass certificate on passing the final examination.
- The State Medical Council will grant provisional registration to the candidate on production of the provisional M.B.B.S. pass certificate. The provisional registration will be for a period of one year. In the event of shortage or unsatisfactory work, the period of provisional registration and compulsory rotating internship "internship" may be suitably extended by the appropriate authorities.
- The intern shall be entrusted with clinical responsibilities under direct supervision of senior medical officer. They shall not be working independently.
- Interns will not issue a medical certificate or a death certificate or a medico legal document under their signature.
- In recognition of the importance of hands-on experience, full responsibility for patient care and skill acquisition, internship "internship" should be increasingly scheduled to utilise clinical facilities available in District Hospital, Taluka Hospital, community Health centre, and Primary Health Centre in addition to teaching Hospital. A critical element of internship will be acquisition of specific experience and skills as listed in major areas:

Provided that where an intern is posted to District / Sub Divisional Hospital for training, there shall be a committee consisting of representatives of the college / university, the state Government and the District administration, who shall regulate the training of such trainee.

Provided further that for such trainees, a certificate of satisfactory completion of training shall be obtained from the relevant administrative authorities which shall be countersigned by the principal / dean of the college.

- Adjustment to enable a candidate to obtain training in elective clinical subjects may be made.
- Each medical college shall establish links with one entire district extending out-reach activities. Similarly, Re orientation of Medical Education (ROME) Scheme may be suitably modified to assure teaching activities at each level of District health system which will be co-ordinated by Dean of the medical college.
- Out of one year, 6 months shall be devoted to learning tertiary care being rendered in teaching hospital/district hospital suitably staffed with well qualified staff, 3 months of secondary care in a small District or Taluka hospital / Community Health Centre and 3 months in Primary Health Care out of which 2 months should be in Primary Health Centre with full attention to the implementation of National Health Programme at the Community level. One month of primary care training may be in the form of preceptorship with a practising family physician or voluntary agency or other Primary Health Care provider.
- One year's approved service in the Armed Forces Medical Services, after passing final M.B.B.S. examination shall be considered as equivalent to the pre-registration training detailed above; such training shall, as far as possible, be at the Base/General Hospital.

6. ASSESSMENT OF INTERNSHIP :

- The intern shall maintain a record of work which is to be verified and certified by the medical officer under whom he works. Apart from scrutiny of the record of the work, assessment and evaluation of training shall be undertaken by an objective approach using situation tests in knowledge, skills and attitude during and at the end of training. Based on the record of work and date of evaluation, the Dean /Principal shall issue certificate of satisfactory completion of training, following which the University shall award the M.B.B.S. degree or declare him eligible for it.

(ii) Satisfactory completion shall be determined on the basis of the following—

- (a) Proficiency of knowledge required for each case SCORE 0.5
(b) The competency in skills expected to manage each case
(a) Competency for performance of self performance
(b) of having assisted in procedures. SCORE 0.5
(c) of having observed
(c) Responsibility, punctuality, work up of case, involvement in treatment, follow-up reports. SCORE 0.5
(d) Capacity to work in a team (Behaviour with colleagues, nursing staff and relationship with paramedicals. SCORE 0.5
(e) Initiative, participation in discussion, research aptitude. SCORE 0.5

poor	fair	below average	average	above average	excellent
0	1	2	3	4	5

A score of less than 3 in any of above items will represent unsatisfactory completion of internship/ 'internship'.

7. Full registration shall only be given by the State Medical Council/Medical Council of India on the award of the M.B.B.S. degree by the University or its declaration that the candidate is eligible for it.

8. Some guidelines in the implementation of the training programme are given below.

(a) **Community Medicine** : Interns shall acquire skills to deal effectively with an individual and the community in the context of primary health care. This is to be achieved by hands on experience in the district Hospital and Primary Health Centre. The details of training are as under.

(i) **Community health centre/district hospital/attachment to general practitioner.**

- (1) During this period of internship/ 'internship' an intern must acquire :
(a) clinical competence for diagnosis of common ailments, use of bed side investigation and primary care techniques;
(b) gain information on 'Essential drugs' and their usage;
(c) recognise medical emergencies, resuscitate and institute initial treatment and refer to suitable institution;

(2) underspecific government of India/ ministry of health and family welfare approved training using government of India prescribed training manual for medical officers in all national health programmes (e.g. child survival and safe mother hood- EPI, CDD, ARI, FP, ANC, safe delivery tuberculosis, leprosy and others as recommended by ministry of health and family welfare ;

- (a) gain full expertise in immunisation against infectious disease
(b) participate in programmes in prevention and control of locally prevalent endemic diseases including nutritional disorders.
(c) learn skills first hand in family welfare planning procedures.
(d) learn the management of National Health Programmes.

(3) Be capable of conducting a survey and employ its findings as a measure towards arriving at a community diagnoses.

- (4) (a) conduct programmes on health education
(b) gain capabilities to use Audio-visual aids
(c) acquire capability of utilization of scientific information for promotion of community health

(5) Be capable of establishing linkages with other agencies as water supply, food distribution and other environmental / social agencies

(6) Acquire quality of being professional with dedication, resourcefulness and leadership

(7) Acquire managerial skills, delegation of duties to paramedical staff and other health professionals

(ii) **Taluka hospital** : Besides clinical skills, in evaluation of patient in the environment and initiation of primary care and interns shall :

- (1) effectively participate with other members of the health team with qualities of leadership.
(2) make a community diagnoses in specific situations such as epidemics and institute relevant control measures for communicable diseases
(3) develop capability for analysis of hospital based morbidity and mortality statistics
(4) use of essential drugs in the community with the awareness of availability cost and side effects
(5) provide health education to an individual/ community on :
(a) tuberculosis
(b) small family spacing use of appropriate contraceptives
(c) applies nutrition and care of mothers and children
(d) immunisation
(e) participation in school health programme

(iii) **Primary health centre** :

- (1) Initiate or participate in family composite health care (birth to death) inventory of events.
(2) participate in all of the modules on field practice for community health e.g. safe motherhood, nutritional surveillance and rehabilitation, diarrhoea disorders etc.
(3) acquire competence in diagnosis and management of common ailments e.g. malaria, tuberculosis, enteric fever, congestive heart failure, hepatitis, meningitis, acute renal failure etc.
(4) acquire proficiency for family welfare programmes (safe natal care, normal delivery, contraception etc etc.)

(b) **General Medicine** :

(i) interns shall acquire following training during their term

- (1) acquire competence for clinical diagnosis based on history, physical examination and relevant laboratory investigation and institute appropriate line of management
(2) this would include diseases common in tropics parasitic, bacterial or viral infections, nutritional disorders, including dehydration and electrolyte disturbance and system illnesses

(ii) The intern shall have assisted as a care team in intensive care of cardiac, respiratory, hepatic, neuro-logical and metabolic emergencies.

(iii) The interns shall be able to conduct the following laboratory investigations

- (a) Blood : routine haematology, sugar and blood groups
(b) Urine : routine chemical and microscopic
(c) Stool : characterisation and occult blood
(d) Sputum and throat swab for gram stain and acid fast stain and
(e) Cerebro spinal fluid (CSF) for sugar

(iv) Conduct following diagnostic procedures

- (a) Tracheal catheterisation
proctoscopy
optimalinoscopy, fibroscopy
indirect laryngoscopy
(b) therapeutic procedures
insertion of Ryd's tube
pleural, ascitic tap, cerebro spinal fluid of SF tap, installing of air way tube, oxygen administration etc

(c) Biopsy procedures : Liver, kidney, skin, nerve, lymphatic and muscle biopsies, bone marrow aspiration, biopsy of malignant lesions on surface, ear, nose/throat/skin, clinical for karyopy

(vi) (a) familiarity with usage of life saving procedures including use of aspirator, respirator and defibrillator.

(b) competence in interpretation of different types of studies such as cardiac monitor, blood gas analysis etc.

- (vii) participate as a team member in total health care of an individual including appropriate follow-up and social rehabilitation.
- (viii) Other competencies as indicated in general objectives.
- (C) **Pædiatrics** : The details of the skills that an intern shall acquire during his/her tenure in the department of pædiatrics are as follows
- The intern shall be able to :
- (1) diagnose and manage common childhood disorders including neonatal disorders and acute emergencies (enquiry from parents of sick children) examining a sick child and making a record of information
 - (2) carry out activities related to patient care such as laboratory work, investigative procedures and use of special equipments. The details are given as under:
 - (a) **DIAGNOSTIC TECHNIQUES** : blood (including from femoral vein and umbilical cord) abscess, cerebrospinal fluid, urine, pleura and peritoneum and common tissue biopsy techniques
 - (b) **TECHNIQUES RELATED TO PATIENT CARE** : immunisation, perfusion techniques, feeding procedures, tuberculin testing & breast feeding counselling
 - (c) **USE OF EQUIPMENT** : vital monitoring, temperature monitoring, resuscitation at birth and care of children receiving intensive care
 - (3) screening of newborn babies and those with objective risk factors for any anomalies and steps for prevention in future
 - (4) plan in collaboration with parents and individual, collective surveillance of growth and development of new born babies infants and children so that he/she is able to :
 - (a) recognise growth abnormalities
 - (b) recognise anomalies of psychomotor development
 - (c) detect congenital abnormalities
 - (5) assess nutritional and dietary status of infants and children and organise prevention detection and follow up of deficiency disorders both at individual and community level such as :
 - (a) protein energy malnutrition
 - (b) deficiencies of vitamins especially A,B,C and d
 - (c) iron deficiency
 - (6) institute early management of common childhood disorders with special reference to paediatric dosage and oral rehydration therapy.
 - (7) participate actively in public health programme oriented towards children in the community.
- (D) **General Surgery** : An intern is expected to acquire following skills during his/her posting:
- (i) Diagnose with reasonable accuracy all surgical illnesses including emergencies.
 - (ii) (a) resuscitate a critically injured patient and a severe burns patient ;
(b) control surface bleeding and manage open wound ;
 - (iii) (a) monitor patients of head, spine, chest, abdominal and pelvic injury;
(b) institute first-line management of acute abdomen ;
 - (iv) (a) perform venesection ;
(b) perform tracheostomy and endotracheal intubation
(c) catheterise patients with acute retention or perform trocar cystostomy.
(d) drain superficial abscesses .
(e) suturing of wound ,
(f) perform circumcision ,
(g) biopsy of surface tumours ,
(h) perform vasectomy.
 - (v) **CASUALTY** : The intern after training in Casualty must be able to :
 - (1) identify acute emergencies in various disciplines of medical practice
 - (2) manage acute anaphylactic shock;
 - (3) manage peripheral-vascular failure and shock;
 - (4) manage acute pulmonary oedema and Left Ventricular failure (L.V.F.)

- (5) undertake emergency management of drowning, poisonings and seizures;
 - (6) undertake emergency management of bronchial asthma and status asthmaticus;
 - (7) undertake emergency management of hyperpyrexia;
 - (8) undertake emergency management of comatose patients regarding airways positioning, prevention of aspiration and injuries ;
 - (9) assess and administer emergency management of burns;
 - (10) assess and do emergency management of various trauma victims ;
 - (11) identify medicolegal cases and learn filling up forms as well as complete other medicolegal formalities in cases of injury, poisoning, sexual offences, intoxication and other unnatural conditions.
- (vi) **Obstetrics and Gynaecology** : Technical skills that interns are expected to learn :
- (1) diagnosis of early pregnancy and provision of ante-natal care;
 - (2) diagnosis of pathology of pregnancy related to
 - (a) abortions;
 - (b) ectopic pregnancy;
 - (c) tumours complicating pregnancy ;
 - (d) acute abdomen in early pregnancy ;
 - (e) hyperemesis gravidarum ;
 - (3) detection of high risk pregnancy cases and suitable advice e.g. PHH, hydramnios, antepartum haemorrhage, multiple pregnancies, abnormal presentations and intra-uterine growth retardation ;
 - (4) antenatal pelvic assessment and detection of cephalo-pelvic disproportion .
 - (5) induction of labour and amniotomy under supervision ;
 - (6) management of normal labour, detection of abnormalities, postpartum haemorrhage and repair of perineal tears .
 - (7) assist in forceps delivery;
 - (8) assist in caesarean section and post-operative care thereof ;
 - (9) detection and management of abnormalities of lactation .
 - (10) perform non-stress test during pregnancy;
 - (11) per speculum, per vaginam and per rectal examination for detection of common congenital, inflammatory, neoplastic and traumatic conditions of vulva, vagina, uterus and ovaries ;
 - (12) medicolegal examination in Gynaecology and Obstetrics.
 - (13) to perform the following procedures :
 - (a) dilatation and curettage and fractional curettage ;
 - (b) endometrial biopsy ;
 - (c) endometrial aspiration ;
 - (d) pap smear collection ;
 - (e) Intra Uterine Contraceptive Device (IUCD) insertion ;
 - (f) manipulation ;
 - (g) urethral catheterisation ;
 - (h) suture removal in post-operative cases ;
 - (i) Cervical punch biopsy ;
 - (14) To assist in major abdominal and vaginal surgery cases in Obstetrics and Gynaecology.
 - (15) To assist in follow up postoperative cases of obstetrics and Gynaecology such as :
 - (a) Colposcopy;
 - (b) Second trimester Medical Termination of Pregnancy (MTP) procedures e.g. Mifeprex Prostaglandin instillations .
 - (16) To evaluate and prescribe oral contraceptive
- (vii) **OTO-RHINO-LARYNGOLOGY (E.N.T.)** :
- (1) Interns shall acquire ability for a comprehensive diagnosis of common Ear, Nose and Throat (ENT) diseases including the emergencies and malignant neoplasm of the head and neck;

- (2) he/she shall acquire skills in the use of head mirror, otoscope and indirect laryngoscopy and first line of management of common Ear, nose and Throat (ENT) problems.
- (3) he/she shall be able to carry out minor surgical procedures such as:
- ear syringing, aural puncture and packing of the nose for epistaxis;
 - nasal decongesting and packing of the external canal;
 - remove the foreign bodies from the nose and ear;
 - observed or assisted in various endoscopic procedures and tracheostomy.
- (4) an intern shall have participated as a team member in the community diagnosis e.g. Chronic Suppurative Otitis Media (CSOM) and be aware of national programme on prevention of deafness.
- (5) he/she shall possess knowledge of various ENT rehabilitative programmes.
- (viii) **Ophthalmology** : An intern shall acquire following skills:-
- he/she shall be able to diagnose and manage common ophthalmologic conditions such as:
 - Trauma, Acute conjunctivitis, allergic conjunctivitis, xerosis, entropion, corneal ulcer, iridocyclitis, myopia, hypermetropia, cataract, glaucoma, ocular injury and sudden loss of vision;
 - he shall be able to carry out assessment of refractive errors and advise its correction;
 - he shall be able to diagnose ocular changes in common systemic disorders;
 - he/she shall be able to perform investigative procedures such as:-
 - Tonometry, syringing, direct ophthalmoscopy, subjective refraction and fluorescent staining of cornea.
 - he/she shall have carried out or assisted the following procedures:
 - subconjunctival injection;
 - Ocular bandaging;
 - Removal of concretions;
 - Epilation and electrolysis;
 - Corneal foreign body removal;
 - Cauterisation of corneal ulcers;
 - Chalazion removal;
 - Entropion correction;
 - Suturing conjunctival tears;
 - Lids repair;
 - Glaucoma surgery (assisted);
 - Enucleation of eye in catataract;
 - he/she shall have full knowledge on available methods for rehabilitation of the blind.
- (ix) **Orthopaedics** :
- GOAL** : The aim of teaching the undergraduate student in Orthopaedics and Rehabilitation is to impart such knowledge and skills that may enable him to diagnose and treat common ailments. He shall have ability to diagnose and suspect presence of fracture, dislocation, acute osteomyelitis, acute polyomyelitis and common congenital deformities such as congenital talipes equinovarus (CTEV) and dislocation of hip (CDH).
- (a) **THERAPEUTIC** : An intern must know:
- Splinting (plaster slab) for the purpose of emergency splintage, definitive splintage and postoperative splintage and application of Thomas splint;
 - Manual reduction of common fractures- phalangeal, metacarpal, metatarsal and Colles' fracture.
 - Manual reduction of common dislocations- interphalangeal, metacarpophalangeal, elbow and shoulder dislocations.
 - Plaster cast application for undisplaced fractures of arm, forearm, leg and ankle.

- Emergency care of a multiple injury patient;
 - Precautions about transport and bed care of spinal cord injury patients.
- (b) **Skill** that an intern should be able to perform under supervision:
- Advise about prognosis of polyomyelitis, cerebral palsy, CTEV and CDH.
 - Advise about rehabilitation of amputees and mutilating traumatic and leprosy deformities of hand;
- (c) An intern must have observed or preferably assisted at the following operations:
- drainage for acute osteomyelitis;
 - sequestrectomy in chronic osteomyelitis;
 - application of external fixation;
 - internal fixation of fractures of long bones.
- (x) **Dermatology and Sexually Transmitted Diseases** : An intern must be able to:-
- conduct proper clinical examination, elicit and interpret physical findings, and diagnose common disorders and emergencies;
 - perform simple, routine investigative procedures for making bedside diagnosis, specially the examination of scrapings for fungus, preparation of slit smears and staining for AFB for leprosy patient and for STD cases.
 - take a skin biopsy for diagnostic purpose;
 - manage common diseases recognising the need for referral for specialised care in case of inappropriateness of therapeutic response.
- (xi) **Psychiatry** : An Intern must be able to
- diagnose and manage common psychiatric disorders;
 - identify and manage psychological reaction and psychiatric disorders in medical and surgical patients in clinical practice and community setting.
- (xii) **Tuberculosis and Respiratory Diseases** : An intern after training must be able to:-
- conduct proper clinical examination elicit and interpret clinical findings and diagnose common respiratory disorders and emergencies;
 - perform simple, routine investigative procedures required for making bed side diagnosis, specially sputum collection, examination for etiological organism like AFB, interpretation of chest X-rays and respiratory function tests;
 - Interpret and manage various blood gases and pH abnormalities in various respiratory diseases;
 - manage common diseases recognising need for referral for specialised care in case of inappropriateness of therapeutic response;
 - perform common procedures like laryngoscopy, pleural aspiration, respiratory physio-therapy, laryngeal intubation and pneumo-thorax drainage aspiration.
- (xiii) **Anaesthesia** : After the internship "internship" in the department of Anaesthesiology an intern shall acquire knowledge, skill and attitude to:-
- perform pre-anaesthetic check up and prescribe pre-anaesthetic medications;
 - perform venepuncture and set up intravenous drip;
 - perform laryngoscopy and endotracheal intubation;
 - perform lumbar puncture, spinal anaesthesia and simple nerve blocks;
 - conduct simple general anaesthetic procedures under supervision;
 - monitor patients during anaesthesia and post-operative period;
 - recognise and manage problems associated with emergency anaesthesia;
 - maintain anaesthetic records;
 - recognise and treat complication in post operative period;
 - perform cardio-pulmonary brain resuscitation (CPBR) correctly, including recognition of cardiac arrest.

(xiv) **Radio Diagnosis:** An intern after training must be able to identify and diagnose:

- (1) all aspects of "Emergency Room: Radiology" like
 - (a) all acute abdominal conditions;
 - (b) all acute traumatic condition with emphasis on head injuries;
 - (c) differentiation between Medical and surgical radiological emergencies;
- (2) Basic hazards and precautions in Radiodiagnostic practices.

(xv) **PHYSICAL MEDICINE AND REHABILITATION:** An intern is expected to acquire the following skills during his/her internship:-

- (1) competence for clinical diagnosis based on detailed history and assessment of common disabling conditions like poliomyelitis, cerebral palsy, hemiplegia, paraplegia, amputations etc.;
- (2) participation as a team member in total rehabilitation including appropriate follow up of common disabling conditions;
- (3) principles and procedures of fabrication and repair of artificial limbs and appliances;
- (4) various therapeutic modalities
- (5) use of self help devices and splints and mobility aids;
- (6) familiarity with accessibility problems and home making for the disabled;
- (7) ability to demonstrate simple exercise therapy in common conditions like prevention of deformity in polio, stump exercise in an amputee etc.;

(xvi) **FORENSIC MEDICINE AND TOXICOLOGY:** The intern is to be posted in the casualty department of the hospital while attached under Forensic Medicine Department with the following objectives:-

- (1) to identify medicolegal problems in a hospital and general practice;
- (2) to identify and learn medicolegal responsibilities of a medical man in various hospital situations;
- (3) to be able to diagnose and learn management of basic poisoning conditions in the community;
- (4) to learn how to handle cases of sexual assault;
- (5) to be able to prepare medico-legal reports in various medicolegal situations
- (6) to learn various medical legal post-mortem procedures and formalities during its performance by police.

APPENDIX-A

Prescribed teaching hours and suggested model time tables:-

Following minimum teaching hours are prescribed in various disciplines:

- (a) **Preclinical Subjects- (Phase-I, First and Second semester)**
 - Human Anatomy 650 hours
 - Human Physiology 480 hours
 - Biochemistry 240 hours
 - Community medicine 60 hours
- (b) **Paraclinical subjects- (Phase-II- Third to fifth semester)**
 - Pathology 300 hours
 - Microbiology 250 hours
 - Pharmacology 300 hours
 - Forensic medicine 100 hours
 - Community medicine 200 hours (including 8 weeks posting of 3 hours each.)

Teaching of paraclinical subjects shall be 4 hours per day in 3rd semester and 3 hours per day in 4th and 5th semesters. (See attached model Time-Table)

- (c) **Clinical subjects - (Phase II and III- third to ninth semesters)**
 1. Clinical postings as per chart attached.
 2. Theory lectures, demonstrations and seminars etc. in addition to clinical posting as under. The clinical lectures to be held from 4th semesters onwards. (See Attached Model Time-Table.)

General Medicine	300 hours
Paediatrics	100 hours
T.B. and chest	20 hours
Psychiatry	20 hours
Skin and S.T.D.	30 hours
Community medicine	50 hours
Anaesthesia	20 hours

General Surgery	300 hours
Orthopaedics	100 hours
Ophthalmology	100 hours
E.N.T.	70 hours
Radiology	20 hours
Dentistry	10 hours
Obst. & Gynae.	300 hours

Note: (a) This period of training is minimum suggested. Adjustments where required depending on availability of time be made.

(b) This period of training does not include university examination period

(c) Extra time available be devoted to other sub-specialties.

During semesters 3 to 9 following clinical postings for each student, of 3 hours duration is suggested for various departments after introductory course in clinical methods in medicine and surgery of 2 weeks each for the whole class.

Chart for clinical posting

Subjects	3rd semester (weeks)	4th semester (weeks)	5th semester (weeks)	6th semester (weeks)	7th semester (weeks)	8th semester (weeks)	9th semester (weeks)	total (weeks)
General Medicine***	6	-	4	-	4	6	6	26
Paediatrics	-	2	-	2	-	4	2	10
T.B. & Chest	-	2	-	-	-	-	-	02
Skin & S.T.D.	-	2	-	2	-	2	-	06
Psychiatry	-	-	2	-	-	-	-	02
Radiology*	-	-	-	-	2	-	-	02
General Surgery****	6	-	4	-	4	6	6	26
Orthopaedics**	-	-	4	4	-	-	2	10
Ophthalmology	4	-	4	2	-	-	-	10
E.N.T.	-	4	-	4	-	-	0	8
Obst. & Gynaec.*****	-	-	-	-	-	-	-	-
& Family planning	2	4	4	-	4	4	6	24
Comm. Medicine	4	4	-	4	-	-	-	12
Casualty	-	-	-	2	-	-	-	02
Dentistry	-	-	-	-	2	-	-	02
Total	18	22	18	22	18	22	22	142

Clinical methods in Medicine and Surgery for whole class will be for 2 weeks each respectively at the start of 3rd semester.

* This posting will include training in radio-diagnosis & radio-therapy where existent

** This posting includes exposure to rehabilitation physiotherapy

*** This posting includes exposure to laboratory medicine and infectious diseases.

**** This posting includes exposure to dressing and Anaesthesia

***** This includes maternity training and family medicine and 3rd semester posting shall be in family welfare planning.

Model Time Table

(Subject to modification as per local situation)

First & Second semesters

Time	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
Mon	← Anatomy →					← Anatomy →		
Tues	Physiology + Biochemistry					(2/3 + 1/3)		
Wed	← Anatomy →				Lunch	← Anatomy →		
Thur	Physiology + Biochemistry					(2/3 + 1/3)		
Fri	← Anatomy →					← Anatomy →		
Satur	Physiology + Biochemistry (2/3 + 1/3)							

Note : The Community lectures be arranged in consultation with other pre clinical departments in the above timings.

Third semester

Time	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
Monday								
Tuesday				para clinical	Lunch	para-clinical	Practicals etc.	
Wednesday	Clinical posting			clinical Lectures		lectures	(paraclinical)	
Thursday								
Friday								
Saturday					*	*	*	*

Fourth and Fifth semesters

Time	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
Monday								
Tuesday				Lectures		Lectures		
Wednesday	Clinical posting			clinical Lectures	Lunch	in para-clinical subjects	Practicals etc.	
Thursday							(paraclinical)	
Friday								
Saturday					*	*	*	*

Sixth, seventh eight and ninth semesters

Time	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
Monday						Lectures or		
Tuesday						Demonstration etc.	Practicals	
Wednesday	Clinical posting			Lectures in clinical	Lunch	in clinical subjects	etc. in clinical subjects	
Thursday								
Friday								
Saturday					*	*	*	*

Note : These are suggested time tables. Adjustments where required depending upon the availability of time and facility, be made.

(9)

Faculty of Medicine

Degree of Bachelor of Physiotherapy (B.Physio.)

Course of studies prescribed for the First, Second, Third & Final

B. Physiotherapy Examination

(In force for students admitted in August, 1998 and thereafter)

O. B.Physio. 1 :

The academic year for undergraduate physiotherapy students shall consist of two terms, viz

- (1) The first term commencing on the 1st September and ending on the 28th February
- (2) The second term commencing on the 1st March and ending on the 31st August

To derive maximum advantage out of this revised curriculum, the vacation period to the students, in one academic year should not exceed one month, during 4 years B.Physiotherapy Course. (Preferably 15 days summer vacation and 15 days Diwali vacation)

O. B.Physio. 2 :

Training Period and Time / Phase Distribution

- (1) For the degree of Bachelor of Physiotherapy, Every student shall undergo a period of certified study extending over 4 Academic years divided in to 8 semesters (i.e. of six months each) from the date of commencement of his study for the subjects comprising the physiotherapy curriculum to the date of completion of final B.Physio. examination successfully and followed by six months compulsory rotating internship.
- (2) The period of 4 years is divided in 4 phases as follows

Phase I (F.Y. B.physiotherapy) :

Consisting of 2 semesters (First and second semesters) university examination of F.Y. B.Physiotherapy shall be held at the end of second semester term

Subject of F.Y. B.physiotherapy

- (1) Human Anatomy
 - (2) Human Physiology
 - (3) Psychology & Sociology
 - (4) Fundamentals of Bio-Medical Physics
 - (5) Exercise Therapy - I & Massage Manipulation
- Following are the minimum teaching hours for various subjects in phase I

- (1) Human Anatomy 300 hours Lectures & Practicals
- (2) Human Physiology 220 hours Lectures & Practicals
- (3) Psychology 40 hours Lectures
- (4) Sociology 40 hours Lectures
- (5) Bio-Medical Physics 150 hours Lectures & Practicals
- (6) Exercise Therapy - I 150 hours Lectures & Practicals

Massage Manipulation

Phase II : (S.Y. B.Physiotherapy) :

Consists of 2 semesters (Third and Fourth semesters) university examination of S.Y. B.Physiotherapy shall be held at the end of fourth semester term

Subjects of S.Y. B.Physiotherapy

- (1) Pathology, Microbiology & Biochemistry
 - (2) Medicine - I
 - (3) Surgery - I
 - (4) Exercise therapy - II & Kinesiology
 - (5) Electromyography
- Following are the minimum teaching hours for various subjects in phase II

- (1) Pathology & Microbiology 100 hours Lectures
- (2) Biochemistry 40 hours Lectures
- (3) General Medicine 35 hours Lectures
- (4) Paediatrics 20 hours Lectures

- | | |
|---------------------------------|---------------------------------|
| (5) Skin & V.D. | 20 hours Lectures |
| (6) Plastic Surgery | 25 hours Lectures |
| (7) General Surgery | 25 hours Lectures |
| (8) E.N.T. | 10 hours Lectures |
| (9) Orthopaedics (Traumatology) | 40 hours Lectures |
| (10) Bio-Mechanics Kinesiology | 80 hours Lectures |
| (11) Exercise therapy - II | 150 hours Lectures & Practicals |
| (12) Electrotherapy - I | 150 hours Lectures & Practicals |
| (13) Radiology | 5 hours |
| Clinical | 500 hours. |

Phase III : (T.V. B.Physiotherapy) :

Consists of 2 semesters (Fifth and Sixth semesters) university examination of T.V. B.Physiotherapy shall be held at the end of Sixth semester (term).

Subjects of T.V. B.Physiotherapy

- (1) Medicine - II
- (2) Surgery - II
- (3) Electrotherapy - II
- (4) Physiotherapy in Musculoskeletal conditions
- (5) Pharmacology.

Following are the minimum teaching hours for various subjects in phase - II :

- | | |
|---|--------------------|
| (1) Neurology | 40 hours Lectures |
| (2) Obstetrics & Gynaecology | 40 hours Lectures |
| (3) Orthopaedics (Non Traumatic conditions) | 40 hours Lectures |
| (4) Cardio Thoracic Surgery | 30 hours Lectures |
| (5) Pharmacology | 40 hours Lectures |
| (6) Psychiatry | 30 hours Lectures |
| (7) Ophthalmology | 10 hours Lectures |
| (8) Electrotherapy - II | 150 hours Lectures |
| (9) Physiotherapy in Musculoskeletal conditions | 120 hours Lectures |
| Clinical | 500 hours. |

Phase IV : (Final B.Physiotherapy) :

Consists of 2 semesters (Seventh and Eight semesters) university examination of Final B.Physiotherapy shall be held at the end of Eight semester (term).

*** Subjects of Final B.Physiotherapy**

- (1) Physiotherapy in Neuromuscular conditions
- (2) Physiotherapy in Cardio Pulmonary conditions
- (3) Physiotherapy in General Medical and Surgical conditions
- (4) Physiotherapy in Rehabilitation
- (5) Bio-statistics & Research Methodology.

Following are the minimum teaching hours for various subjects in phase - IV :

- | | |
|--|---------------------------------|
| * (1) Physiotherapy in Neuromuscular conditions | 120 hours Lectures & Practicals |
| * (2) Physiotherapy in Cardiopulmonary conditions | 120 hours Lectures & Practicals |
| * (3) Physiotherapy in General Medical and Surgical conditions | 120 hours Lectures & Practicals |
| (4) Rehabilitation Therapy | 35 hours Lectures |
| (5) Bio-statistics & Research Methodology. | 45 hours Lectures |
| (6) Ethics & administration | 15 hours Lectures |
| Clinical | 1100 hours |

* Teaching hours of these subjects should be distributed

- (3) (a) Passing in F.Y. B.Physiotherapy (Phase-I) is compulsory before proceeding to phase-II training. No student shall be permitted to join phase-II group of subjects than four trials provided four trials are completed in three years from the date of admission.

- (b) Passing in phase-II (S.Y. B.Physiotherapy) is compulsory before proceeding to phase-III training.
- (c) Passing in phase - III (T.Y. B.Physiotherapy) is compulsory before proceeding to phase - IV training.
- (d) Passing in Final B.Physiotherapy examination is compulsory before proceeding to compulsory rotating Internship training.

R. B.Physio-I :

Following is the syllabus of various subjects of B.Physiotherapy Examination

(1) F.Y. B.Physiotherapy

(a) Human Anatomy

Note : Emphasis to be placed on topographical, skeletal, neuromuscular and functional aspects of anatomy. Students must take part in dissections to identify various structures.

General Introduction :

1. Definitions and subdivisions.
2. Plan of the human body.
3. System of the body.
4. The unit of structure and function-the cell.

Obstology :

1. Terminology : Anatomical position, planes, surface relationship of parts of the body proximal, distal etc.
2. Bones : Type of bones, formation, function, growth and repair, structure of long bone, vertebral, column, types of vertebrae, bones of extremities and bony landmarks.

Arthology :

1. Classification of joints.
2. Construction of joints.
3. Motions of joints.
4. Articulations - articular Surfaces, types of joints, motions of upper and lower extremities, trunk, head.

Myology :

1. Types of muscle tissue.
2. Muscles of upper extremity, lower extremity, trunk, eye, face etc. origin, insertion, nerve supply and actions (in detail).
3. Cardiovascular System.
4. Blood, lymph, tissue fluid-characteristics, composition, function.
5. The heart-main arteries, veins capillaries.
6. Lymph circulation.

Nervous System :

1. Division and function of the nervous system.
2. Nerve tissue-neurone, nerve, fibre, synapse, end-organs etc.
3. Spinal cord, Brain-their structures, divisions.
4. Peripheral and cranial nerves and their distribution, special emphasis on nerve supply to voluntary muscles, segmental distribution.
5. Cerebro-spinal fluid.
6. Sensory endorgans and sensation.
7. Autonomic nervous system-sympathetic, parasympathetic.

Respiratory system :

1. Anatomy of respiratory organs - air passages, lungs, bronchial tree etc. Relation with diaphragm and thoracic cage.

Digestive System :

1. Anatomy of digestive organs-oesophagus, stomach, intestine, rectum etc.
2. The digestive glands.

Urinary System :

1. Anatomy of urinary organs-kidneys, ureter, urinary bladder etc. Emphasis on types of bladder in paraplegics.

Endocrine System :

1. Glands, secretion, enzymes, hormones.

Reproductive System :

1. Outline of reproductive system - male and female reproductive organs.

Special sensory organs and sensations :

1. Emphasis on skin, ear and eyes. Less detail on smell and taste.

Histology :

1. Cell, tissue of the epithelium, connective tissue, cartilage bone, blood, lymph, muscles and nerves.

General Embryology :

1. Ovum, spermatozoa, fertilisation, differentiation, development of musculoskeletal system, central nervous system.

Practical work :

- Dissection :* Dissection of upper and lower extremities, back, anterolateral abdominal wall identification and description of all anatomical structures, surface marking.

(b) Human Physiology

General Physiology :

1. Cell structure and organelle.
2. General Principles of Biophysics.
3. Body Fluid compartments

Blood :

1. Composition of blood, Plasma, protein formation and their function.
2. Structure formation and functions of R.B.C.
3. Structure formation and functions W.B.Cs and Platelets.
4. Coagulation and its defects of bleeding, clotting time.
5. Blood groups and their significance, Rh Factor.
6. Reticulo Endothelial system, jaundice, structure and functions of spleen.
7. Haemoglobin and E.S.R.

Cardiovascular System :

1. Structure, properties of heart muscle and nerve supply of heart structure and function of arteries, arterioles, capillaries and veins.
2. Cardiac cycle and heart sounds
3. Cardiac output measurement, factors affecting.
4. Heart rate its regulation, cardio vascular reflexes.
5. Blood pressure, its regulations and physiological variations.
6. Peripheral resistance, factors controlling role in B.P.
7. Haemorrhage.
8. Changes in muscular exercise.

Respiratory system :

1. Mechanism of respiration, Intra-pleural and intra pulmonary pressure.
2. Lung volumes and capacities.
3. O_2 and CO_2 carriage and their exchange in tissues and lungs.
4. Nervous chemical regulation of respiration-Respiratory Centres. Respiratory states-anoxia, asphyxia, Cyanosis, Acclimatization.

Digestive system :

1. General outline and salivary digestion.
2. Gastric secretion and its mechanism of secretion and functions.
3. Digestion, absorption and metabolism of proteins.
4. Structure, Secretions and Functions of Livers.

Nutrition :

1. Digestion, absorption and metabolism of carbohydrates.
2. Digestion, absorption and metabolism of fats.
3. Digestion, absorption and metabolism of proteins.
4. Vitamins, sources, functions and resources.
5. Balanced diet in different age groups and occupation.

Endocrines :

1. Anterior Pituitary.
2. Posterior Pituitary and parathyroid.
3. Thyroid.
4. Adrenal Cortex.
5. Adrenal Medulla, thymus.
6. Pancreas and Blood sugar regulation.

Reproductive system :

1. Sex determination and development, puberty.
2. Male sex hormones and their functions, spermatogenesis.
3. Female sex hormones and formation of urine, G.F.R. and Tubular function.
4. Pregnancy, functions of placenta and lactation.

Excretory system :

1. Gross and minute structure of kidney and features of renal circulation.
2. Mechanism of formation of urine, G.R.F. and Tubular function.
3. Renal function tests.
4. Physiology of micturition.

Neuro Muscular Physiology

Muscle and Nerve :

1. Structure of neurones, membrane potential and generation of action potential.
2. Nerve impulse conduction, saltatory conduction.
3. Nerve muscular junction and drugs acting on it - Myasthenia.
4. Degeneration and regeneration in peripheral nerves-Wallerian degeneration of electro tonus and pflagers law.

Muscle :

1. Type of muscles and their gross structure, stimulus chronaxie, strength duration curve.
2. Structure of Sarcomere-basis of muscle contraction, Starlings law, changes muscle contraction.
3. Electrical - Biphasic and monophasic action potentials.
4. Chemical, Thermal and Physical changes, isometric and isotonic contraction.
5. Motor units and its properties. Clonus tetanus, all or none law, beneficial effect.
6. Nature of voluntary contraction, fatigue.

Nervous system :

1. Types and properties of receptors, types of sensations.
2. Structure of synapses, reflex arc and its properties, occlusion summation, subminimal fringe etc.
3. Tracts of spinal cord.
4. Descending tracts, Pyramidal and Extrapyramidal.
5. Hemisection and complete section of spinal cord. Upper and lower motor neurone paralysis.
6. Cerebral Cortex, areas and functions - E.E.G.
7. Structure-connections and function of cerebellum.
8. Basal ganglia and thalamus. connections and functions.
9. Autonomic Nervous system.

Special Senses :

1. Broad features of eye, errors of refraction, lesions of visual pathways.
2. Speech and its disorders.
3. Ear and vestibular apparatus.

Practical and Demonstrations :

- (a) 1. Haemoglobinometer and total R.B.C. Count.
2. Speech and its disorders.
 3. Preparation and staining of Blood smears, determination of differential W.B.C. Count.
 4. Blood Grouping.
 5. Erythrocyte Sedimentation rate.
 6. Bleeding and clotting time.
- (b) 1. Artificial Respiration.
2. Pulmonary function tests.

- (c) 1. Heart Sounds.
2. Arterial Blood pressure in man.
3. Cardiac efficiency tests.
4. Recording and study of Electrocardiogram.
(d) 1. Testing of peripheral sensations and cranial nerves.
2. Superficial and deep reflexes.
3. Tests for Cerebral and Cerebellar functions.
(e) 1. Varieties of stimuli, electrical apparatus for physiological experiment. Frogs Nerve-muscle preparation and demonstration of the following experiments on it.

Simple muscle twitch.

Effect of load, temperature and fatigue of muscular contractions.

Frog's normal cardiogram.

Effects of following on normal cardiogram of frog :

1. Temperature
2. Extrasystole
3. Stimulation of vagosympathetic trunk
4. Radial pulse tracing
5. Basal metabolic rate
6. Work Physiology.

(c) Psychology & Sociology

(1) Psychology :

Reference should be made wherever appropriate to the therapist's relationship with the patient and with his professional colleagues. Emphasis should be laid on the effects of disease on the patient's behaviour.

1. *Biological foundations of behaviour* : Hereditary and environment and logical basis for development, developmental psychology (child).
2. *Learned and unlearned behaviour* : Simple learning and conditioning, social learning.
3. *Thinking and Intelligence* : Learning and problem solving, development of conceptual thinking in children. Communication, language and thinking. Measurement of intelligence, influences on intelligence, extent and consequence of individual difference.
4. *Perception* : Sensory basis of perception, attention and perception, observer error.
5. *Memory* : Phases of memory, short term storage, memory and perception thinking etc. Forgetting testimony and recall of events, memory and ageing.
6. *Motivation and Emotions* : Approaches to motivations, emotional development, influence of early experience. Family and social influences on motivation and behaviour.
7. *Personality* : Nature of personality structure and dynamics, dimensional, psycho analytical and constitutional theories of personality, measurement of personality, culture and personality patterns.
8. *Attitude* : Nature of attitudes and beliefs including prejudice, group influences on attitudes, attitude change, doctor-patient expectations and attitudes, prejudice formation and reduction.
9. *Interpersonal Behaviour* : Experimental analysis on social interaction, studies of the interview situation, behaviour in formal and informal groups, group norms and roles, modification techniques, token economy.
10. *Social Psychology* : Nature and scope of social psychology, social interaction, psychological groups and their classification, socialization of the individual, social control (social hereditas)-moves, customs, fashion, propaganda and its techniques.
11. *Tests* : Wechsler scales, Stanford-Binet Intelligence scale, Bender and Gestes of the projective test, Anxiety scale.

(2) Sociology

The subject will introduce the student to the basic sociological concepts, principles and social processes, social institutions in relation to the individual family and community and the various social factors affecting the family in rural and urban communities.

Introduction :

1. Meaning-Definition and scope of sociology.
2. Its relation with anthropology, psychology, social psychology and ethics.

3. Methods of sociology-Case study, social survey, questionnaire interview and opinion poll methods.
4. Importance of its study with special reference to health care professionals.

Social factors in Health and disease :

1. The meaning of social factors. The role of social factors in health and illness.

Socialization :

1. Meaning and nature of socialisation
2. Primary, secondary and anticipatory socialisation
3. Agencies of socialisation.

Social Groups :

1. Concepts of social groups, influence of formal and informal groups on health and sickness. The role of primary groups and secondary groups in the hospital and rehabilitation settings.

Family :

1. The family,
2. Meaning and definition,
3. Functions,
4. Types,
5. Changing family patterns.
6. Influence of family on the individuals health family and nutrition the effects of sickness on family and psychosomatic disease and their importance to physiotherapy.

Community :

1. Rural community-Meaning and features - health hazards of ruralities.
2. Urban community - Meaning and features - Health hazards of urbanities.

Culture and Health :

1. Concept of culture
2. Culture and behaviour
3. Culture meaning of sickness
4. Culture and health disorders.

Social Change :

1. Meaning of social changes.
2. Factors of social change.
3. Human adaptation and social change.
4. Social change and stress.
5. Social change and health.
6. Social change and health programme.
7. The role of social planning in the improvement of health and in rehabilitation.

Social Problems of Disabled :

Consequences of the following social problems in relation to sickness and disability remedies to prevent these problems.

1. Population explosion.
2. Poverty and unemployment
3. Beggary
4. Juvenile delinquency
5. Prostitution
6. Alcoholism
7. Problems of women in employment.

Social Security :

Social security and social legislation in relation to disabled.

Social Worker :

Meaning of social work. The role of a medical social worker.

(d) Bio-Medical Physics

General Physics and Properties of Matter : Machines - Principle of work, Definition, Mechanical advantage, Velocity of Radio and efficiency, Lever, pulley and three systems of pulley, wheel and axle, Fluid mechanics-viscosity, diffusion-coefficient of viscosity, poise, critical velocity, principle of Archimedes, law of floatation, Hydrostatic pressure-surface tension, velocity, principle of Archimedes.

buoyancy, streamline, flow and turbulent flow, effect of temperature and pressure on viscosity, surface tension, excess pressure in spherical liquid drop. Friction-Limiting friction, laws of static and dynamic friction, friction necessity and anvil, physical properties of water. Elasticity - only definition.

Heat: Emission and absorptive power - properties of thermal radiation perfectly black body, Kirchhoff's law, ewton's law of cooling and specific heat by cooling, first law of thermodynamics and its application, second law of thermodynamics, Goussius law, joule's law of heat production.

Sound: Newton's formula for velocity of sound, Laplace correction effect of temperature, pressure, density of media, humidity and wind, loudness, pitch, vibrations of string and wire sonometer, Melde's experiment, resonance and velocity of sound by resonance method, Ultrasonic production and its application, recording and reproduction of sound.

Light: Absorption and Emission spectra, classification of emission spectra sole spectrum and Fraunhofer lines, infra red spectrum and ultra violet spectrum, interference-Newton's ring polarization, double refraction positive crystal, crystal, negative crystal, nicol prism, optical activity, laser and its application, fibre-optics.

Electricity: Different types of capacitors, biological cell as capacitor, Ohm's law, thermoelectricity. Chemical effect of current and electromagnetic induction-faraday's law, Fleming's right hand rule, self induction, mutual induction, Induction coil, induced E.M.F. in the coil rotating in magnetic field, transformer long distance transmission, measurement of A.C., D.C., Modified current, milliammeter, voltmeter, gack coil, variable rheostat.

Modern Physics: Structure of atom (Bohr model) X-rays production properties and applications, infra red rays, ultra violet rays and lamp short wave diathermy, electric shock, radio active transformation half life period, average life period, radio active isotopes and medical applications isotopes, G.M. Counter, Scintillation count.

Electronics: Semi conductor, diode as rectifier, zener diode single stage transistor, amplifier, production of high frequency of current (microwaves) by Klystron magnetron Amplifier C.R.O. triode as amplifier, triode as oscillator, thyatron.

List of Experiments

1. Constant volume air thermometer
2. Resonance
3. Spectrometer (dispersive power)
4. Low resistance
5. Post office box
6. Thermocouple
7. Deflection of magnetometer
8. Wattage
9. Triode (static and dynamic)
10. Friction
11. Newton's law of cooling
12. Zener
13. Calibration of spectrometer

(*) Exercise Therapy-I & Massage Manipulation

(1) Exercise Therapy

1. Introduction to exercise therapy.
2. Physiological effects and uses of exercise.
3. Psychogenic aspects of exercises.
4. Pharmacological aspects of exercises.
5. Use of apparatus in exercise therapy
6. Fundamental starting positions, derived positions-effects and uses, pelvis tilt.
7. Muscle work for all positions.
8. Joint movement - terminology and range axes and planes of movement, levers, measurement of joint movements, goniometry, types of goniometers-bubble and gravity goniometers.
9. Classification of movements.
10. Active movements-Definition types, techniques. Effects and uses.
11. Passive movements - Definition, types techniques of relaxed passive movements and uses companion of both movements.

12. Causes of restriction of range of movement-Distinguish between skin muscles, capsular contractures.
13. Group work - Criteria of selection of patients advantages and disadvantages of group etc exercises.
14. Home exercises-trick movements.
15. Suspension therapy - definitions of suspension and point of suspension, types of suspension, pulleys and use of pulleys in suspension therapy, application of suspension therapy either to increase the joints range or to increase muscle power
16. Breathing - Mechanism of breathing (normal) muscles of respiration, changes in thoracic cage during process of respiration types of breathing exercises training programme: diaphragmatic and segmental breathing.
17. Pursed lip breathing-significance.
18. Crutch walking - Types of crutch walking use of paralysed bars in pre crutch walking stage, balance exercises, phase of walking, gait training, group of muscles responsible during crutch walking
19. Progression in crutch walking, measurement of crutches, other walking aids - canes, walkers, tripods other types of crutches, crutch walking on even surface, slopes, climbing up the stair case.
20. Measurement of limb length methods of measurements
21. Application of resistance to develop endurance and power, progression of exercises, angle of pull, types of muscle work, exercises-free resisted, assisted use of gadget apparatus.
22. Resisted Exercises - Techniques and types of resistance, S.E.F. exercise (Heavy resisted exercises Oxford Method, Delorme method, McQueen Method, S.E.F. system (Heavy resisted exercises Oxford Method Delorme method McQueen's method)
23. Free Exercises - Classification, technique, effects of free exercises application for shoulder, neck hip and knee joints techniques of mobilisation for stiff joints
24. Mat exercises - education of balance, strength endurance
25. Posture-definition, types, factors influencing posture, posture training
26. Maintenance of record - volume, range of motion resistance limb length

(2) Soft Tissue Manipulation-Massage Mobilization

1. Introduction-brief history, definition, classification
2. Physiological effects and therapeutic uses, contra indications
3. Preparation of patient, basic points to be considered before and during massage procedure
4. Techniques, effects and uses of as on manipulation and contra indications
5. Specific effects of certain manipulations
6. Massage for arm, leg, neck and upper back face
7. Massage for neck, head, feet, tendons, fibrous chest fasciae
8. Practice of soft tissue manipulation on subjects
9. Mobilization of soft tissues, joints and third correction

(*) S.S. B. Physiotherapy

(a) Pathology, Microbiology & Biochemistry

(1) Pathology

1. Introduction : Aims and objects of study of pathology. Definitions of health, disease, causes of disease, methods of study of disease.
2. Reversible and Irreversible Cell Injury : Cellular adaptation, hypertrophy, hyperplasia, atrophy.
3. Acute Inflammation : General morphology, Phenomenon of acute inflammation.
4. Repair : wound, fractures, skin nerves muscles
5. Chronic inflammation : Otitis media, tuberculosis, rheumatoid arthritis, syphilis
6. Chronic inflammation : Otitis media, tuberculosis, rheumatoid arthritis, syphilis
7. Fluid and hemodynamic disturbances
8. Neoplasia : General outline, classification, characteristics, the cause and mechanism of its spread of tumours, systematic effects
9. Disorders of joints : Rheumatoid arthritis, osteoarthritis, hemarthrosis, gout
10. Immunity and hypersensitivity
11. Hematological disorders : Anaemia, hemophilia
12. Respiratory disorders : Supportive lung diseases, COPD, asthma

12. **Diseases of nervous system** : Poliomyelitis, cerebrovascular accidents.
13. **Diseases macies** : angiotonia gravis, myopathies, angiotonia congenita, the generally determined neuromuscular diseases.
14. **Diseases of C.V.S.** : A brief outline of heart diseases, infective endocarditis, ischemic heart disease, diseases of blood vessels-Burger's disease, T.A.O., X-Thrombophlebitis, atherosclerosis.

(2) Microbiology

General Bacteriology

1. Introduction, historical background, classification of micro-organisms.
2. Morphology of bacteria.
3. Staining of bacteria.
4. Sterilisation
5. Cultivation and culture media.

Systemic Bacteriology

1. Gram positive cocci-strepto cocci, staphylococci and pneumo cocci.
2. Gram negative cocci-gono and meningococci.
3. Gram positive bacilli
4. Gram negative bacilli-typhoid, Cholera, Dysentery.
5. Aerobic-diphtheria, tuberculosis, leprosy.
6. Anaerobic-tetanus, gas gangrene, botulism

Immunology

1. Immunity, antigens.
2. Antibodies, antigen and antibody reactions.
3. Agglutination, precipitation.
4. Hypersensitivity reactions.

General Virology :

1. Poliomyelitis.
2. Rubella.

Demonstration of tests in : Diagnosis of Aids, Diagnosis of hepatitis, Diagnosis of syphilis.

Parasitology :

1. Malaria
2. Amoebiasis
3. Round worm and hook worm.

Mycology :

1. Candidiasis, Ring worm, Scabies.

(3) Bio-chemistry

1. Biochemical characteristics of living matter.
2. Biochemistry morphology of cell.
3. Nucleic acids.
4. Proteins.
5. The enzymes
6. Metabolism.
7. Hormones.
8. Nutrition.
9. Biochemistry of connective tissues, nerve tissue and muscle.
10. Water, electrolyte and acid base balance.
11. Chemistry of biology materials.
12. Physico chemistry Phenomenon.
13. Common procedures used in biochemistry.

Biophysics :

1. Molecular biophysics, structure thermodynamics.
2. Electro-chemistry.
3. Micro-bio, including electron microscopy, spectroscopy, centrifugations, chromatography, electrophoresis, tracer technique.
4. Cell biophysics.
5. Computers.
6. Radiation biology.

(b) Medicine - I

(1) General Medicine

1. **Respiratory Diseases** : Lung function tests, pneumonia, lung abscess, bronchiectasis, asthma, emphysema, pleural effusion, pneumothorax, empyema, chronic bronchiectasis.
2. **Cardio Vascular diseases** : Rheumatic fever, valvular lesions, congestive cardiac failure, ischaemic heart diseases (Angina pectoris and myo-cardial infarction) stress test, hypertension, peripheral vascular-diseases (TAO, Raynauds disease).
3. **Endocrinal Disorders** : Diabetes mellitus, thyrotoxicosis, myxoedema.
4. **Gastro-intestinal Disorders** : Peptic ulcer, pancreatitis, dysenteries and diarrhoeas, inflammatory bowel diseases, jaundice, cirrhosis of liver.
5. **Infectious Disease** : Tuberculosis, malaria, typhoid, infective hepatitis.
6. **Nutritional Disorder** : Vitamins and its deficiencies, disorders including rickets and osteomalacia, anaemia.
7. **Urogenital Syatem** : Structure and functions of kidneys including physiology of micturition, acute and chronic renal failure, glomerulo-nephritis, pyelonephritis.
8. **Rheumatology** : Rheumatoid arthritis, ankylosing spondylitis, gout, osteoarthritis connective tissue disorders, scleroderma.

(2) Paediatrics

1. Growth and development of a child from birth to 12 years, including physical, social, adaptive development.
2. The maternal and neonatal factors contributing to high risk pregnancy the neonate, inherited diseases, maternal infections-viral and bacterial, maternal diseases incidental to pregnancy, induced hypertension, chronic maternal diseases such as heart diseases, such as heart diseases renal failure, tuberculosis, diabetes, epilepsy, bleeding in the mother at any trimester.
3. Community programmes : International (WHO), national and local for prevention of poliomyelitis, blindness, deafness, mental retardation and hypothyroidism, the immunization schedule for children.
4. Cerebral Palsy : Etiology-prenatal, perinatal and postnatal causes, pathogenesis, types of cerebral palsy (classification), findings on examination, general examination, examination of C.N.S. musculoskeletal system, respiratory system, G.I. Tract and nutritional status.
5. Associated defect Mental retardation. Microcephaly, blindness, hearing and speech impairment squint and convulsions.
6. Prevention - Appropriate management of high risk pregnancies, prevention of neonatal and postnatal infections, metabolic problems.
7. Muscular Dystrophy : Various forms, modes of inheritance and clinical manifestation, physical findings in relation to disabilities, progression of various forms and prognosis, treatment goals in forms which are and are not fatal.
8. Spinabifida, Meningomyelocele : Development, clinical features - lower limbs, bladder and bowel control, complication-U.T.I. and hydrocephalus, medical treatment and surgical treatment.
9. Still's Disease : Classification, pathology in brief, physical findings, course and prognosis, treatment, prevention and correction of deformity.
10. Acute C.N.S. infections, Classification (Bacterial and Viral) the acute illness, C.N.S. sequelae leading to mental retardation, Blindness, deafness, speech defect, motor paralysis, scoliosis and bowel problems, seizure disorder and specific problems such as subdural effusion, hydrocephalus, pressure sores, feeding difficulties.
11. Normal diet of newborn and child : List dietary calorie, fat, Protein, mineral and vitamin requirement in normal child and in a child with malnutrition. Etiology, findings and treatment of rickets, vitamin D deficiency and resistant rickets.
12. Lung infections : Clinical findings, complications and medical treatment of bronchiectasis, lung abscess and bronchial asthma.

(3) Skin & D.V., (Dermatology)

1. Structure and functions of normal skin, primary and secondary skin lesions.
2. Scabies and pediculosis.
3. Fungal infections of skin : Dermatophytosis, Pityriasis versicolor, Candidiasis.

- Bacterial infections of skin-impetigo/Boil.
- Viral infections of skin-Herpes zoster.
- Eczema/Dermatitis/Allergies
- Poriasis/Acne/Alopecia/Vitiligo and Leucoderma.
- Leprosy/Lepa-reaction/Physiotherapy in leprosy.
- Sexually transmitted diseases :

Syphilis-primary & secondary, Gonorrhoea, Chancroid, AIDS.

(d) Surgery - I

(1) General Surgery & Plastic Surgery

- Acute infections-inflammatory fever bacteraemia septicaemia pyaemia Specific types-Cellulitis-sites lymphangitis abscess with special reference to hand infection, carbuncle.
- Specific types contd. : Tetanus, gas gangrene, hospital infection cross infection with modes of spread and prevention.
(General survey of chronic inflammations, Syphilis (reference to other venereal diseases).
- Surgical tuberculosis.
- General survey of trauma, pathology and clinical features of wound repair-primary secondary and tertiary wound healing.
Clean wounds, contaminated wounds and infectious wounds, Principles of treatment survey of factors affecting wound healing, Ulcers and gangrene, Post operative complications of abdominal surgery specifically chest, wound infection, oedema.
- Burns as a specific type of severe trauma, classification. Early and late complications management and reconstructive surgery-skin grafting as an example of plastic procedure.
- Types of skin grafting - take of grafting, healing of grafting, Post operative care of plastic surgery with specific role of physiotherapy, outline of surgical disorders of brain-head injuries. General survey of surgical disorders of spine and spinal cord problem of paraplegia - a literary spread and its behaviour various abdominal demonstration for an hour a day for a period of one week.
- Anaesthesia, O.T. demonstrations.
- Neck, skin contractures and correction.
- Problems of trauma to hand and their management. Urinary tract infection.
- Principles of cinelaplasty Tendon transplant. Cosmetic surgery types of grafts, surgery of hands with emphasis on management of traumatic and leprosy hand.
- Breast : Surgery.

Neuro Physiology : Neurophysiology basis of tone disorders of tone and posture, bladder control muscle contraction, Movement and pain

Clinical Features and management of the following :

- Congenital and childhood disorders - hydrocephalus spina bifida.
- Trauma - Broad localisation, first aid and management of sequelae of head injury and spinal cord injury.
- Diseases of the Spinal Cord - Craniovertebral junction anomalies syngomyelia, Cervical and lumbar disc disease, tumours.
- Peripheral nerve disorders - Peripheral nerve injuries, localisation and management. Entrapment neuropathies.
- Intracranial tumours - Broad classification. Signs and symptoms.
- Pre-operative Assessment and indications and contra-indication for neurosurgery.
- Management of pain, electrical stimulation of brain and spinal cord.
- Miscellaneous.

(2) Orthopaedics (Traumatology)

Traumatic Disorders :

- General Principles and injuries of the upper limb :
Introduction : Orthopaedic Surgery. Definition and scope, brief history.
Sprains and dislocations - causes, types, principles of treatment.
Fractures - types, displacement, general symptoms, Healing principles of treatment, union delayed union, non-union, complications.

Injuries to the hand-types, Principles of treatment, injuries to the phalanges, sprains, dislocations of MP & IP joints, fractures of the phalanges, metacarpals, Bennett's fracture, nail finger, stenosing tenosynovitis, Trigger finger.

Wrist, dislocations, sprains, injuries to carpal, scaphoid, ganglion, Colles' fracture, displaced epiphysis. Fractures of forearm bones - greenstick fracture. Infraction injury, adult forearm fractures, principles of treatment, Monteggia fracture dislocation. Injuries to the elbow, Traumatic synovitis, sprain dislocation.

Myositis ossificans. Tennis elbow, principles of treatment of elbow. Fractures involving the elbow joint.

Supracondylar fracture - displacement of lateral humeral epiphysis, medial condyle injuries. Fractures involving elbow joint.

Supracondylar fracture - displacement of lateral humeral epiphysis medial condyle injuries, Y & T shaped fractures, Volkman's Ischaemic Contracture.

Fracture of the head of the radius fracture of olecranon.

Baby car fracture dislocation and reference to Volkman's contracture.

Fractures of the shaft of humerus, principles of treatment.

Injuries to shoulder, fractures of the upper end humerus, shoulder cuff lesions.

Dislocations. Fracture. Dislocation, recurrent dislocations, periarthritis.

Fractures of clavicle, acromioclavicular and sternoclavicular dislocations, fractures of the scapula.

Injuries to main nerves : Radial, ulnar and median.

2. Injuries of the spine and pelvis :

Vertebral injuries, Transverse processes, Kummel's disease. Neural arch, vertebral body. Injuries to the cervical spine, atlanto-axial injuries, hyperaemic dislocations. Brachial plexus injuries, Injuries to pelvis.

3. Injuries of the lower limb :

Injuries of the legs, epiphyseal injuries. Dislocations of the hip joint, sciatic nerve injuries, fractures of the neck femur, Coxa vara, fracture of the shaft of femur, supracondylar fracture, Injuries to the knee joint, contusion, haemarthrosis, quadriceps mechanism, ligamentous injuries, cartilage tear, fractures involving knee joint dislocations.

Epiphyseal injuries to the knee, fractures of upper end of tibia, injuries to the ankle, lateral and medial nerve injuries, principles of treatment of fractures of fibula and tibia, sprain, subluxation, dislocation, recurrent dislocations, dislocation of peroneal tendons. Pott's fracture, injuries to the talus, to the talus, calcaneum and tarsal bones. Injuries to the foot.

4. Miscellaneous :

Amputations - types site, ideal stump complications, general principles. Upper extremity and lower extremity-prosthesis and prosthetic service.

Nerve injuries, paraplegia, hemiplegia/paraplegia orthopaedic splints, appliances injuries to muscles and tendons.

(3) E.N.T.

- Anatomy and physiology of hearing and the use of audiometry in assessment of hearing outline only.
- General introduction to diseases of E.N.T. emphasis on otitis media. Bell's palsy, sinusitis, rhinitis.
- Mastoid surgery.
- Larynx and associated functional paralysis with tracheostomy and care of tracheostomy.
- Causes of hearing loss, conservative and surgery intervention including types and availability of hearing aids.

(4) Radiology

Introduction, X-Rays of Fractures of Bones. Orthopaedic Conditions - O.A., P.A., Cervical & Lumbar Spondylosis, common Chest Conditions, C.T. Scan, M.R.I. and Angiography etc.

(e) Exercise Therapy - II & Kinesiology

(1) Exercise Therapy - II

- Passive Movements : Definition, types, technique, effects and uses, CPM unit, comparison of passive movements with active movements, for all joints of extremities, neck and trunk.

- Stretching : Definitions related to stretching, types of contractures and differentiation properties of soft tissues affecting elongation, and aims of stretching, manual and mechanical stretching, cyclic mechanical stretching, indication and aims of stretching, principles of stretching and contra-indications. Traction : Types effects, principles of application for cervical and lumbar spine, traction to soft tissues of joints-gliding movement.
- Mobilisation :** Causes of restrictions of range of movements prevention of restrictions. Techniques of mobilisation of various joints of limbs assistance to mobilize joints ROM through functional diagonal patterns, joint mobilisation manipulations definition, types. Joint shapes, types of motion. Are stretching, Glide stretching, compression, traction, indications, Contra-indications and precautions. Conditions for special precautions.
 - Manual muscle testing :** Need of MMT. Uses of MMT. Fundamental principles, anatomical and physiological bases of muscle testing. Oxford scale of muscle gradation, principles of isolation, substitution, stabilization, grading procedure for muscles of arm, leg, neck and trunk. Voluntary control of movements, gradation by Bobath, Bruns, Breathing mechanisms and postural drainage, normal mechanism of respiration, altered mechanism of respiration in respiratory diseases, control of breathing, pursed lip breathing, postural drainage, assistive measures, techniques, indicators, and contra-indications.
 - Posture :** Type, factors influencing posture, regulation of postural reflex mechanisms, pelvic tilt and postural deviations of spine and treatment. Crawling Exercises Necessity, types, effects and uses of Clapp's crawl.
 - Strengthening of muscles :** Principles involved to prevent muscle wasting. Rood's techniques, initiating of muscle contraction, progressive strengthening of muscles, (Load assisted and load resisted exercises) use of equipments, re-education of muscles and restoration of functions. Practice of strengthening of muscles of limbs, neck, trunk and face. Emphasis on hand and foot muscles, quadriceps glutei, calf, triceps, deltoid and face muscles. Use of manual and mechanical resistance, contra-indications to resisted exercises, Isometric-isokinetic regime.
 - Proprioceptive Neuromuscular facilitation :** Introduction, response of neuromuscular mechanism, basic techniques of RNF patterns of arm. Leg head, neck and trunk (Emphasis on straight Patterns). Specific techniques of emphasis. Reputed contractions-slow reversal, contract and relax, hold-relax, rhythmic stabilization, Inhibitory techniques, Kabat-Bobath-Rood's.
 - Hydrotherapy :** Physiological properties of water and hydrodynamics, physiological and application of Bad Ragaz technique indications and contra-indications of hydrotherapy.
 - Relaxation :** Muscle tone postural tone, general and local relaxation techniques of relaxation.
 - Neuromuscular co-ordination re-education,** factors governing co-ordination principle of re-education of co-ordination Frenkel's exercises and its techniques.
 - Functional re-education** mat activities for re-education of hemiplegics, paraplegics and cerebral palsy walking re-education in neurological conditions and in orthopaedic cases.
 - Physiological effects and therapeutic uses of aerobic exercises,** fitness testing, stress testing for healthy and convalescent individuals. Exercise programme to test strength, flexibility, endurance, skill.
- (2) **Kinesiology**
Basic Concepts : Centre of gravity, line of gravity, planes and axes of motion (mechanical and Anatomical).
Principles of Stability : Basic support, height of centre of gravity, line of gravity, mass of body, the impact of forces, friction, segmentation, visual factors, psychological factors, physiological factors.
Principles of Motion : Causes of motion, kinds of motion, motions experienced by body, laws of motion, centripetal and centrifugal force.
Mechanics of muscular action : Classification of muscles, line of pull types of contractions role of muscles, tendon action of two joint motion, non customary action.
Muscular skeletal Mechanics : Anatomical levers, anatomical wheel and axle, anatomical pulley.
Force and Work : Magnitude of force, point of application, direction of force and resistance arm of lever, perpendicular distance, composite effect of two or more forces methods of segments of the body in air, water and on surface.

- Skilled movements :** Rope climbing, cycling, running, ballistic movements Volitional movements, reflex movements.
Impetus : Impetus to external objects, receiving impetus.
Location : Sitting phase, stance phase, joints and muscles involved during these phases.
Muscle Palpation : Upper extremity, neck, trunk, lower extremity. Muscular analysis of fundamental movements.
Bio-mechanics of joints : Shape of the articular cartilage, type of joint movement-gliding, rocking with gliding, axial rotation, mechanics of the muscle and stabilizing, rotating.
Patho-mechanics of joints : Hip, knee, ankle and foot.
Patho-mechanics of the paralytic joints: Hip, knee, ankle and foot.
Patho-mechanics of the shoulder, elbow, wrist and hand.
Patho-mechanics of the Paralytic joints: shoulder, elbow, wrist and hand.
Mechanics of spinal column : Spinal curves, articulations, non-contractile soft tissue of column, IV disc, ligaments intrinsic equilibrium, movements of spinal column and muscle mechanics.
Mechanics of Pelvis Complex : Pelvis at rest, in standing body in motion, pathomechanics of pelvis.
Mechanics of the throat : Movement between ribs and vertebrae, sternum and ribs.
Pathomechanics of respiration, Postural Strain and Occupational Hazards : Correct use of body mechanics at home, at school, at work, recreation
 Particular application of patients, Physiotherapists and other staff.
 (c) **Electro Therapy - I**
Electromagnetic Waves : Electromagnetic spectrum, physical properties of electromagnetic radiations reflection, refraction, absorption penetration, grotius law, cosine law, inverse square law and its practical application.
Infra Red Rays : Production of infra red rays, luminous and nonluminous emitters, penetration, technique of application, physiological effects and therapeutics uses of infra red rays, duration and frequency of treatment, indications and contra-indications, dangers and precautions (Krimmayer Lamp).
Ultra Violet Rays : Production of U.V.R. mercury vapour lamps (Krimmayer Lamp).
 Fluorescent tubes for U.V.R. production (Alpinesium lamp) with skin).
 apparatus, Physiological effects of U.V.R. (Chemical reactions with skin).
 Structure of skin, penetration and absorption of U.V.R.
 Erythema, different degrees of erythema, test dose, technique to find out the test dose and its importance.
 Technique of application of U.V.R. in local and general irradiation, specific conditions like psoriasis, acne, alopecia, indolent wounds.
 Technique of applications using accessories.
 Filters, sensitizers.
 Dangers and contra-indication
Cold Therapy : Physiological effects and therapeutic uses of ice therapy. Techniques of application, contra-indication to ice treatment.
Hydrotherapy : Properties of water buoyancy, effects of buoyancy on movement, Hubbard tank, Contrast bath whirlpool bath.
 Paraffin wax bath : Structure of the bath composition of wax ad mineral oils physiological effects and therapeutic uses of wax bath.
 Other Heating Modalities : Heating Pad, moist heat.
High Frequency Current : Short Wave Diathermy : Introduction, Physiological effects and Therapeutic effects of S.W.D. Methods of application (capacitor field method and cable method etc.). Techniques of treatment, indications, contra-indications and dangers.
Pulsed S.W.D. : Definition, Characteristics, Mechanism of work, Physiological effects and therapeutic effects, Indications, Technique of application, Principles of treatment and contra-indications.
Microwave Diathermy : Introduction and characteristics, Physiological effects, Therapeutic effects, techniques of application and principles of treatment, Danger of microwave diathermy.
Lasers : Introduction and characteristics, dangers.
Ultrasonic Therapy : Introduction and characteristics, U.S. Therapy parameters, Coupling application, Indications, contra-indications and dangers, Testing of apparatus, media, Therapeutic effects, Indications, contra-indications and dangers, Testing of apparatus, Techniques of application and dosage.

(1) **Neurology :**

1. Anatomy, Physiology, Lesions and diseases of Pyramidal system, extra-pyramidal system, cerebellar system, spinal cord, upper and lower motor neurone, cranial nerves, brachial plexus, lumbosacral plexus and peripheral nerves.
2. Causes, Clinical features and management of : Unconscious patient, hemiplegia, paraplegia, quadriplegia, cerebral diplegia, spastic child, footdrop and wristdrop.
3. Disorders of cerebral circulation.
4. Infections : Encephalitis, meningitis, poliomyelitis, transverse myelitis, slow viral diseases.
5. Diseases of Peripheral nerves : Peripheral neuropathy, neuropathy.
6. Muscle disorders : Myopathy, polymyositis, Muscular dystrophies.
7. Degenerative diseases : Parkinsonism, motor neurone diseases, spinocerebellar degenerations and diseases of anterior horn cell, dementia.
8. Cerebrovascular syndrome.
9. Demyelinating disorders including multiple sclerosis.
10. Basic concept of electrophysiology and electromyography.
- (2) **Obstetrics and Gynaecology :**
Anatomy physiology of the female reproductive organs. Puberty dynamics.
Physiology of menstrual cycle-ovulation cycle, Uterine cycle Cx. cycle, Duration, amount.
Hormonal regulation of menstruation.
Diagnosis of pregnancy.
Abortion.
Physiological changes during pregnancy.
Antenatal care exercises.
High risk pregnancy.
Normal labour.
Normal puerperium and postnatal exercises.
Family planning.
Medical Termination of pregnancy (MTP).
Infection of female genital tract including sexually transmitted diseases, low backache.
Prolapses of uterus and vagina.
Principles of common gynaec operations Hysterectomy D & D, D & E, Pap smear.

(b) **Surgery - II**(1) **Cardiothoracic Surgery :**

1. Basic anatomy of chest wall, trachea and bronchial tree, lungs and bronchopulmonary segments. Pleura and mediastinum.
2. Physiology and mechanics of breathing and use of mechanical breathing - ventilators (respirators).
3. Pulmonary function tests.
4. Investigation of lung diseases including endoscopies.
5. Chest injury.
6. Common suppurative diseases of lung - Bronchiectasis, lung abscess.
7. Bronchogenic carcinoma.
8. Common surgeries of chest : Thoracoplasty, Pulmonary sisections, thoracotomy Pneumothorax, hydrothorax - Pneumothorax, emphyema.
9. Common diseases of oesophagus and related conditions causing dysphagia.
10. Surgery of portal hypertension.
11. Surgery of pulmonary tuberculosis.
12. Surgery of heart and great vessels.
13. Basic anatomy of heart, great vessels.
14. Investigation of patient undergoing cardiac surgery.
15. Cardiac arrest, its management.
16. Basic principles of open heart Surgery. Heart lung bypass (Extra Co-portal circulation).
17. Common diseases of heart requiring surgery both congenital and acquired including open heart surgery.
18. Common vascular surgery.

Embolectomy, vascular reconstructive surgery, (Thrombosis, Embolism, atherosclerosis and occlusive vascular diseases including coronary artery bypass).

Clinical-1. Examination of patients as regards chest and heart diseases.

2. Demonstration - Acquaintances with C.T. Surgery, Equipments, I.C.C.U.O.T. Radiology - X-ray studies - X-ray chest in various lung diseases.

(2) **Ophthalmology :**

1. Common eye diseases, including Refraction errors, conjunctivitis and trachoma.
1. Cataract and glaucoma.
3. Squint and ptosis.
4. Eye lesions in leprosy, including causes treatment and complications of lagophthalmos.
5. Causes, clinical features and treatment of disorders of ocular movement occurring in diseases such as myasthenia gravis, progressive supranuclear palsy and lower motor neuron diseases.
6. Causes, clinical features treatment and prognosis in inflammatory disorders, vitamin-A deficiency emphasis on preventable causes and prophylactic measures.
7. Definition of blindness and visual disability evaluation, investigative procedures used for testing visual failures.
- (3) **Non-Traumatic Disorders :**
1. Congenital disorders : Congenital deformities, congenital elevation of scapula, torticollis, electroranial dystosis superior radio-ulnar dysostosis.
Scoliosis, medelung's deformity sternocleido mastoid congenital wry neck.
Kyphosis, lordosis, scoliosis-primary and secondary idiopathic, Spinabifida, myelomeningocele.
Coxa vara, congenital epiphyseal, congenital dislocation of hip.
Derotation varus osteotomy, salter operation, Dehistrbrown split Lorenza position for plaster immobilization of C.D.H.
Genuvalgum, genu varum, genu recurvatum.
Quadriceps contracture, talipes equino varus.
Flat foot and foot wear.
Hallux valgus, regdus, metatarsalgia etc. Duputren's contracture.
2. Infections of bones joints and arthritis : Infections of bones - acute and chronic diseases of joints, Rheumatoid arthritis, osteoarthritis, Skeletal tuberculosis, Principles of treatment, T.B. of shoulder, elbow and wrist T.B. of hip, knee, ankle and foot.
3. Neurological disorders : Poliomyelitis - recovering and late stages.
Rehabilitation in recovery phase, tenodesis, tendon transplants, stailisation problems short limb and equidistans, tendon lengthening.
Miscellaneous : Backache, Disc lesions servical spondylolysis, metabolic diseases, rickets, osteomalacia, osteoporosis, parathyroid osteodystrophy, scurvy etc.
Tumours of bones and soft tissues.

(c) **Electro Therapy - II****Low frequency Currents :**

Nerve Muscle physiology : Resting potential action potential propagation of action potential motor unit, synapse and synaptic transmission of impulses. Effect of negative and positive electrodes on nerve and accommodation.

Faradic Current : Definition, characteristic and modified faradic current sinusoidal current. Parameters of faradic stimulation, Physiological and therapeutic effects of faradic stimulation. Indications, contra-indications and precautions, Techniques of stimulation, Group muscle stimulation, faradic foot bath, faradism under pressure and pelvic floor muscle re-education.

Galvanic Current : Introduction and characteristics, Parameters of stimulation, physiological and therapeutic effects of stimulation, precautions.

Electro Diagnosis : F.G. test, S.D. Curve, Chronaxie and Rhe-base, Nerve conduction, E.M.G. Nerve conduction velocity measurement (outline only) Ionotophoresis : Definition, principles of ionotophoresis. Physiological and therapeutic effects, indications, techniques of principles of ionotophoresis. Definition, contra-indications and dangers.

TENS : Definition, pain gate theory, Theories of pain modulation, principle of TENS treatment, Techniques of treatment, indications, and Contra-indications.

Medium Frequency Current : Interferential current : Definition, characteristics, physiological and therapeutic effects of I.F. current. Indications, Techniques of application, Contra-indications and precautions.

Bio-Feed Back : Introduction, principles of Bio-feed back. Therapeutic effects of bio-feed back. Indications and contra-indications, Techniques of treatment.

Advanced Electrotherapy : Computerisation in electrotherapy. Programming of parameters of treatment. Appropriate selections of parameters and combination in therapy, combined therapy. Principles, therapeutic uses and indications like U.S. therapy with stimulation or TENS etc.

(d) Physiotherapy in Musculo-Skeletal Conditions

1. Traumatology : Fractures and complications : Definitions, healing process of fractures causes, signs and symptoms of fractures. Methods of reduction, means of immobilization, duration of immobilization, fractures in children, epiphyseal injury, principles of physiotherapy in fractures of upper, lower extremity bones, scapula, ribs, vertebrae, spine and pelvis.
2. Physiotherapy for Pott's osteomyelitis.
3. Rehabilitation of patients - Arthroplastics, excision arthroplasty, total partial hip and knee replacement, MC Murray's osteotomy, reconstructive surgery mechanical changes-tendon transfer, peripheral nerve injuries.
4. Dislocation : Causes, types principles of treatment of shoulder, elbow, wrist, MP, IP, hip, knee, ankle dislocation, perthes disease, acromioclavicular and sternoclavicular joints.
5. Deformities : Mallory finger, trigger finger, Dupuytren's disease, metatarsalgia hallux valgus, Dupuytren's contracture.
6. Pathological changes in inflammation, oedema pyogenic conditions, osteomyelitis.
7. Soft Tissue Injury : Contusion sprains, strains ruptures of muscles and ligaments, knee injuries, arthrosis.
8. Rheumatology and arthritis : Still's disease, ankylosing spondylitis, bursitis, capsulitis, synovitis, tendinitis, infective arthritis, osteoarthritis, cervical spondylosis, gout, periarthritis fascitis, tennis elbow, ganglions, tenosynovitis, chondromalacia patellae, OS good Schlegel's disease, causalgia.
9. Congenital Deformities : Coxa vara, coxa valgus, C.D.H. Sprengle's scapulothoracic, Madelung's deformity, wry neck, kyphosis, lordosis, PID sprain back, spina bifida, spondylolisthesis, tuberculous spine, C.V. anomalies.
10. Foot conditions : Valgus and Varus pads. Amputations of lower and upper extremity. Physiotherapy management Calipers, prosthesis and splints.

(e) Pharmacology

1. Chemical character and general action of drugs.
2. Methods of administration.
3. Metabolic fate of drug.
4. Drug toxicity including allergy and idiosyncrasy.
5. Drugs acting on C.N.S. anaesthetics, alcohols, alkaloids, narcotics, analgesics, antipyretics, hypnotics, sedatives, psychopharmacology.
6. Drugs acting on peripheral nervous system, stimulating and/or inhibiting cholinergic and adrenergic activity.
7. Drugs acting on neuromuscular junction and muscle.
8. Drugs acting on the cardio-vascular system.
9. Chemotherapeutic agents.
10. Drugs acting on the respiratory system.
11. Hormones and drugs affecting endocrine functions.
12. The vitamins.
13. Immunological agents.
14. Irritants, counterirritants, plasters, poultices, pastes.
15. Diagnostics.

Mental health :

Psychiatry

- Normal Mental Health
- Criteria of normality or matured personality
- Factors contributing to normal mental health
- Self actualizing individual.

Study of Abnormal Personality :

- Neurotic, Hysterical, Psychotic, Paranoid, Schizoid, Psychopathic, etc.

General Etiological Factors :

- Hereditary, Genetical Constitutional
- Social and Environmental including pathogenic family patterns, Precipitating causes, Frustration and conflicts.

Advanced Electrotherapy : Ch. 12-13-14-15

Symptomatology and Treatment :

- Psychoses** : (1) Functional - Functional Schizophrenic, reaction group, simple, paranoid, catatonic, hebephrenic paranoid state, paranoia, juvenile, schizophrenia autistic thinking, dement. (2) Organic - Toxic confused states, senile psychoses arteriosclerotic, degenerative, G.P.I.
- Affective Disorders** : Dynamics of Mania, hypomania, chronic mania, M.P.D., Involutional depression, senile depression, postpartum depressive reactions, reactive and neurotic depression, endogenous depression, suicide (egoistic, Altruistic, Anomic) Epileptic Disorders : Epileptic Psychoses.

Neurosis : Symptomatology, diagnosis and treatment and psychodynamics of anxiety state, hysteria, conversion reaction, dissociative reaction, dual personality, obsessional neurosis, phobias hypochondriasis, neurasthenia and mental fatigue.

Mental Retardation : Definition, Biological factors - Prenatal postnatal infective hormonal congenital.

Types of mental retardation clinical types-microcephaly, hydrocephalus, mongol, family idiocy, Phenylketonuria etc.

Symptomatology of various grades of retardation, differential diagnosis and treatment.

Child Psychology : Behaviour disorders - Nalibing, Enuresis, Truancy Thumb-sucking, Speech difficulties, Pica, Vomiting, Anorexia, delinquency.

Introduction to dynamics of Psychophysical disorders : Asthma, skin rashes, hypertension, bowel disorders Introduction to treatment in psychiatry-E.C.T., Insulin, coma therapy, Drug therapy-Tranquilizer, Mood elevators, hypnotics and sedatives.

Psychotherapy : Deep and superficial, individual and group, expressive, suppressive, environmental manipulation, re-educative :

Psychodrama, Psychoanalysis, Play Therapy, Physiotherapy, Occupational Therapy.

(2) Final Year B.Physiotherapy

(a) Physiotherapy in General Medical and Surgical Conditions

1. Community Physical therapy - Sports, health promotion, occupational hazards
2. Physiotherapy in mother and child care - Antenatal and postnatal management, Early intervention and stimulation therapy in child care - (Mott therapy).
3. Physical Fitness - Endurance, Alopecia, Leucoderma, Carbuncles and Boils, Sexually Transmitted Diseases - AIDS, Syphilis, Gonorrhea.
4. Skin conditions : Acne, Psoriasis, Alopecia, Leucoderma, Carbuncles and Boils, Sexually Transmitted Diseases - AIDS, Syphilis, Gonorrhea.
5. Geriatrics - Handling of old Patients and their problems.
6. Psychiatry - Physiotherapy in Psychiatric conditions.
7. Complications common to all operations.
8. Physiotherapy during pre-operative and post-operative stages.
9. Wounds, Local infections, ulcers, pressure sores-UVR and other electrotherapeutics for healing of wound, prevention of hypergranulated scars relief of pain and mobilization.
10. Abnormal incisions.
11. Operations on upper gastro-intestinal tract-oesophagus-stomach-duodenum.
12. Operations on large and small intestine-Appendectomy, Cholecystectomy, partial colectomy, ileostomy, hernias, hemiotomy, hemiorrhaphy.
13. Hysterectomy, Prostatectomy, Nephrectomy, Pelvis repair, Caesarian.
14. Other gynaecological operations.
15. Mastectomy - simple, radical.
16. Burns and its treatment, physiotherapy in burns, skin grafts and reconstructive surgery.
17. ENT : Sinusitis, Non suppurative otitis media, chronic suppurative otitis media, otosclerosis, Labyrinthitis, Mastoidectomy, facial palsy, chronic rhinitis, Chronic nasal sinusitis, laryngectomy, Pharyngo-Laryngectomy.

(b) Physiotherapy in Neuro-Muscular Conditions

- Assessment and treatment planning strategies for Neuromuscular deficits.
- Diseases of Nervous system** : Hemiplegia, Cerebral palsy, Hydrocephalus, Basal ganglion-Extraparaventricular tracts, Parkinsonism, Cerebellar ataxia, meningitis.
- Spinal cord** : Quadriplegia, paraplegia, Brown Sequard Syndrome, Monoplegia, Pott's spine, Cauda equina, spina bifida, disseminated sclerosis (Multiple sclerosis), Tabes dorsalis, Subacute combined degeneration of cord (S.C.D.C.).

Viral infections : Polio, Herpes Zoster, Encephalitis, Peripheral neuritis, transverse myelitis.

Motor Neurone Disease : Peroneal muscular atrophy, myopathies, myasthenia gravis, Syringomyelia, Amyotrophic congenita.

Polymyositis, prolapsed disc, Thoracic inlet syndrome, Carpal tunnel syndrome.

Peripheral Nerve Injuries : Erb's palsy, Klumpke's palsy, Axillary palsy (Brachial plexus injury), Recal palsy, Bell's palsy etc.

Polyneuropathies

Causalgia, Sciatic nerve injuries

Leptos : Operations, transplantations, grafts, sutures, splints.

Leptos : Frank and root injuries.

Nerve : Cranial nerve injuries : Neuro surgery, cranial surgery. Head injuries-intracranial aneurysms, intracranial abscess, tumors.

Surgical of spinal cord : Spinal neoplasms, infections, tuberculosis of spine, spinal abscess, laminectomy, discectomy, spinal fusion.

(c) Physiotherapy in Cardio-Pulmonary Conditions

1. **Mechanisms of Normal respiration :** Retraining, Relaxation and maintenance of bronchial hygiene in respiratory diseases.

Respiratory rehabilitation. Cardiac rehabilitation, Fitness programme for cardio-respiratory disorder.

2. **Diseases of Respiratory System :** Acute respiratory infections : Pneumonia, Pleurisy, Emphysema, Pulmonary tuberculosis.

Chronic respiratory conditions : Chronic Bronchitis, Emphysema, Bronchiectasis, Asthma, cystic fibrosis, Pneumothorax, Pyothorax.

3. **Incisions on thorax (Thoracotomy) :** Thoracoplasty, Lobectomy, Pneumonectomy, Tracheostomy, Mitral Valvotomy (Mitral stenosis), Aortic Incompetence, Valve Replacement, Patent ductus arteriosus, Coarctation of aorta.

Pericardectomy in chronic constrictive pericarditis, Septal defects, Fallot's tetralogy, Bypass surgery, Aims of physiotherapy in general cardiac surgery ICCU.

Resuscitation and Cardiac arrest - Demonstration.

Peripheral vascular diseases.

Rheumatic Heart diseases.

(d) Physiotherapy and Rehabilitation Therapy

1. The Philosophy and Need of Rehabilitation. The principles of Physical Medicine, Basic principles of administration and organisation.

2. The evaluation process and treatment planning. Principles of prescription writing.

3. **Principles of Rehabilitation :** Nursing, Communication problems, Social problems, Vocational problems and Vocational placements.

4. **Prostheses :**

1. Difference between Prostheses and orthoses.

2. Purpose of prostheses, types.

3. Upper limb prostheses.

4. Lower limb prostheses in detail B. K. Prosthetic components, Gait analysis and deviations following B.K. Prostheses.

5. Prosthetic components, Gait analysis and deviations following A.K. prostheses.

6. Check out procedure for B.K. and A.K. Prostheses.

7. Symes and Partial foot Prostheses.

8. Upper limb prosthetic components - terminal devices-hooks-wrist units.

9. Forearm, shoulder harness-suspension control system.

10. Prosthetic checkout procedure.

5. **Orthotics :**

Purposes of orthoses, types, lower limb orthoses in detail.

Lower limb orthoses - introduction to HKAFO Orthoses.

Pathological gait, bio-mechanics of lower limb orthoses.

Check out procedure and training with orthoses.

Upper Limb Orthoses - Introduction to wrist hand orthoses.

Principles of wrist - finger - thumb orthoses, opponens splint (short and long), finger splints

for correction of contractures, knuckle hender splint, interphalangeal.

Extension splint with lumbrical baring coil assist.

Introductory demonstration of methods of construction of temporary orthoses for hand and

finger.

Spinal-orthoses - Introduction of Lumbosacral (Knight).

Thoracolumbar (Taylor) orthoses, Cervical collar, Milwaukee orthoses.

Thoracolumbar (Taylor) orthoses, Cervical collar, Milwaukee orthoses.

(e) Bio-Statics and Research Methodology

Bio-statistics :

1. Introduction to biostatistics, why statistics?
2. Data : What is data? Qualitative and quantitative data and the presentation of data with practical exercises.
3. Measures of Central tendency, Mean, Median, Mode, Arithmetic mean, Geometric mean.
4. Sampling : Why sampling? Methods of sampling and concept of sample size.
5. Measures of Variability.
6. Standard deviation, Coefficient of Variation Normal distribution.
7. Measures of variability standard error and its significance, limitations.
8. Statistical tests X2 test, S.E. of proportions, difference of proportions.
9. Mean and difference of mean.
10. Concept of Z. & X2 & t.
11. Values coefficient of correlation.

Research Methodology :

1. What is research? Why research?
2. Types of epidemiological studies and measurement of various indications.
3. Possible errors that may generate due to study design and how to overcome them.
4. How to read and what to read from journals.

O. B.Physio. 3 :

1. Essentialities for Qualifying to appear in University Examinations.

Fresh appearing candidates before presenting themselves for the University examination shall have :

(a) Attended 75% of the total numbers of days in each term.

(b) Attended 75% of the minimum prescribed teaching hours as per O. B.Physio. 2.

(Lectures and Practicals including clinics, seminars, group discussions, tutorials, demonstrations etc.) in concern subject.

N.B.— For definition of term refer O. B.Physio. 1.

2. Is a student is found appearing in the University examinations without fulfilling the conditions in O.B.Physio. 3 (1) criteria, his/her University result of the concerned subject/subjects should be cancelled.

R. B.Physio. 2 :

Examination Regulation

1. F.Y. B.Physiotherapy :

No.	Subject	External marks	Duration of Paper
1.	Human Anatomy	Theory 100 Practical 100	3 hours
2.	Human Physiology	Theory 100 Practical 100	3 hours
3.	Psychology and Sociology (Section I Psychology 50 marks, Section II Sociology 50 marks)	Theory 100 Practical 50	3 hours
4.	Fundamentals of Bio-Medical Physics	Theory 100 Practical 100	
5.	Exercise Therapy I & Massage Manipulation		

2. S.Y. B.Physiotherapy :

No.	Subject	External marks	Duration of Paper
1.	Pathology, Microbiology & Biochemistry (Section I Pathology, Microbiology 50 marks, Section II Biochemistry 50 marks)	Theory 100 Practical 100	3 hours
2.	Medicine - I (Section I General Medicine including Paediatrics 70 marks, Section II Dermatology 30 marks)	Theory 100	3 hours
3.	Surgery - I (Section I General Surgery including Neurosurgery and Plastic Surgery 50 marks, Section II Traumatology 50 marks)	Theory 100	3 hours
4.	Exercise therapy - II & Kinesiology (Section I Exercise therapy-II 70 marks, Section II Kinesiology 30 marks)	Theory 100	3 hours
5.	Electro therapy-I & Massage Manipulation	Theory 100 Practical 100	3 hours

3. T.Y. B.Physiotherapy :

No. Subject	External marks Theory 100	Duration of Paper 3 hours
1. Medicine - II (Section I Neurology 70 marks, Section II Obst. & Gynae. 30 marks)	Theory 100	3 hours
2. Surgery - II (Section I Orthopedics, NonTraumatic conditions 50 marks, Section II C. T. Surgery 50 marks)	Theory 100	3 hours
3. Electro Therapy - II	Theory 100 Practical 100	3 hours
4. Physiotherapy in musculoskeletal conditions	Theory 100 Practical 100	3 hours
5. Pharmacology	Theory 50	3 hours

4. Final Year B.Physiotherapy :

No. Subject	External marks Theory 100	Duration of Paper 3 hours
1. Physiotherapy in Neuromuscular conditions	Practical 100	3 hours
2. Physiotherapy in Cardiopulmonary conditions	Theory 100 Practical 100	3 hours
3. Physiotherapy in general Medicine & Surgical conditions	Theory 100 Practical 100	3 hours
4. Physiotherapy and Rehabilitation	Theory 50	2 hours
5. Bio-Statistics and Research Methodology	Theory 50	2 hours

Structure of Question-Papers

- (a) For subject human anatomy, human Physiology, Psychology and Sociology, Fundamentals of Bio-Medical physics, Exercise therapy-I and massage Manipulations Pathology, Microbiology and Biochemistry, Surgery-I, Electrotherapy-I, Surgery-II, Electrotherapy-II, Physiotherapy in musculoskeletal conditions, Physiotherapy in Neuromuscular conditions, Physiotherapy in Cardiopulmonary conditions and Physiotherapy in General Medical and Surgical conditions.

(3 hours duration)

Section I

Q. 1 Full Question OR Full Question	20 marks
Q. 2 Write notes in short (2 out of 3)	16 marks
Q. 3 Write short notes (2 out of 3)	14 marks

50 marks

Section II

Q. 4 Full Question OR Full Question	20 marks
Q. 5 Write notes in short (2 out of 3)	16 marks
Q. 6 Write short notes (2 out of 3)	14 marks

50 marks

Total marks 100

- (b) For subjects Pharmacology, Physiotherapy and Rehabilitation and Bio-statistics and Research methodology :

(2 hours duration)

Q. 1 Full Question OR Full Question	16 marks
Q. 2 Write notes in short (2 out of 3)	16 marks
Q. 3 Write notes in short (2 out of 3)	10 marks
Q. 4 Write short notes (2 out of 3)	8 marks

50 marks

- (c) For subjects Medicine-I, Exercise therapy-II & Bio-Mechanics Kinesiology, Medicine-II (3 hours duration)

Section I

Q. 1 Full Question OR Full Question	20 marks
Q. 2 Full Question OR Full Question	20 marks
Q. 3 Write notes in short (2 out of 3)	16 marks
Q. 4 Write short notes (2 out of 3)	14 marks
	70 marks

Section II

(For Dermatology, Bio-Mechanics and Kinesiology and Obstetrics and Gynaecology)

Q. 1 Full Question OR Full Question	16 marks
Q. 2 Write short notes (2 out of 3)	14 marks
	30 marks

Total 100 marks

R.B. Physio-3 :**General Instructions for University Practical Examination**

1. Practical examination should be taken and marks should be given by pair of examiners only and not by single examiner.
2. Marks should be put directly to the marksheet. No rough marksheet should be used.
3. Sealed original and duplicate marksheets should be submitted at the end of each session to the special supervisor or coordinator of examination.
4. Examiner shall not keep any kind of rough or fair copy of any mark sheet with him.

O. B. Physio-4 :**Passing Standard**

To pass any B.Physio examination a student must obtain at least 50% marks in the theory and 50% marks in practical examination, in each of the Subjects separately in concerned examination.

In following subjects, in Theory examination the candidate must obtain atleast 50% marks in each section separately to pass the whole subject.

1. Psychology & Sociology	4. Medicine-II
2. Pathology, Microbiology & Biochemistry	5. Surgery-I
3. Medicine-I	6. Surgery-II

O. B. Physio-5 :**Definition of Trial**

First trial is deemed to take place when the candidate is due to appear for the examination irrespective of his/her actual appearance, provided that non-appearance is not a result of reasons beyond his/her control. Similarly 2nd, 3rd, etc. trials relating to subsequent examination.

O.B. Physio-6 :

1. Exemption : Candidates who have passed in any of the subjects/subjects may at their option be excused for appearing in that subject/subjects at a subsequent examination. But they should not be declared to have passed the whole examination until they have passed in all the subjects in the particular examination.

2. University examinations will be held twice during the year at the end of each term. Notwithstanding any thing contained in O. B. Physio-2 (3) (A) Failure to pass the examination will not debar candidate from appearing at subsequent examination, on the submission of a new application and the payment of a fresh fee.

O. B. Physio. 7 :

1. Awards and Prizes : The following shall be eligible for the university awards and prizes. Those who appear and pass the first, second, third, or final B. Physio examination at their first attempt in a regular batch.

2. Distinction Marks : The subject or subjects in which successful candidates may have distinguished themselves will be shown on the list. In order to obtain distinction in any subject, the candidates should pass the examination at the first attempt in all the subjects and obtain 75% of the total marks in the subject/subjects.

O. B. Physio. 8 :

Compulsory rotating internship : In order to qualify for B.Physiotherapy degree every student after passing Final B. Physiotherapy examination shall do compulsory rotating Internship Training for a period of six months in an institution recognised by Gujarat University for the purpose.

R. B. Physio. 4 :

The concerned college authorities shall do the posting of the successful candidates, for internship, within 15 days of declaration of Result of Final B.Physiotherapy Examination.

During training of Internship 75% presence is compulsory, failing which an intern will have to repeat the term (training).

(d)

Medical Faculty

Revised Remuneration Scale

1. Scale of Remuneration to various staff at Practical Examination :

Subject	Expert	Lab. Asst.	Nurse	Hamal	Day for Preparation	Day for Cleaning up
E.N.T.	6	-	4	6	1 for all	1 for Half Staff
Ophthalmology	6	-	4	6	"	"
Podiatrics	6	-	4	6	"	"
Community Medicine	4	4	-	4	"	"
Microbiology	4	2	-	4	"	"
Pharmacology	4	2	-	4	"	"
Biochemistry	4	2	-	4	"	"

2. Scale of Remuneration for Practical & Oral Examination to Examiners.

- (a) For M.B.B.S. Examination : For each subject, per candidate, to be equally divided among Examiners :

I. Anatomy, Physiology at First M.B.B.S.	Rs. 36
II. Biochemistry at First M.B.B.S.	Rs. 18
III. Pathology at Second M.B.B.S.	Rs. 36
IV. Pharmacology, Forensic Medicine & Microbiology at Second M.B.B.S.	Rs. 18

V. ENT, Ophthalmology, Podiatrics & Community Medicine at Final M.B.B.S.	Rs. 30
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VI. Medicine, Surgery at Final M.B.B.S.	Rs. 72
VII. Obs. & Gyn. at Final M.B.B.S.	Rs. 45

- (b) For Medical Examination (P. G. Medical) Per Candidate, per Practical, Per Examiner:

I. P. G. Diploma & M.Sc. (Medicine)	Rs. 30
II. P. G. Degree	Rs. 45

Note : P. G. Degrees have 3 practicals : (a) Long case (b) Short & spot cases (c) Viva-voce.

Diploma will be deemed to have only one practical.

- (c) For B.D.S. & B. Physiotherapy Examination : For each subject Rs. 16 per candidate to be equally divided among examiners.

- (d) For M.D.S. Examination : Rs. 30 per candidate per Practical per Examiners.

Note : P. G. Degrees have 3 practicals : (a) Long case (b) Short & spot cases (c) Viva-voce.

3. For Lunch, Tea/Snack during practical examination. Present Rate (since 1989) Rs. 35 per person. Revised Rate Rs. 70 per person.

4. Daily Allowance : (For external Practical Examiner) Present Rate (since-1989) Rs. 45 per day. Revised Rate Rs. 90 per day.

5. Halting Allowance for External Practical Examiners : Present Rate (since 1989) Rs. 90 per day. Revised Rate Rs. 180 per day.

6. Patient's Remuneration:

Exam.

	Present Rate (since-1989)	Revised Rate
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* U.G. Exam. Rs. 3 per Clinical Examination Rs. 5

* P.G. Exam. Rs. 5 per Clinical Examination Rs. 8

7. Rs. 100 will be paid for Chairmanship in Dental & Physiotherapy Practical Examination.

8. Minimum Remuneration to Examiners in Dental and Physiotherapy Examination will be Rs. 150

ਪਰਿਸ਼ਦ "3/18"
ਸਿੱਖਿਅਕ ਸੇਵਾ (18)Teaching and Examination Scheme
B.E. (Information Technology) Semester I & II
(Revised and effective from July, 1999)

Sub. No.	Name of the Subject	Teaching Scheme		Examination Scheme		T.W.	Total Marks
		Lect.	Pract.	Theory	Sessional Pract.		
101.	Mathematics *	3	—	100	50	—	150
102.	Strength of Materials*	2	1	100	50	—	175
103.	Engg. Mechanics*	2	1	100	50	—	150
104.	Materials Science*	2	—	100	50	—	100
105.	Application Packages	—	3	—	—	50	50
106.	Engg. Graphics*	3	4	100	50	—	200
107.	Programming Languages	2	2	100	50	50	250
108.	Elements of Electrical Engg. & Electronics*	2	1	100	50	—	175
109.	Modern Workshops Practice*	—	2	—	—	50	50
Total...		16	14	700	350	100	275

* Subjects Common with all other Engineering Branches.

B.E. (Information Technology) Semester III

Sub. No.	Name of the Subject	Teaching Scheme		Examination Scheme		T.W.	Total Marks
		Lect.	Pract.	Theory	Sessional Pract.		
301.	Advance Mathematics	4	—	100	50	—	150
302.	Data Structures and Algorithms	4	2	100	50	25	200
303.	Communication Techniques	4	2	100	50	25	200
304.	Business Data Processing	4	2	100	50	25	200
305.	Fundamental of Digital Electronics	4	2	100	50	25	200
306.	Software Project Lab.	—	2	—	—	25	50
Total ...		20	10	500	250	125	1000

B.E. (Information Technology) Semester IV

Sub. No.	Name of the Subject	Teaching Scheme		Examination Scheme		T.W.	Total Marks
		Lect.	Pract.	Theory	Sessional Pract.		
401.	Probability Statistical and Numerical Analysis	4	1	100	50	25	200
402.	Computer Graphics	4	2	100	50	25	200
403.	Computer Architecture and Peripherals	4	1	100	50	25	200
404.	Operating Systems-I	4	2	100	50	25	200
405.	Data Base Management System	4	2	100	50	25	200
406.	Software Project Lab.	—	2	—	—	25	50
Total ...		20	10	500	250	150	1050

Sub No.	Name of the Subject	Teaching Scheme		Examination Scheme			T.W.	Marks
		Lect.	Pract.	Theory	Sessional	Pract.		
501	Advance Data Base Management System	4	2	100	50	25	25	200
502	Engineering Economics and Business Management	4	—	100	50	—	25	175
503	Object Oriented Design	4	2	100	50	25	25	200
504	Computer Networking	4	2	100	50	25	25	200
505	Management Information System	4	2	100	50	25	25	200
506	Software Project Lab.	—	2	—	—	25	—	50
	Total ...	20	10	500	250	125	125	1000

Software Project Lab : Consisting of small software projects based on subjects of that semester.

B.E. (Information Technology) Semester VI

Sub No.	Name of the Subject	Teaching Scheme		Examination Scheme			T.W.	Marks
		Lect.	Pract.	Theory	Sessional	Pract.		
601	Modelling, Simulation & Operational Research	4	2	100	50	25	25	200
602	Introduction to Internet, Intranet and Web server	2	3	50	25	75	25	175
603	System Analysis & Design	4	1	100	50	—	25	175
604	Operation Systems-II	4	2	100	50	25	25	200
605	Elective Paper I	4	2	100	50	25	25	200
606	Software Project Lab	—	2	—	—	25	25	50
	Total ...	20	10	500	250	150	150	1000

B.E. (Information Technology) Semester VII

Sub No.	Name of the Subject	Teaching Scheme		Examination Scheme			T.W.	Marks
		Lect.	Pract.	Theory	Sessional	Pract.		
701	Multimedia & Visualization	4	1	100	50	25	25	200
702	Data Compression and Encryption	4	1	100	50	25	25	200
703	Artificial Intelligence & Expert Systems	4	1	100	50	25	25	200
704	Software Engineering	4	2	100	50	25	25	200
705	Elective Paper II	4	2	100	50	25	25	200
706	Software Project Lab	—	2	—	—	25	25	50
	Total ...	20	10	500	250	150	150	1050

B.E. (Information Technology) Semester VII

Sub No.	Name of the Subject	Teaching Scheme		Examination Scheme			T.W.	Marks
		Lect.	Pract.	Theory	Sessional	Pract.		
801	Project	—	—	—	—	200	200	400

B.E. (Information Technology)

(In force from July, 1999)

501. Advance Data Base Management System

1. Recovery : Transaction, transaction recovery, system recovery, media recovery, two phase commit, SQL support.
2. Concurrency : Three concurrency problems, locking, deadlock, serializability, levels of isolation, intent locking, SQL support.
3. Security : General consideration, discretionary access control request modification, mandatory access control, data encryption, SQL support.

4. Integrity : General consideration, Integrity rules, domain rules, attribute rules, relation rules, database rules, state Vs. transaction rule, candidate and foreign keys, SQL support.
5. Views : What are views for ? Data definition, Data manipulation retrieval operations, Data manipulation update operation, updating union, intersection and difference views, updating other views, snapshots, SQL support.
6. Optimization : The optimization process - an overview, expression transformation, database statistics, a divide and conquer strategy, implementing the relational operators.
7. Domains, relations and Data types : Domain, relations, type inheritance, relation value-attributes, SQL support.
8. Missing information : An overview of the 3VL approach, some consequences of the forgoing scheme, outer join, SQL support.
9. Distributed Database and Client/Server systems : Some preliminaries, the twelve objectives, problems of distributed systems, gateways, client/server systems, SQL support.
10. Storage structure and Access Method : Database Access: an overview, page sets and files, indexing, hashing pointer chains, compression techniques.
11. Case study : A relational implementation : Storage structure, system components, detailed control flow, compilation and recompilation, utilities and related matters.

Text/references

1. Database systems by C. J. Dave
2. Database System Concept by Abraham Silberschatz.

502. Engineering Economics and Business Management

1. National Income : Economic planning and public finance
2. Organization concept, Principles, line and staff functions organization structure and its importance system concept of organization.
3. Management concept and functions : Concept function (Planning) Organizing directing, Co-ordinating, Controlling, motivating principles of management, Traditional v/s modern management approaches, decision making, delegation.
4. Productivity and its techniques : Concepts, Gain of productivity, Productivity of economic development, Rules of management in promotion of productivity, Selected productivity techniques, Work, study (time study and work management), Quality control, Waste reduction, Job evaluation, Incentives, Inventory control CPM and PERT control, Waste reduction, Job evaluation, Man power assessment recruitment, training
5. Personal Management : Personal functions, Man power assessment recruitment, performance appraisal and counselling discipline improvement grievance handling union management relation (industrial relation) trade unionism in India.
6. Human Side of Management : Understanding of human behaviour group dynamics, interpersonal behaviour, motivation communication, leadership
7. Financial Management : Financial management and quantitative techniques, management accounting break even analysis, preparation and analysis of balance sheets, capital budgeting, cost accounting, cost and budgetary control.
8. Marketing Management : Introduction, Marketing management concepts and approach product development and diversification Industrial Marketing.

Reference books

1. Management Analysis, Concepts and Cases by Hynes and Massie (PIH)
2. Personal Management by R. S. Davar (Vikas Publishing House Ltd., Delhi)

503. Object Oriented Design

1. Introduction to Object Oriented Modelling and Design, What is object oriented (OO).
2. Object modeling Concepts, OO methodology, OO themes
3. Introduction to OO Modeling Techniques : Modeling, modeling techniques, Object model.
4. Functional Model, OO Programming fundamentals using C++
5. OO programming : Object and Classes, Object modeling concepts in details, links
6. Object Modeling : Object and Classes, Object modeling concepts in details, links
7. Association, generalization, inheritance, metadata, etc A sample Object Model.

5. Dynamic Modeling : Dynamic modeling concepts, A sample dynamic model, Relation of object and dynamic model with example
6. Functional Modeling : Functional Modeling concepts, A sample functional model.
7. System Analysis Using Different OO Modeling : Techniques : OMPT and software engineering, Analysis of a problem (ATM as an example), Various modeling of ATM, Adding operations and analysis iteration
8. OCD present and future : Other OO analysis and modeling flavours COD future.
9. OO Programming : Advance Object Oriented programming using C++, Other OO Programming Languages: Introduction, Other OO Programming Languages: Introduction OO modeling case tools

Test books

1. Object Oriented Analysis and Modeling, James Rumbaugh, Michael Blaha, Et. Al, Prentice-Hall India, Eastern Economic Edition
2. Object Orient Programming using C++, Robert Lafore.

Reference book

Programming with C++ by Vijay Mukhi.

504. Computer Networking

1. Introduction : Use of computer networks, Network hardware, Network software, Example networks, Network standardization.
2. Data link layer : Data link layer design issues, Elementary data link protocols, Sliding window protocols, Protocols specifications of verification.
3. Medium access sublayers : Channel allocation, Multiple access protocols & ALOHA, CSMA, IEEE 802.3 Ethernet, Bridges.
4. Network layer : Design issues, Routing Algorithms : Optimality principles, Shortest path routing, Flooding, Link State routing, Congestion control algorithm, Internet working.
5. Transport layer : Transport Service, Elements of transport protocols, A simple transport protocols, Performance issues.
6. Application layer : Network security, DNS (DNS Name Space), Electronic mail, Architecture and Services, The user agents

Books

Computer Networks by Andrew S. Tanenbaum, 3rd ed. PHI Publication.

505. Management Information System

1. Introduction to Management Information System : Emergence of MIS, Overview of MIS, Management, Information and Systems, MIS subsystems, Information Resources Management (IRM), Computer Based Information Systems, Key issues of MIS.
2. Components of MIS : People Physiological and Psychological factors affecting systems, Organisations, Organizational characteristics, products offered, strategies, size, structure, staff positions etc.

MIS functions in Organization, Organizational behaviour - power, intergroup dynamics, leaderships and conflicts.

System - Components of a system, system environment, Deterministics and probabilistic systems, open and closed system, subsystems, systems entropy, system stress and change (DAVIS).

System models

Types of models : Graphical, Mathematical, Narrative and Physical Models of Organisational systems Strategic planning models.

Information Characteristics - Definition of information, Information presentation, quality of information, Value of information, Age of information, Humans as information processors models, limitations, human condition and learning, characteristics of human information processing (DAVIS).

Decision - types of decisions; Decisions making process, different models of decision making, evaluation of decisions, documentation of decision rules.

3. Transaction processing and MIS, Decision Support and Office Automation Systems.

Transaction Processing Systems - nature, functions, use of information technology, cycle of processing, inquiry processing, report generation.

TP subsystems - Payroll, order entry, Inventory, Invoicing, Shipping.

A/C receivable, Purchasing, A/C payable, General ledger etc. Management Reporting Systems - Types of reports, structure of reports.

Decision support systems - Concepts of DSS, data reconfiguration, Optimization tools, what if analysis.

DSS tools, Application areas of DSS, Executive information.

System (EIS) - Roles and characteristics, Knowledge Based systems and applications.

Office Automation System - Nature and function of offices.

Tools of OAS - word processing, DTP, reprographics - image processing, document archival, facsimile, e-mail, Voice-mail, teleconferencing, etc.

4. MIS in functional areas : Decision making in functional areas of Finance and Accounts, Marketing Manufacturing, Human Resource etc.

Text / Reference books

1. Management Information System, 2nd edition, Parker and Case, McGraw-Hill, 1993.
2. Management Information Systems, 2nd edition, Davis and Olson, McGraw-Hill, 1985.
3. Management Information Systems, 4th edition, Laudon and Laudon, Prentice-Hall, India, 1998.
4. Management Information Systems, 3rd edition, Kanter, Prentice-Hall, 1995.
5. Information Systems for Modern Management, 3rd edition, Murdock, Ross and Clagett, Prentice-Hall India, 1995.
6. Management Information Systems, 2nd edition, Knoke, McGraw-Hill, 1992.
7. Business Systems for Microcomputers, Hausain, Prentice-Hall India, 1998.

601. Modelling, Simulation and Operational Research

1. Introduction to OR : Concepts, genesis, Art of modelling, components of model, Types of OR models. Effect of data availability on modelling, Computations in OR, Phases of OR study.

2. Linear Programming (LP) :

Concepts :

Formulation of model

Graphical solution

Maximisation/Minimisation, Simplex Algorithm

Use of slack/surplus/artificial variables

Big and Two phase method-Nature and type of solutions

Interpretation of optimal solution

Dual problem-relation between primal and dual

Dual simplex method, Interpretation of dual variables

Introduction to Integer programming

Developing software for LP solution methods and exposure to available LP and IP Packages

3. Transportation and Assignment Problems :

Concepts :

Formulations of models

Solution procedures

Optimality checks

Balanced/Unbalanced

Maximum/Minimum problems

Prohibited case-degeneracy.

4. Network Analysis :

Network Definition

Minimal spanning tree problem

Shortest route problem

Maximal flow problem concepts and solution algorithm as applied to problem

- Project planning and control by CPM network
- Probability assessment in PERT network
- Introduction to resource smoothing and allocation. Development of software for the techniques and exposure to Project Management Packages.
- 5. Queuing Models :
 - Concepts relating to Queuing systems
 - Types of queuing system (use of six character code)
 - Basic elements of Queuing model
 - Roll of Poisson and Exponential Distribution
 - Concepts of Birth and Death process
 - Stead state measures of performance
 - MM/1 model with and without limitation of q-size
 - M/G/1, single channel with poisson arrival rate and general service time.
- 6. Computer Modelling and Simulation :
 - Use of computer in modelling real life situations
 - Distribution functions
 - Random number generation
 - Selection of input probability distribution
 - Design of simulation models
 - Experimental design, output analysis variance reduction techniques
 - Introduction to simulation languages
 - Programming tools for developing simulation models.
- 7. Replacement and Maintenance Models :
 - Replacement of items
 - Subject to deterioration of items subject to random failure
 - Group Vs. Individual replacement policies.

Text books

1. Quantitative Techniques in Management, N. D. Vora, Tata McGraw Hill
2. Operations Research - An Introduction, fifth edition by Hamdy A Taha-Prentice Hall of India, New Delhi
3. Wagner, H. M., Principles of Operations Research - With Applications to Management Decisions, Prentice-Hall of India, New Delhi, 1982

Reference books

1. Hillier, F. S. and Lieberman, G. J., Operations Research, Holden Day Inc., San Francisco, 1974.
2. Littlechild, S. C. (ed.), Operational for Managers, Philip Allan, Oxford, 1977
3. Mitchell, G. H. (ed.), Operational Research Techniques and Examples, The English Universities Press Ltd., London, 1972
4. Moder, J. J. and Elmaghraby, S. E. (ed.), Handbook of Operations Research - Models and Applications, Van Nostrand Reinhold Co., New York, 1987.
5. Payne, T. A., Quantitative Techniques for Management : A Practical Approach, Reston Publishing Co., Inc., Virginia, 1982
6. Wilkox, F. M., Baum, P. and Smith, G. D.: Management Science : An Introduction, John Wiley and Sons, Santa Barbara, 1979.

Objectives

The objective of this course is to impart some modelling techniques and to offer basic operations research tools and techniques which are used for decision making. The new focus of this course is to provide an understanding of OR models. The emphasis of the course will be on the application and computational aspects of OR and simulation models.

602. Introduction to Internet, Internet and Web Server

1. The WWW and the Ethernet History
2. Web site architectures
3. Java Programming

4. Study of popular Web server softwares
5. Study of popular Web page editors, Web graphics tools, page designers
6. Database access via Web
7. Delivering of sound and vide via the Web
8. 3D Animation Technologies : VRML, DirectX
9. Overview of commerce over the Web.

It is strongly recommended to have much use of World Wide Web

References books

Special references to journals, books and technical reports will be made during the delivery of the subject.

603. System Analysis and Design

1. Information Systems Development : Overview of systems analysis and Design, role of Systems Analyst, Categories of business systems-TPS, MIS, DSS, OAS, Strategic information systems, development strategies-Classical, structured and prototyping.
 - Reasons for systems project initiation, Project selection and review-committee methods, project requests
 - Preliminary investigation-scopes of project, feasibility study, institutional v/s end-user applications.
2. Systems Requirement Specification and Analysis : Requirement determination-process, data used, information produced, schedule, controls, transaction and decision requirements, etc. Fact finding techniques-interview, questionnaire, document scanning, observation. Tools for specifications - decision trees, decision tables.
 - Structured Analysis, physical and logical data flow diagrams, process charts, data dictionaries
 - Application prototyping-rationale, suitability, steps uses Tools for prototyping-4GL, report generators, application generators, screen generators, strategies for prototyping.
 - Automated tools-Front-end, Back end, integrated tools, case tools functionalites and benefits
3. System Design : Objectives in system design, components to be designed output files, database, input, controls, procedures, codes, program specifications, management of design process.
 - Output design-needs, types of output, presentation of outputs, printed outputs, input and controls capture of input data, source documents, coding methods, input validation-batch controls, transaction controls, check digit system, hash totals, data entry forms design
 - User interface design-purpose, characteristics, actions to be incorporated navigation, message displays, Dialogic design
 - File design storage, media selection, Types of files by purpose, file organization and access methods, Backup and recovery design database entity relationship
 - Data communication design-Choice of communication channels control device and protocols design of LAN Systems, Client/Server Strategies
 - 5. System Implementation : Program development and testing, Tools for document HIPO, structured flow charts, warner/or diagrams, Quality assurance-testing verification and validation testing strategies, creation/conversion of master files Loading the database, Preparation of system documentation
 - User Framing, conversion from old system to new system, Post implementation review
 - System development management-Estimation of development time, team management
 - Managing change relationships Stress and communication Elements of change management
 - Hardware/software selection, selection criteria, benchmarking, purchase/lease/rent options, Evaluation of make or buy software options

Text Reference books

1. Analysis and Design of Information Systems, James Senn McGraw-Hill, 1998
2. Systems Analysis and Design Methods, Whitten, Bentley and Harlow, Galgotia, 1995
3. System Analysis and Design, Elias Awad, Galgotia, 1997

B.E. (Mechanical) Semester VII

Sl. No.	Name of the Subject	Teaching Scheme			Examination Scheme			Total T.W.	Marks
		Lect.	Pract.	Theory	Hrs.	Sessional	Pract.		
701.	Production Technology	4	2	100	3	50	25	25	200
702.	Machine Design I	4	2	100	4	50	25	25	200
703.	Heat and Mass Transfer	4	2	100	3	50	25	25	200
704.	Thermal Engineering III	4	2	100	3	50	25	25	200
705.	Seminar***	4	2	100	-	-	25	25	50
706.	Work Study	4	2	100	3	50	25	25	200
707.	Refrigeration Engineering	4	2	100	3	50	25	25	200
708.	Computer Aided Design	4	2	100	3	50	25	25	200
709.	Internal Combustion	4	2	100	3	50	25	25	200
Total ...		20	12	500	-	250	150	150	1050

Explanatory Notes :

* Student can take any one paper out of this, based on the Elective offered by the Department.

** Seasonal exam is in abeyance.

*** It has been proposed to shift M 704 from B.E. Sem. VII to B.E. Sem. VIII M801.

**** M803 Control Engineering : It has been proposed to introduce one hour laboratory in this subject from academic year, 1999-2000.

***** M802 Machine Design II : It is proposed to change practical hours in this subject from 3 hours/week to 4 hours week.

General Remarks : Marks for practical and termwork have been rationalised as shown above.

B.E. (Mechanical) Semester VIII

Sl. No.	Name of the Subject	Teaching Scheme			Examination Scheme			Total T.W.	Marks
		Lect.	Pract.	Theory	Hrs.	Sessional	Pract.		
801.	Alternate Energy: Sources	4	2	100	3	50	25	25	200
802.	Machine Design II	4	4	100	4	50	50	50	250
803.	Control Engineering	4	1	100	3	50	25	25	200
804.	Production and Operation Management	4	2	100	3	50	25	25	200
805.	Project	-	1	100	-	-	50	50	100
806.	Operations Research	4	2	100	3	50	25	25	200
807.	Airconditioning Engineering	4	2	100	3	50	25	25	200
808.	Computer Aided Manufacturing	4	2	100	3	50	25	25	200
809.	Automobile Engineering	4	2	100	3	50	25	25	200
Total ...		20	12	500	-	250	200	200	1150

Explanatory Notes :

* Student can take any one paper out of this, based on the Elective offered by the Department.

** Seasonal exam is in abeyance.

*** It has been proposed to shift M 704 from B.E. Sem. VII to B.E. Sem. VIII M801.

**** M803 Control Engineering : It has been proposed to introduce one hour laboratory in this subject from academic year, 1999-2000.

***** M802 Machine Design II : It is proposed to change practical hours in this subject from 3 hours/week to 4 hours week.

General Remarks : Marks for practical and termwork have been rationalised as shown above.

**B.E. IV (MECHANICAL) SEMESTER VII
M-701 PRODUCTION TECHNOLOGY
(Effective from : 1999-2000)**

Theory Hr.	Pract Hr.	Theory Marks	Examination Scheme		Term Work Marks	Total Marks
			Hrs.	Seas. Marks		
4	2	100	3	50	25	200

- Cutting Tools :
 - Single Point Cutting Tools : Tool geometry for single point cutting tools, tools signatures, design of single point cutting tools such as solid tools, tipped tools, coated tipped tools, throw away tools and diamond tools, tools materials.
 - Multiple Point Tools : Types of multiple point cutting tools, tools materials, tool geometry, form tools, standard tool holder and standard toolings and their selection for turret and automates.

- Theory of metal cutting and economies of machining process : Orthogonal and oblique cutting, theory of chip formation, types of chips, thickness ratio and shear plane angle, forces cutting, theory of chip formation, concept of machinability, tool wear and tool life, Economies of and power in machining, concept of machinability, tool wear and tool life, Economies of machining, cutting fluids, types, properties and scope of use.

- Types and principle of dynamometers to measure cutting forces and their construction.
- Analysis of machine tools : Working and auxiliary motions in machine tools, machine tools drive, Stepped and step less regulation of speed and feed. Classification of speed and feed boxes, design analysis of speed boxes and selection of range ratio. Function and types of machine tools structure diagrams speed charts, selection of feed ratio. Function and types of machine tools structures, their requirements. Materials for machine tool structure for study of general features of machine tools beds, slide ways, guide ways, columns, bearings etc.

- Numerical control in m/c tools : Introduction to NC, CNC and DNC machines. Main parts of controls in CNC machine, types of format used in CNC programming, preparatory codes, misc. Codes, used in programming, use of canned cycles.
- Semi Automates and Automates : Semi-automates capstan and turret lathes, their working and toolings tool layout on semi-automates single spindle and multi spindle automates lat and tooling and chucking type machines their principles of working constructional details and tool type and chucking type machines their principles of working constructional details and tool setting evaluation of process of working cam design, transfer machines basic types and construction.

- Unconventional newer machining techniques : Principle and constructional details of EDM, ECM, ECG, AJM, USM etc with their applications.
- Gear and Thread manufacturing : Different types, thread manufacturing methods and tooling involved study of different gear generating and forming methods with their special features, gear finishing processes.
- Jigs and Fixtures : Definition, its usefulness in mass production, design principles, locators and clamps with their types, jig bushes, type of jigs and fixtures for various machining operations, economies of jigs and fixtures.

TERM WORK

It shall be based on topics of syllabus as above, laboratory work shall consists of study type / performance, evaluation type experiments on the above topics and this work to be written and reported in the form of journal.

PRACTICAL : Practical examination be conducted on above topics mentioned in the syllabus.

REFERENCE BOOKS

- Production Technology by Pandey Singh & Singh
- Production Technology by P.C. Sharma
- Principle of m/c tool design by N.K. Mehta
- Manufacturing Science by Amitabh Ghose and Malik
- Production Technology by HMT
- Principle of metal cutting by Issamman and martyn
- Tool design by Donaldson
- Numerical control and computer aided manufacturing by T.K. Kundra, P.N. Rao, N.K. Tiwari

M-702 MACHINE DESIGN I

(Effective from : 1999-2000.)

Teaching scheme				Examination scheme			
Theory Hr	Pract Hr	Theory Marks	Sess. Hrs	Pract. Marks	Term Work Marks	Total Marks	
4	2	100	4	50	25	200	

- Design Considerations : Manufacturing and assembly considerations, Design of components for casting, welding, forging, hot and cold working, machining, welding etc. assembly considerations in design Design for creep thermal considerations wear considerations in design Human considerations in design
- Application of standardization in machine design preferred numbers preferred series derived series- limits fits and tolerances and their applications in design.
- Design of welded joints weld design for fillet joints lap joints - butt joints and eccentrically loaded welded joints
- Design for strength, design for rigidity design of shaft based on rigidity. Hertz contact stresses and its applications in design, Theories of failures and their applications.
- Fatigue loading. Completely reversed or cyclic stresses stress cycle (S-N) curves fatigue and endurance limit effect of surface finish, size and loading etc. on endurance strength, Finite and infinite life design for finite and infinite life, stress concentration, notch sensitivity and fatigue stress concentration factor factor of safety for fatigue loading. Gerber, Goodman and Soderberg criteria for design of parts subjected to variable loading. Combined variable normal and shear stresses applications of fatigue loading for design of shafts, axles etc. Bolts with initial tightening under static and fatigue loading.
- Design of pressure vessels. Classification of pressure vessels design of thin cylindrical and spherical shells subjected to internal pressure design of thick cylindrical shell subjected to internal and external pressure compound cylinders subjected to internal and external pressure Design of interference joints press / shrink fitted assemblies Design of cylinder covers, cover plates, pipes pipe flanges for pipe joints.
- Design of power screws for machine tools, screw press and other applications.
- Belt and chain drives. Types of belt drives selection of belt drives type of belts, materials for belt and their properties velocity ratio, center distance and length of belt for various types of belt drives pullover transmitted by flat and V belt drives design of belt drivers selection of flat and V belts using manufacturers catalogues. Design flat and V belt pulleys. Types of chains used for power transmission selection of standard roller bush chains and sprockets for power transmission by chain drive using standard data Stresses in the elements of chain drive.
- design of clutches. Positive clutches, friction clutches, design of cone, single and multiple and centrifugal clutches, application of friction clutches in automotive and industrial machinery.
- design of brakes. Design of hand brake, external and internal shoe brakes internal expanding shoe brakes design of disc brakes, application in automotive and industrial machinery.

TERM WORK

- Term work shall be based on above and carries 25 marks Term work to be prepared by the candidate should be as under.
- Preparation of design report consisting of one major problem from the list given below :
 - Spring loaded safety valve
 - Brakes external shoe brake, internal expanding shoe brakes, band brake
 - Clutches cone, disc, single plate, Multiple and centrifugal clutches
 - Belt drive for industrial applications.
 - Hydraulic cylinders
 - Hydraulic press
 - Any other topic covered under above.
 - Power screw applications such as fly press, screw press etc.
 - Preparation of design report for atleast six minor problems out of which at least one problem be solved by computer programme
 - Preparation of A1 size working drawings for the assembly and details for the major problem as mentioned above.

PRACTICAL EXAMINATIONS

Students will be required to defend the work done which carries 25 marks. Students should be prepared to make the sketches of the machine elements studied above at the time of practical examination.

SESSIONAL EXAMINATION will be based on the topics covered above

REFERENCE BOOKS

- Elements of machine design by Pandya and Shah.
- Machine design vol. 1 & 2 by Patel, pandya, Sikh & Rajput
- Machine design by R S Khurmi and J K Gupta
- Machine design by Sharma & Agrawal
- Mechanical engineering design by Dr. Sadhusingh.
- Machine design by Abdulla Sharif
- Mechanical engineering design by Joseph Shigley
- Machine design by R K Jain
- P S G Data book
- Design data book by Mahadevan
- Design of Machine elements by V B Bhandari

M-703 HEAT AND MASS TRANSFER

(Effective from : 1999-2000)

- | Teaching scheme | | | | Examination scheme | | | |
|-----------------|-------------|-----------------|-------------|------------------------|-----------------------|----------------|--|
| Theory
Hr | Pract
Hr | Theory
Marks | Sess
Hrs | Pract
Oral
Marks | Term
Work
Marks | Total
Marks | |
| 4 | 2 | 100 | 3 | 50 | 25 | 200 | |
- Conduction : Derivation of generalized equation in the Cartesian, spherical and cylindrical co-ordinates, one dimensional steady state conduction Dependence of thermal conductivity of gases, liquids, metals, refractory material on temperature, pressure and humidity. Determination of thermal conductivity of metals, refractors and building materials. Temperature distribution and heat flow in steady state through plane, cylindrical and spherical walls with constant and variable thermal conductivity, composite walls, electrical analogy. Elementary one dimensional transient conduction in solids.
 - Radiation : Nature of radiation, its intensity, concept of black and gray surfaces. Laws of radiation. Kirchhoff's, Stephen, Boltzmann's, Planck's & Wien displacement law. Emissivity, Electrical analogy. Heat exchange between black and gray surfaces with and without irradiating surfaces. Heat exchange between the enclosed body and the enclosure. Effect of radiation shields by electrical analogy method. Application of shape factors for various geometries.
 - Convection : Dimensionless numbers and their interpretations, continuity equation, concept of hydrodynamic and thermal boundary layers, momentum equation and energy equation, use of approximate integral methods in their derivations. Derivation of generalized equation in approximate integral methods for free and forced convection by dimensional analysis and principle of similarity. Natural Convection : Eckert's equation, use of experimental co-relation to determine the heat transfer coefficient and the heat loss, in finite and infinite spaces. Forced Convection : Determination of the heat transfer coefficient from experimental co-relation for parallel, counter and cross flow arrangements. Empirical co-relations in natural and forced convection heat transfer.
 - Condensation and Boiling : Film and Droplet condensation : use of equations for determination of heat transfer coefficient for Laminar and turbulent film condensation on vertical surfaces and on single and banks of tubes. Nucleate and film boiling : use of equation for determination of boiling heat transfer coefficient.
 - Heat transfer through extended surface : Convection and conduction. Heat transfer from fins. Effectiveness of fins, efficiency of fins, effectiveness of heat transfer surfaces.
 - Combined modes of heat transfer : Convection, conduction and radiation, overall heat transfer coefficient, heat losses from pipe lines, furnaces, air spaces critical thickness of insulation.

Heat Exchangers Parallel, counter, cross flow and multi-pass, the logarithmic mean temperature difference, the overall heat transfer coefficient, Effect of fouling on the performance of heat exchangers. Determination of the numbers of passes. Number of tubes per pass and length of tubes for a heat exchangers for parallel, counter and cross flow heat exchanger Effectiveness NTU method.

- 7 Mass Transfer : Fick's law, equimolar diffusion, diffusion of vapors through a stagnant medium, similarity between heat and mass transfer, heat and mass transfer in humidification and dehumidification, convective mass transfer.

Sessional work. Practical work shall be based on above syllabus.

Term Work shall consists of a report of experiment based on the topics of the syllabus.

The practical examination shall be as under.

Oral or practical examination based on the Experimental work.

BOOKS

1. Engineering Heat Transfer by J P Holman
2. Heat & Mass Transfer by D S Kumar

M-704 THERMAL ENGINEERING - III

Effective from : 1999-2000.

Teaching scheme				Examination scheme					
Theory Hr.	Pract Hr.	Theory Marks		Hrs.	Sees. Marks	Pract. Oral Marks	Term Work Marks	Total	
4	2	100		3	50	25	25	200	

1. Steam Nozzles : Types of nozzles, velocity and heat drop, condition for maximum discharge, effect of friction and nozzle efficiency. Physical concept of critical pressure. General relationship between area, velocity and pressure, super saturated flow, effect of variation of back pressure.

2. Steam Turbine : Principle of operation types of steam turbines, velocity diagrams and compounding of turbines.

Impulse Turbine : Work done on the turbine blades, diagram efficiency, stage efficiency, axial thrust, multi staging, most economical ratio of blade angles, reheat factor, internal efficiency, effects of finite stages.

Reaction Turbine : Velocity diagram, degree of reaction, Impulse reaction turbine with similar blade section and half degree reaction, stage efficiency, work done, optimum blade speed ratio, axial thrust, height of reaction balancing, effects of varying heat drop, blade sections and losses in turbine.

Construction of Impulse and Reaction turbine : Types of blades, blade mounting, labyrinth packing, construction of salient parts such as starter, rotor, types of bearings.

3. Industrial steam turbines : Back pressure, pass out and mixed pressure turbine topping turbine, steam accumulator.

4. Method of improving performance of turbines : Regenerative feed heating, Re-heat cycle, Binary vapor cycle.

5. Steam Turbine control and performance : Governing of turbines, part load operation, pressure distribution at part load and mechanism of Governing, Integrated control of Thermal power plant.

6. Gas Turbines : Introduction, classification, simple open cycle gas turbine, closed cycle gas turbine, actual Brayton cycle, optimum pressure ratio for maximum thermal efficiency, work ratio, air rate, means of improving the efficiency and specific output of simple cycle, open cycle gas turbine with regeneration, reheating intercooling, effect of various modification, and regeneration. Effect of operating variables on air rate, actual cycle gas turbine with intercooling, reheat gas turbine, Combustion chambers, applications on work ratio, water injection, closed cycle materials, protective coating, performance of a turbines, turbine blade cooling, lubricating systems.

7. Co-generation Plant : Working on gas and steam turbine combined cycle, Arrangement combine cycle, advantages of combines cycle, parameters affecting the efficiency of combined cycle. Performance of combined cycle, numerical problems.

- 8 Jet Propulsions : Introduction, Turbo jet, Thrust power, propulsive efficiency, thermal efficiency, merits and demerits of jet propulsion, turboprop, Ram jet Rocket engines
- 9 Term work based on the above syllabus or suggested

TEXT BOOK

1. Steam & Gas Turbines by R Yadav.

REFERENCE BOOKS

1. Steam Turbine Design & Practice by Kearton.
2. Gas Turbine by Dr. Khajuria etc.
3. Applied Thermodynamics by Eastop & Mc Conkey.
4. A Course in Power Plant Engineering by Arora & Domkundwar, Ed-4th.

M-705 SEMINAR

Effective from : 1999-2000.

Teaching scheme			Examination scheme						
Theory Hr.	Pract Hr.	Theory Marks	Hrs.	Sees. Marks	Pract. Oral Marks	Term Work Marks	Total		
	2	100	3	50	25	25	200		

Seminar work will consist of study and presentation of topic related to Mechanical Engineering in general. Each student will be assigned a topic of his interest by the batch Engineering in general. He/She will do literature survey, study and practice the presentation of his/her work in batch / class during the semester. He will submit the report of the seminar and present the same at the final seminar talk in the batch/class.

The seminar will be evaluated internally with the progress of work by the concerned teacher

M-706 WORK STUDY E.P. - I

Effective from : 1999-2000.

Teaching scheme			Examination scheme						
Theory Hr.	Pract Hr.	Theory Marks	Hrs.	Sees. Marks	Pract. Oral Marks	Term Work Marks	Total		
4	2	100	3	50	25	25	200		

1. Productivity and its relation with work study.

2. Method study : Objective and procedure of method study. Recording techniques charts, diagrams and models.

3. Motion Study : Classification of movements, principle of motion economy, basic elements of motion. Timeing. Motion analysis: SIMO charts, low handed process charts, use of cine film motion. Timeing. Graph and chronology logograph

4. Work measurement : Objective and procedure of work measurement, work measurement techniques, stop watch time study, time study procedure, rating, qualified worker, from study to standard time, work sampling, standard data synthesis, PMTSM, analytical estimating.

5. Wage Administration : wage payment plans, types of wage incentives plans.

6. Organization of work study departments : Position of work study, personnel in organization structure, selection and training of work study personnel.

7. Ergonomics : Introduction, psychophysiological data, anthropometry, Normal and maximum work areas, location of control knobs, visual display, fatigue in industry, environmental requirements.

TERM WORK

1. Minimum four experiment / exercise based on topics of methods study & motion study

2. Four experiments / exercise based on topics of work measurement

3. Discussion of atleast one case study on above mentioned topics

4. Practical examination will be based on the topics covered in the syllabus.

REFERENCE BOOK

1. Introduction to work study I.L.O.
2. Work Study R C Patel & Gupta
3. Time & Motion Study
4. Work Study R M

M-707 REFRIGERATION ENGINEERING

Effective from 1999-2000.

Teaching scheme			Examination scheme			
Theory	Pract	Theory	Sess.	Pract.	Term	Total
Hr	Hr	Marks	Hrs.	Marks	Oral	Marks
4	2	100	3	50	25	200

- Refrigerants : Primary and secondary refrigerant, classifications, designation of refrigerant, need of new refrigerants, desirable properties of refrigerants Properties of alternatives, solubility of refrigerants in oils, purging.
- Non Conventional Refrigeration Systems :
 - Steam Jet Refrigeration : Basic concept, system components, and construction and working, application, advantages and disadvantages (Theoretical analysis only)
 - Thermo Electronic Refrigeration : Construction and working, comparison with VCRS, advantages and disadvantages.
 - Vortex Tube Refrigeration : Construction and working, application, advantages and disadvantages
- Low Temperature Refrigeration : Application areas, Joule Thomson expansion, Ideal system, simple Linde Hamon system, Claude system, analysis on P-h diagram, cascade system, analysis, COP, yield, concept of inversion temperature, use of Joule Thomson valve in gas refrigeration system, practical cycle of production of dry ice by snow chamber.
- Refrigeration Equipments & Components : Different components of reciprocating, scroll screw and vane compressor, condensers, their classification, condensers such as air cooled and water cooled condenser shell and coil condenser, evaporators, their classification, evaporators such as bare tube, plate type finned evaporator, liquid chillers shell and coil and shell and tube, type DX chiller, flooded evaporator and chiller, flow controls like externally an internally equalized TXV, AXV, capillary tube, high and low side float, their construction, working and application. Mention how compressor, condenser and evaporators are selected in practice.
- Application of Refrigeration : Application in industry and Domestic, purposes, such as domestic refrigerator, Ice plants, (Can ice only), water cooler, bottle cooler, walk in cooler, their construction and working, application of refrigeration in transport, principles of freeze drying.
- Defrosting : Purposes, natural defrosting, hot gas defrosting for cold storage
- Air Refrigeration : Need for air craft refrigeration, design conditions, air cycles for air craft and their analysis on T-S plane, cycle with ram compression, simple cycle, bootstrap cycle, mention other systems use for air craft cooling.
- Vapour Compression Refrigeration :
 - Vapour Compression System : Simple system on P-h diagram, analysis of the simple cycle, factors affecting the performance of the system, wet and dry compression, actual cycle considering different losses, volumetric efficiency of compressor, factors affecting volumetric efficiency, P-h diagram considering all losses calculation of principle dimensions of compressor.
 - Compound Compression System : Need, flash tank, Inter cooler and flash chamber, compound with flash chamber and water cooler and also with flash inter cooler, their analysis, power required and COP.
 - Multiple evaporator and condenser system : Application, all evaporators working at the same temperature, evaporators with back pressure valves and with multiple expansion valves without flash inter cooling, analysis of two evaporators with flash inter cooler and individual and multiple expansion valve, estimation of power requirement and COP.
- absorption system : Characteristics of refrigerant, selection of pair, practical water NH₃ cycle and its deviation form simple cycle and its working, introduction to h-x charts, representation of various process on h-x chart simple Li Br system and its working, compression with VCRS (Theoretical analysis only)
- Cooling Load Estimation : Cooling load estimation for cold storage using tables, mention various loads for Domestic refrigerators, water cooler, bottle cooler, deep freezer and ice plant, storage requirements for different foods.

- Controls : Various types of operating, cycling and protection controls used and their functions, function off drier, filter, sight glass, shut off valve, check valve, service valve, compound gauge manifold, oil separator, solenoid valve and accumulator. Simple layout or refrigerant piping.
- Insulation : Function, desirable properties of insulation used up to 400C, their selection, vapour barriers.

Students be given idea about relevant IS/ASHRAE/ARI standards in appropriate place and topics.

TEXT BOOKS

- Refrigeration & Air Conditioning by Domkundwar
- Refrigeration & Air Conditioning by Khurmi & Gupta.
- Refrigeration & Air Conditioning Ballay
- Principles of Refrigeration by Dossat.

REFERENCE BOOK

- Refrigeration and Air Conditioning by Stoecker and Jones

TERM WORK

Term work will consist of record of practical work based on the above syllabus

PRACTICAL ORAL

Practical / Oral Examination will be based on the term work presented and based on the syllabus above.

M-708 COMPUTER AIDED DESIGN (C A D)

Effective from 1999-2000

Teaching scheme			Examination scheme			
Theory	Pract	Theory	Sess.	Pract	Term	Total
Hr	Hr	Marks	Hrs	Oral	Work	Marks
4	2	100	3	50	25	200

- Introduction : Introduction to CAD conventional design Vs CAD, applications & advantages of CAD to Mechanical Engineering Field, etc., selection of programming language and salient features of CAD software.
- Computer Graphics : Graphic input/output devices, concept of windows & viewport. 2d Transformation, scan conversion, BDDA method for generation of vector, Bresenham's algorithm for generation of line, Graphics standard functions in C graphics, introduction to various graphics driver in 'C', Boolean operations etc. 2D & 3D modeling, wireframe, solid modeling, advanced features of CAD software.
- Introduction to Optimization techniques in CAD, role of computer in optimum design, terminology of optimization, classification of optimization problems, general procedure for terminology of optimization, classification of optimization problems and examples with graphical optimization 2D optimum design problem formulation and examples with graphical solutions.
- Introduction to Finite Element Method : Introduction to design and analysis, generalized procedures for FEM types of elements, simple design problem.
- CAD to CAM : CAD as a pre requisite to CAM : Interfacing, conversion of graphics and information to part program, simple geometrical shape : typical examples of surfaces and other specifications, interactive tape preparation system and manual data input systems.
- Computer Aided Analysis of Mechanism & Machines : Motion analysis, Static & Dynamic force analysis, Vibration Analysis.
- Computer Aided Design of Machine elements such as spring, shaft, connecting rod, push rod, etc.

The term work and practical will be based on above syllabus

Suggested List of Experiments

- Introduction to graphics hardware, revision of Auto CAD
- Generation of script & DXF files
- Design of machine elements
- Exercise on surface, solid and wire frame modeling
- Programme for generation of lines and circles
- Exercise on FEM

- #### REFERENCE

- ## M-709 INTERNAL COMBUSTION ENGINE

Effective from : 1999-2000

10) Rating, Testing and Performance Measurements of speed, air flow, fuel consumption, indicated power brake power, frictional horse power, and smoke, testing of engines as per

B.E. (Mechanical) Semester VIII

M-801 Alternative Energy Sources (AES)

Term work shall consist of Laboratory. Practical work to be written
of a Journal conducted by the University there will be practical oral exam

Solar Energy Utilisation by G.D. Rai.
 Non-conventional Energy Sources by G.D. Rai.
 Bio gas plants by M.P. Khandelwal.
 Solar Energy by S.P. Sukhatme.
 Solar Energy Thermal Processes by Beckman and Duffie.
 Renewable Energy Sources by Twidell.
 Energy from Waves by Rose.
 The Generation of Electricity by Wind by E.W. Golding.
 Solar Power Engineering by B.S. Mangal.
 Bio gas Energy in India by T.K. Mastik.
 Renewable Energy Sources and Conversion Technology by Bansal.
 Introduction to Solar Energy by Warden.
 UNESCO Energy Series, published by John Wiley.
 Solar Energy by M.P. Agrawal.
 Energy Sources for Electric supply by United Nations, New York 1986.

(M-802) MACHINE DESIGN II

Effective from : 1999-2000.

Teaching scheme				Examination scheme				Total Marks
Theory Hr.	Pract Hr.	Theory Marks	Hrs	Sess. Marks	Pract. Oral Marks	Term Work Marks		
4	4	100	4	50	50	50	50	250

- (A)
- Introduction to statistical considerations in design process capabilities, Natural tolerances, reliability, Hazard rate mean time before failure (MTBF).
 - Aesthetics and Ergonomics in design.
 - Design of spur, helical, bevel and worm gears Lewis equation form factor, velocity factor, service factor, stress concentration factor for gear tooth profile, reliability factor. Gear tooth profile surface finish (accuracy) and surface hardness. Selection of materials, checking the gear tooth for dynamic load, wear load endurance strength, calculation of bearing reactions machine cut types of gear drives, gear lubricants and gear lubrication. Load rating of multi speed gear box. Selection of spur, helical and worm gear speed reducers with reference to manufacturers' catalogues.
 - Design of sliding contact bearings, hydrodynamic, hydrostatic and boundary lubrication, Petroff's equation for lightly loaded bearings, Mckers' equation, determination of coefficient of friction and power loss in bearings, Sommerfeld number, checking performance of sliding contact bearing by use of Ramondi and Boyd's charts.
 - Selection of rolling contact bearing : Advantages and disadvantages of rolling contact bearing vs sliding contact bearing, basic dynamic and static capacity of bearings, L₁₀ life, average life of bearings, selection procedure for given loading and life of bearings. Installation of rolling contact bearings, preloading of rolling contact bearings, lubrication of bearings.
 - Introduction to design of I.C. Engine components like pistons, valves gears, flywheel, crank shafts, and connecting rod.
 - Design of Hoisting elements selection of wire ropes, hoisting chains, sheaves, hooks and related components.
 - Introduction to optimum design of machine elements, Johnson's method of optimum design and its application to machine elements like rods, shafts, springs etc.

(B) Practical and term work will be based on above syllabus shown in (A).

(C) Term work to be prepared by the candidates shall be as under.

- Students will be required to prepare a report of one major problem [from the list given at (c) below] and five minor problems from the topics covered in (A).
- Students will be required to prepare an assembly drawing on A1 size sheet of major problem done in (a) above and detail working drawing of the same on A1 size sheet.

3. Topics of major problems :

- Speed reducer.
- Material handling equipment hoists, cranes etc.
- Design of simple system involving the design of elements covered in (A) above.

(D) Sessional examination will be based on (A) above, in practical examination, students will be required to defend the work done in (B) above.

TEXT BOOKS

- Machine Design by Dr. S. Singh.
- Machine Design by Sharma & Agrawal.
- Machine Design by Bhandari.
- Machine Design by Pandya & Shah.
- Machine Design by R.C. Patel. Vol. II.

REFERENCE BOOK

- Optimum Design on M/C Elements by Johnson.

(M-803) CONTROL SYSTEM ENGINEERING

Effective from : 1999-2000.

Teaching scheme			Examination scheme			Term Marks	Total Marks
Theory Hr.	Pract Hr.	Theory Marks	Hrs.	Sess. Marks	Pract. Oral Marks		
4	-	100	3	50	-	-	200

- Basic control system : System differential equation of electrical, Mechanical, Thermal Hydraulic and electromechanical network, analogy.
- Theory of Automatic Control : Concept of feed back referred to linear control systems in general, e.g. displacement and speed control, process control, definition and terminology. Open loop and closed loop systems and advantage.
 Block diagrams and signal flow graph representation of physical systems. Block diagram algebra, transfer function from block diagram.
 Basic control actions and controllers on off, proportional, derivative and integral controllers, steady state analysis. Transient response of first order and second order systems to step, ramp and sinusoidal input, steady state errors. Applications of Laplace transform methods, Routh's stability criteria and root locus methods, improving system performance.
- hydraulic system : Characteristic of hydraulic components control valves, source of hydraulic power, hydraulic motors, Pumps and transmission. Elements of circuit design. Accumulation control circuits such as position control and speed control circuit. Hydraulic control machine tools.
- Pneumatic systems : Pneumatic power supply, amplifiers with different controlling actions.
- Pneumatic valves and cylinders. Three, four way pilot valves, Pneumatic control of machine tools.
- Electrical systems : speed control of D.C. motors, Remote control positional servo mechanism (including effect of gearing between motor and load).
- Control components : Pneumatic relays, control mechanisms for liquid level, boiler feed control, pressure regulation, throttle valve, temperature regulations and industrial process regulation.
- Micro processor based digital control : State space analysis optional and adoptive control systems. Industrial logic control system : programmable logic controller and its applications.

Sessional work shall be based on the course of study under control engineering.

TEXT BOOKS

- Modern Control Engineering by OGATA.
- Control Systems Engineering by Nagrath & Gopal.
- Automatic Control Engineering by Reva 2nd edition.

REFERENCE BOOKS

- A course in Control Engineering by Tandon Rao etc.
- Automatic Control System by Kuo.
- Automatic Control Systems by Verma.

M-804 PRODUCTION AND OPERATION MANAGEMENT

Effective from : 1999-2000.

Teaching scheme			Examination scheme				
Theory Hr.	Pract Hr.	Theory Marks	Hrs.	Sess. Marks	Pract Oral Marks	Term Work Marks	Total Marks
4	2	100	3	50	25	25	200

1. **Production Planning and Control** : Introduction, types of production systems and their characteristics, functions and objectives of PPC.
2. **Product design and development**, factors affecting product design, elements of product development, standardization and simplification and specialization.
3. **Break Even Analysis** : Break even alternatives, utilization of plant capacity, economics of product design Profit volume chart make or buy decision.
4. **Sales Forecasting** : Definition & concepts, Importance of consumer opinions, customer opinions, distribution surveys, executive opinions marketing trends Time series analysis trend cycles seasonal errors Time series calculations least square exponential simple average, moving averages, comparison and control of time series forecasts, co-ordination selection of forecasting methods. Close ups and updates
5. **Process Planning** : Production planning, process planning, aggregate planning, economic batch quantity, economics of machine tool selections
6. **Loading and Scheduling** : Factors affecting scheduling procedure and techniques, use of gantt chart, network in scheduling elements of CPM-PERT, crashing of network line of balancing and assembly line balance sequencing, graphical solution of sequencing problems.
7. **Inspection, and Quality Control** : Inspection, Function, types, objective and benefits, quality control, principle, introduction to concepts of quality circles, total quality management statistical quality control concepts, variables and attribute Normal distribution curves and its property. Charts for variable and attribute and their application and interpretation (analysis) process capability, acceptance sampling, sampling plans OC curves and AOQ curves.
8. **Value Engineering and Value Analysis** : Value analysis value, its types, approach and analysis, including techniques, procedures, advantages and application of value engineering and value control.
9. **Sales and Marketing** : Functions and organization, marketing concepts vs selling concepts, market research, advertising, sales promotion distribution channels.
10. **Entrepreneurship** : Concept, product identification, infrastructure facilities, preparation of project report, sources of industrial finance, resources allocation, government incentives to entrepreneurs.
11. **Management Information Systems (MIS)** : Introduction, concept, elements, use of computers in industrial engineering, benefits and application.
12. **Basic concepts of TQM JIT etc.**, Introduction to ISO 9000 and ISO 14000

REFERENCE BOOKS

- 1 PPC and Industrial management by K C Jain & L N Agrawal.
- 2 Industrial Engineering and management by O P Khanna.
- 3 Statistical quality control by Mahajan.
- 4 PERT & CPM by R C Gupta.
- 5 Modern Production Management by Buffa.
- 6 Production system, planning, analysis and control by J L Riggs.
- 7 Basic marketing by Philip. Kotler and Hise.
- 8 Elements of PPC by Samuel Eilon

TERM WORK & PRACTICALS

1. Exercise/experiments on sales forecasting (covering all the questions of forecasting i.e. code)
2. Exercise on process planning.
3. Experimental frequency distribution and construction of X-R and charts and analysis.
4. Proof of sampling and construction of O.C. curve
5. Exercise on CPM & PERT including crashing.
6. Exercise on Break even analysis.

7. Study and concept of value engineering and value analysis and case study
8. Introduction to market research and sales promotion techniques.
9. Preparation of a project report
10. Exercise line of balance and assembly line balancing.
11. Exercise on MIS.

Practical examination based on term work and topic in the syllabus be carried out

M-805 PROJECT

Effective from : 1999-2000.

Teaching scheme			Examination scheme			Total Marks
Theory Hr.	Pract Hr.	Theory Marks	Hrs.	Sess. Marks	Pract. Oral Marks	
					50	100

The objective of the course is to give an experimental and project work through problems of relevance. Students will design, experimental work, industrial Problems, manufacture and like.

M-806 OPERATION RESEARCH

Effective from : 1999-2000

Teaching scheme			Examination scheme			Term Work Marks	Total Marks
Theory Hr.	Pract Hr.	Theory Marks	Hrs	Sess Marks	Pract (Oral) Marks		
4	2	100	3	50	25	175	

1. Introduction to Operation Research : Introduction and History of O.R., Definition and Characteristics of O.R., Scope and areas of application of O.R., Phases of O.R.
- (A) Linear programming I : Introduction of linear programming and reformulation as L.P.P., formulation of the problem, graphical solution, Simplex method, procedure to simultaneous linear equations, slack and surplus variable, simplex method, procedure to obtain optimal solution by simplex method, approximation and equality, variable unrestricted design, alternative optimal solution minimization and maximization problem BIG M and TWO PHASE methods; degeneracy
- (B) Linear Programming II : Duality in L.P.P. Dual problem and its construction, interpretation and properties, sensitivity analysis, change in objective coefficient and right hand side constants, Dual simplex algorithm, adding of new constraint. Bounded variables
- (C) Transportation Techniques : Mathematical statement of T.P. Methods to obtaining the initial basic feasible solution (viz. NWCR VAM, LCM) optimal solution by stepping stone basis and MODI methods, Minimization and maximization problems; conditional allocations over time problems, Transshipment problem
- (D) Assignment Techniques : Mathematical statement of problem ; Technique for solution Hungarian method, modified matrix, maximization and problem, routing problems traversing salesman problem
3. Replacement Theory : Introduction, replacement of equipment that deteriorate on become obsolete, replacement of that do not deteriorate, but fail. Replacement by alternative equipment, capacity correction in alternative equipment, Group replacement policy
4. Inventory Models : Introduction, cost elements, inventory carrying cost, ordering cost, shortage cost, inventory models, model I (DU) , Models with (1) finite rate of arrival , instantaneous replenishment, and shortage cost, (3) Production inventory model with finite shortage cost, (4) model with discount (5) probabilistic demand ABC analysis
5. Queuing Theory : Introduction, input process, queue discipline, service mechanism, inter arrival times, service time, Kechals notation queuing models, M/M/1 and with finite queue, arrival times, service time, exponential service, multi-channel queuing model The [model with poisson arrival with non exponential service, multi-channel queuing model The [M/M/1 / SRO] model III [M/M/1 / (N/FIFO)] model IV (Birth death process) Queue M/C Queuing systems with M/M/C, (FIF0) M/M/C (N/FIFO) M/M/C (C/FIFO) Queues in series

- 1. INTRODUCTION TO MECHATRONICS :** Introduction, Scope of Mechatronics, Electronics for Mechanical Engineers, Mechanical system for Electronics engineers, Mechatronics in manufacturing, mechatronics in product, the engineer and mechatronics.
- 2. NUMERICAL CONTROL :** Definition, merits and demerits, NC, CNC, DNC, NC machine tools, classification, axes, types of controls, components, their functions and features, tooling for NC machines NC part programming, ISO code, formats, manual and computer assisted programming, part programs for lathe, milling machine etc.
- 3. COMPUTER AIDED PRODUCTION MANAGEMENT :** Introduction PPC fundamentals, problems with traditional PPC, use of computer in PPC, such as CAPP, MRPI, MRP II, CAQC.
- 4. GROUP TECHNOLOGY :** Introduction, part families, part classification and coding, machining cells, benefits of group technology
- 5. FLEXIBLE MANUFACTURING SYSTEM AND COMPUTER INTEGRATED MANUFACTURING :** Introduction, types of CIM, manufacturing cells, CIM benefits, FMS material handling equipment, pallets and automatic guided vehicles, CIM machine tools and related equipment.
- 6. INTRODUCTION TO ROBOTICS :** Definition, terminology, robot elements and controls, programming and teaching robots, specification, application and safety aspects.
- 7. CAD/CAM INTEGRATION :** Introduction, activities involved in CAD/CAM integration process such as 3-D modeling, analysis and optimization, 2-D drafting and drawing preparation, Data base management, Process planning, Tool design, NC programming, Inspection, Case study, Brief description of commonly used ready made software packages and their use in area of CAD/CAM/CAE.

TERM WORK

The term work and practical will be based on above syllabus.

REFERENCES

1. CAD/CAM, Computer aided design and Manufacturing- Mikell P. Grover & E.N. Zimmers, Prentice Hall.
2. Numerical control and Computer aided manufacturing T.K. Kundra & P.A. Rao. TMH Publication.
3. Numerical control & Machine Tools Martin S.J. ELBS London
4. Computer integrated Manufacturing- S.K. Vajpayee. PHI Publication.
5. CAD/CAM/CIM - P. Radhakrishnan & S. Subramanyam. New Age International.
6. Mechatronics by HMT.
7. Technology of computer Aided Design and Manufacturing by S.Kumar & Dr. A.K. Jha. Dhanpat Rai & Sons.
8. Mechatronics by Bradley and offers - Chapman and Hall Publication.

M-809 AUTOMOBILE ENGINEERING

Effective from : 1999-2000

Teaching scheme			Examination scheme					Term Work Marks	Total Marks
Theory Hr.	Pract Hr.	Theory Marks	Hrs.	Sexs Marks	Pract. Oral Marks	Term Work Marks	Total Marks		
4	3	100	3	50	50	25	200		

- 1. Vehicle Performance :** Forces acting on vehicle in motion, Transmission efficiency, Factors affecting it. Rolling resistance, Grade resistance, tractive force with uniform speed and with various resistance acting on a vehicle in motion. Dynamic factor, weight transfer due to curve.
- 2. Chassis Frame & Body :** Types of frames engine location. Caparison of front and rear joints. Front and rear differentials, rear, front and four wheel drives, their relative merits, types of chassis pre requirements of body, types of bodies & their construction.

3. Transmission System :

- (a) Clutch :** Constructional features of clutches used in two wheelers, three wheelers, components of each type, their functions, force acting on them. Calculation of surface area and number of driving and driven plates. Nature of wear and tear each components, effect of misalignment and misadjustment of components. Trouble shooting charts.
 - (b) Gear Box :** Sliding, constant mesh and synchro mesh, type gear box transfer case of four wheel drive vehicle. Automatic gear transmission fluid coupling torque converter, over speed drive and its working.
 - (c) Propeller Shaft :** Universal joints, slip joint, constant velocity joint, whirling of propeller shaft, Hotchkiss & Torque tube Drives.
 - (d) Final Drive and Rear Axle :** Types of front drive, differential conventional and non-slip type, pinion adjustment. Diagnosis of faults, types of rear axle.
- #### 4. Axle, Suspension and Steering System :
- (a) Front Axle :** Types, Construction, Components and their functions.
 - (b) Suspension System :** Principle, type of suspension system, conventional and independent front and rear axle. Spring, rubber and air suspensions, automatic/hydro suspension system.
 - (c) Steering System :** Steering Layout, types of steering gears, steering linkages, steering mechanism, definitions, and significance of camber, caster king, pin inclination, toe in, toe out on turn. Measurement and adjustment of various steering system layouts, steering ratio, under steering and over steering, power assisted steering, steering geometry, wheel alignment, diagnosis of fault.
 - 5. Brakes :** Principles and types of various brakes, power assisted brakes, braking distance, braking efficiency weight transfer, self engineering effect and braking torque capacity. Faults, their diagnosis, adjustment and maintenance.
 - 6. Wheels & Tyres :** Types of wheels, types of tyres, tyre construction, constituents of tyre, tyre tread pattern, tyre pressure and wear, tyre properties tyre size, tyre maintenance.
 - 7. Electrical Systems :**
 - (a) Battery :** Construction, working, methods of rating, faults, charging methods, test, generator and cranking motor with drive purpose, construction, faults and diagnosis, voltage and current regulator, purpose, typical circuit, layout, working principle, voltage setting.
 - (b) Lamps, Lighting and other circuits :** Electrical necessities such as fuel gauge, temperature gauge, wiper, speedometer.
 - 8. Study of Modern Vehicle :** Construction and operational features of four wheelers available in Indian market.
 - 9. Garages & Servicing and Trouble Shooting :** Garaging & its types, equipments for garages, tools in a service station, services carried out in garages and service station. Necessity and types of servicing, cleaning. Engine docking automobile overhauling, car battery services, trouble shooting and remedy.
 - 10. Air Pollution and Control :** Pollutants from gasoline engines, evaporation losses, crank case blow by, exhaust emission and effect of operating variables and electronic fuel injection, gasoline engine emission control methods such as engine design modification, treatment of exhaust gas and fuel modification, blow by and total emission control package, diesel engine emission catalytic converter, control of nox and total emission control package, diesel engine emission and control. Standards for emission of pollutants from motor vehicles, National ambient air quality standards, Euro norms, Methods of issuing PUC certificate.
 - 11. Automobile Law :** Motor vehicle act, Registration of motor vehicles, driving license, control of traffic, Insurance against third party, claims for compensation.
 - 12. Silence :** Mufflers types. Baffle type, wave cancellation type, resonance type, absorber type, combined resonance and absorber type. Their construction and capacity to damp high and low frequency waves.

TEXT BOOKS

1. Automobile Engineering by K. Singh.
2. Automobile Engineering by Banga & Singh.
3. Automobile Engineering by Crouse.
4. Automobile Engineering by Narang.

परिशिष्ट "अ/१९"

संलग्नक ४१६९ (१९९८)

**Revised syllabus for First and Second Year B.Com. for Computer Science
Computers in Business Operation Paper I and II (New Syllabus)**

(In force from June, 1999)

Objective

1. To develop awareness of potentiality of Computer and familiarity with current trend in hardware and software on a personal computer
2. To develop skill of computer operations and application packages
3. To obtain working knowledge of Graphical user interface, Local Area Networks and Internet
4. To obtain familiarity with Database Management System
5. To acquire skills in writing simple programming with DBMS.

Practicals

Students are required to complete minimum 20 practicals in each year as per the list of practicals prescribed by the University. Students are required to write the practicals in the journals and produced the same at the time of practical examination duly signed by the concerned teacher and the principal of the college.

Hardware and Software Requirement: Hardware - Minimum PC-80486 or Pentium with 32 MB RAM, 24 GB Harddisk, Floppy Drive 1.2/1.44 MB, Mouse, Keyboard, VGA MONO/ COLOUR Monitor, CD-ROM drive.

Operating System: DOS 5.0 and above, Windows 3.11, Novell Netware/Windows-95/98.

Packages: MS-Office 4.2/97, FoxPro-2.6, Norton Utility, Anti virus software etc.

1. Computers: An introduction 20%
 - (a) Computer Hardware and I/O Devices: What is computer? - Basic structure of computer-Different types of personal computer, Micro Computers, Mini Computers, Mainframes (Computers, Super computer etc. CPU, VDU, keyboard, Mouse, Scanners, MICR, OMR, OCR, Dot Matrix Printers, Inkjet printers, Laser printers, Line printers etc. Memory Organisation: Memory system - Internal Processor Memory, Primary or Main memory, RAM, ROM, PROM, EPROM, EEPROM External or Auxiliary Memory - storage capacity, access modes. Sequential access and direct access. Access and seek time. Storage devices and media: Floppy disk, Floppy disk drive, Winchester disk drive, Cartridge tape, CD-ROM drive, Compact Disk, Erasable optical disk.
 - (b) Software: Introduction of system software, application software and its use in information technology.
2. Graphical User Interface 10%
 - (a) Graphical User Interface (GUI): Introduction, Common Graphical User Interface Terms: Pointing devices, Bit-mapped displays, Windows, Menus, Dialog Boxes, Icons, Desktops, Metaphors.
 - (b) Operating system concepts: Introduction, types of operating system: Multitasking operating system, multiuser operating system, GUI based operating system. Advantages over other system: Starting with shortcuts, keyboards, Desktop Work with Files and Folders-To Create, move, Delete, Cut & Copy, Rename, Printing, etc. Use of recycle Bin.
3. Office Automation and Tools 10%
 - (a) Today's office: need for office automation, office automation, advantage of office automation, office automation functions.
 - (b) Tools of office automation 20%
 - (i) Work on documents by using GUI tools
How to start WORD, Screen of word.
Additional Features: Using the SHOW command, Changing the case of text, Moving & copying text with drag & drop, Justifying text.

Creating bulleted & numbered lists, Arranging & moving between documents.

Typing and editing : Typing and revising text, Typing text, text editing, copying and moving, typing special characters (Symbols). Finding and replacing, Finding and replacing text and formatting.

Using the Go To Command.

Editing and Proofing Tools : Using the spelling checker, Checking grammar, Looking up words in the thesaurus, using hyphenation.

Formatting text characters.

Formatting Paragraph : Centering, Right alignment and left alignment, Indenting text, Tab stops, Line spacing, Paragraph spacing, Borders and shading.

Document Templates : Template wizards, Starting a new document from a template.

Page design and layout.

Page Setup : Paper size and page orientation, Page margins, Headers and footers, Page numbering.

Tables : Table creation, Table modification, Table Formatting, Sorting & numbering cells, Special tasks with tables.

Mail Merge : Data sources & Main document, Starting & editing the main document, Merge printing envelopes & labels.

Macro : Need of MACRO, Creation of MACRO, Uses of MACRO.

(ii) Worksheet using GUI tools

Introduction about work sheet and worksheets in business, How to create new work sheet Find a worksheet, Insert a worksheet, Delete a worksheet, Move the worksheet, Selecting cells.

Enter and edit data, To create a custom list, Cell references, Range names, Navigate worksheet, Search and replace data.

Rearrange Cell Contents : Move or copy cell contents, Inserting or deleting rows & columns, Save and protect workbook.

Calculations in worksheet

Formula Basics: Basic properties of formula, Order of precedence of operators, How to enter a formula - Editing formula.

DATE, TIME, TODAY, NOW, SEQUENCE, AND, OR, NOT, IF, IFS, COUNT, COUNTA, COUNTBLANK, SUM, AVERAGE, MAX, MIN, STDEV, STDEVP, VAR, VARP, TEXT, LEFT, RIGHT, MID, LEN, LOWER, UPPER, CONCATENATE, TRIM, CLEAN, SUBSTITUTE, REPLACE, ISNUMBER, ISERR, ISERROR, ISBLANK, ISLOGICAL, ISREF, ISTEXT, ISERR, ISNA, ISNONTEXT, ISFORMULA, ISARRAY, ISERR, ISNA, ISNONTEXT, ISFORMULA, ISARRAY, ISERR, ISNA, ISNONTEXT, ISFORMULA, ISARRAY.

Logical Functions: AND, OR, NOT, IF, IFS, COUNT, COUNTA, COUNTBLANK, SUM, AVERAGE, MAX, MIN, STDEV, STDEVP, VAR, VARP, TEXT, LEFT, RIGHT, MID, LEN, LOWER, UPPER, CONCATENATE, TRIM, CLEAN, SUBSTITUTE, REPLACE, ISNUMBER, ISERR, ISERROR, ISBLANK, ISLOGICAL, ISREF, ISTEXT, ISERR, ISNA, ISNONTEXT, ISFORMULA, ISARRAY.

Financial Functions: Different types of financial functions: PV, FV, DDB, SLN, SYD, DB, TVM, NPV, PMT, RATE etc.

Formatting and print worksheet: Page set-up, column width and row height, Using menu commands, Using mouse: Fonts, numbers, Alignments, Getting worksheet printed.

Using custom controls: Forms toolbar, Create controls on the worksheet, Format controls, Worksheet controls.

Charts: Chart Types, Editing Charts: Adding or deleting data, Change the chart type, Format a chart, Drawing in the chart, Pie chart, Series Chart Line and Area Chart, Column and Bar Chart, Stacked 3-D Column Chart, XY Chart, Stock Chart.

List of reference books for First Year B.Com.

No.	Name of the books	Author	Publication
1.	Window-95 No experience required	Crawford	BPB
2.	Window-98 No experience required	Crawford	BPB
3.	Learn Window in a day	Dooleen	BPB
4.	Teach yourself Window 95 in 24 hours	Perry	Technimedia
5.	ABC of Window 3.1	Neibauer	BPB
6.	Mastering EXCEL - 5 for window	Chester	BPB
7.	Learn EXCEL 7.0 for Window in a day	Stultz	BPB
8.	Teach Yourself EXCEL 7.0 for Window 95	Weingarten	BPB
9.	ABCs of Excel 97	Weisskopf	BPB
10.	Mastering EXCEL 97	Chester	BPB
11.	EXCEL 97 Training Guide	Schwartz	BPB
12.	Teach yourself MS EXCEL in 24 hours	Peterson	Technimedia
13.	The complete Idiot's guide to MS EXCEL 97	Post & Gold	Que
14.	ABC of Local Area Network	Dortch	BPB
15.	Learning Guide to MS-OFFICE professional for WIN 95	Marquis	BPB
16.	Mastering MS-OFFICE Professional 7.0 WIN 95	Mosley	BPB
17.	ABCs of MS-OFFICE 97 professional	Hart	BPB
18.	Learn MS-OFFICE 97	Stultz	BPB
19.	MS-OFFICE 97 No experience required	Courter	BPB
20.	Complete Guide to Window Word & Excel	Mansfield	BPB
21.	MS-OFFICE 97 Interactive course	Perry	Technimedia
22.	Teach Yourself MS-OFFICE 97 in 24 hours	PERRY	Technimedia
23.	MS-OFFICE 97 User certification study Guide	Annette Marquis & Gini Courter	BPB
24.	Learn MS WORD 7.0 for WINDOWS 95 in a day	Stultz	BPB
25.	The ABCs of Word 97	Hart	BPB
26.	WORD 97 Training Guide	Reidelbach	BPB
27.	Office 97 Small Business Solution	Comodex	
28.	The complete Idiot's guide to MS WORD	Babola	Que
29.	Angat Computer and DOS Packages	R. P. Soni & Other	Tata Mac.

Paper II—Computer in Business Operation (New Course)
(In force from June, 1999)

1. Data Base Management System (Any QUI base package like FoxPro 2.6, MS Access) 40%
Introduction : DBMS as Programming Language, Utilities and tools.
Defining database and Indexes : Defining a databases, Normalizing databases, Data integrity, Data consistency, Defining indexes.
Data Entry : Providing data defaults, Input validation, Calculated fields, Control object, Read options.
Procedure and User defined functions : Procedure, Functions, Choosing between procedure and functions, Creating procedure and functions library.
DBMS and Windows : Windows Defining - Activating - Removing - Modifying - Saving and restoring Window.
Use of Macro with GUI package for DBMS : Macro : Keyboard macro, Keyboard command, Text merge.
Arrays : Arrays : Creating and naming array, Redimensioning arrays, Redefining arrays, Copying arrays, Determining array length, Sorting array, Searching an array for an expression.
Using Memo Fields : Memo fields : Adding a Memo to a databases, Using Memo, Locating text in a Memo.

Menus : Menu terminology, Pop-up menus, Horizontal bar menu, Component menus, Menu functions, HIDE/SHOW/RELEASE/DEACTIVATE Menu and Pop-up.

The Report Generator : Starting report, Creating a report form, Defining group, Creating a Quick report, Enhancing report, Adding and deleting fields.

The Screen generator : Generating information screens, Creating edit screen.

The Menu Generator : Quick Menu, Creating a sample application menu.

2. Networking and Internet : 20%
(a) Networking : Network concept and classification : Local Area Network : Need of Networking, Characteristics of LAN - LAN topology - Ring, Star, Bus - LAN access methods : CSMA/CD, token passing - Communication architecture : Application layer, Presentation layer, Session layer, Transport layer, Network layer, Datalink layer, Physical layer. - LAN hardware and software - Transmission channel, Network Interface Unit, Servers, Workstation. Facilities available under Novel Network Operating System.
(b) Networking : Introduction to Internet, Use of Internet, Working of Internet - Tools and Services on Internet : Electronic Mail on Internet, Usenet and Newsgroup, Transferring files with FTP - Browsing the Internet - Gopher and WWW Searching. 20%
HTML - Creating and editing Web page.
3. Installation Management : Introduction : Backup, importance, Backup procedure, Diagnostics for IBM PC. Use of Norton Utilities for system maintenance jobs. Virus : Introduction, the process of infection, Classification of virus, viruses prevention cure from viruses.

List of reference books for Second Year B.Com.

No.	Name of the books	Author	Publication
1.	Developing & distributing FOXPRO 2.5/2.6	Havevala	BPB
2.	Mastering FOXPRO 2.5 and 2.6	Seigel	BPB
3.	Programming FOXPRO 2.5 and 2.6	Liskin	BPB
4.	Programmers Guide to FOXPRO 2.5/2.6	Dekker	BPB
5.	FoxPro 2.5/2.6	R. K. Tavalh	
6.	Data Base Management System	C. J. Date	BPB
7.	ABC of MS Access	Cowart	BPB
8.	Learn MS Access for Windows in a day	Stultz	BPB
9.	Teach Yourself ACCESS for WINDOWS 95	Siegel	BPB
10.	ACCESS 97 Developers Handbook	Latwin	BPB
11.	ABCs of Internet (2nd Rev. Ed.)	Cramlish	BPB
12.	INTERNET Basic reference from A to Z	Falk	BPB
13.	Internet Toolkit	Falk	BPB
14.	Learn Internet Relay Chat	Tavel	BPB
15.	Learning to use INTERNET	Ackermann	BPB
16.	Mastering WEB DESIGN	Mcors	BPB
17.	Mastering the Internet	Mcgregat	Comodex
18.	Web page design in easy step	Oliver	Technimedia
19.	Teach yourself HTML 4 in 24 hours	Sams	Technimedia
20.	Teach yourself to create Homepage in 24 hours	Dyson	BPB
21.	Dictionary of NETWORKING	Deyson	BPB
22.	Learn Norton Utility in a day	Crawford	BPB
23.	NORTON Desktop for Window instant reference	Haynes	BPB
24.	Computer Virus Protection handbook	Thomas	BPB
25.	Introduction of LAN (Revised Edition)	Mina	BPB
26.	Mastering Local Area Networks	Millet	PHI
27.	LAN Troubleshooting Handbook	Tangney	Tata Mac
28.	Local Area Network and their application	R. P. Soni & Other	
29.	Angat Computer and DOS Packages		

FIRST YEAR B.Com.

Computer in Business Operation — Paper 1 (New Course)

(Inforce for the year 1999-2000)

List of Practicals

It is recommended that —

1. All the prescribed practicals should be written in neat journal.
2. The index and the certificate in the journal should be certified by the concerned faculty and the Principal of the college.
3. The certified journal should be produced at the time of University practical examination.

Practicals :

1. Introduction to CPU, VDU, Printer, Keyboard, Mouse, Various types of Processors.
2. Introduction to various types of operating system like Dos & Windows and their differences.
3. Introduction to Windows. How to start Windows. Use of Mouse. Introduction to Icons, Group Items, Programme Items, Desktop, Arranging Icon, use of Maximise Minimise and Restore.

OR

Introduction to Window 95 as an operating system. How to start Window 95. Use of mouse. Introduction to Icons, Desktop, Arranging Icon, Use of Maximise Minimise and Restore, start menu.

4. Use of Programme manager (group of different group/program items in Windows 3x).

OR

Use of Start menu. Programmes, My computer and other icons.

5. Use of paintbrush - in Windows 3x. Use of tools and menus to draw different figures. Also design a Logo of your college or Company using Paintbrush.

OR

Use of Paint in Windows 95. Use of tools and menus to draw different figures. Also design a Logo of your college or company using Paint.

6. Design an advertisement of a company product using paint/paintbrush.
7. Creating a document using WRITE (Windows 3x)/WORDPAD (Window 95) in accessories :
 - Moving through document
 - Selecting and editing the text.
 - Saving and naming the document.
8. In WRITE (Windows 3x)/WORDPAD (Windows 95) :
 - Finding and replacing the text
 - Formatting the text.
9. Use of Notepad in (Windows/Windows 95)
10. Use of other accessories like calculator, clock, character map etc.
11. Using Control Panel :
 - Customizing Display using different menus and options
 - Changing date and time
 - Changing setting of Mouse.
12. File manager (Windows 3x) :
 - Copy, Move, Delete, Rename, making new folders.

OR

- Explorer (Windows 95)
- Copy, Move, Delete, Rename, making new folders.
13. File manager (Windows 3x) :
 - Opening multiple Windows
 - Changing file attributes
 - Finding files and folders
 - Sorting files by Name, Date, Type, etc.

OR

- Explorer (Windows 95)
- Opening multiple Windows
 - Changing file attributes
 - Finding files and folders
 - Sorting files by Name, Date, Type, etc.

14. File manager (Windows 3x) :
 - Managing disk and other utilities
 - Undeleting the files

OR

- Explorer (Windows 95) :
- Managing disk and other utilities
 - Undeleting the files from Recycle Bin.

Practical in MS Word :

1. Introduction to MS Word
 - How to start MS Word
 - Information about different menus
 - Description of ruler line (horizontal and vertical), Scroll bars, Status bars etc
2. Introduction to different Tools bars available. Creating a new document of about 75 to 100 words. Naming and saving the document. Show the paragraph markers. Justifying the text. Show the word wrap.
3. Create a new document, enter two to three paragraphs. Do as directed
 - Change the character format and style
 - Show how to underline, bold and making italic the text
 - Show text alignment (centre, right, left)
 - Use of format painter, paragraph alignments (line spacing etc.)
4. Open an existing document and check the following
 - Selecting, copying, moving, deleting the text using edit menu
 - Find and replace the text
 - Check the spelling using spell check
5. Open an existing document and check the following using Insert menu. Page breaks, page number, date and time, symbol, files, footnotes etc.
6. Create a document and enter an application from the C.C. book using tab settings like left, right, center and text formatting. Also show the drop cap facility.
7. Create a document using newspaper column by using format menu/insert menu. Insert a picture and show the text wrapping.
8. Show the use bullets and numbering, borders and shading, change case and AutoText in word.
9. Create a following table and show different options available in table menu

Emp No.	Name of employee	Basic	D.A.	P.F.	Net Pay
Enter at least 10 data and find D.A., P.F., Net pay using the formula					
D.A. = 50% of Basic					
P.F. = 10% of Basic					
Net pay = Basic + D.A. + P.F.					
10. Enter any letter to show the use mail merge for multiple data.
11. Enter any paragraph. Do the following commands by using macros
 - Font size = 14
 - Character type New Roman
 - Italic character
 - Centering the text
12. Use of word art in the document
13. Use of draw tools bar to draw different figures.
14. Use page set up for the document. Show the print preview.

Practicals in MS EXCEL :

1. Introduction to MS Excel and show the following
 - How to start Excel
 - Workbook in Excel and Worksheets within workbook
 - Information about various menus available in Excel
 - Use of short keys, left and right keys of mouse
 - Create a worksheet and show the different cell pointer using mouse, displaying and hiding the cells.

2. Create a worksheet containing the following details.
- Employee number, Employee name, Basic salary, Department, Date of joining.
 - Enter atleast 10 data and save the worksheet.
3. Editing the cells, hiding cells, clearing cells, selecting rows of cells, moving/copying/using drag and drop, Inserting and deleting the cells setting the width of the cells
4. Open the worksheet created in practical No 2. Modify it by adding following information.
- DA = 30% of Basic salary
H.R.A. = 20% of Basic salary
P.F. = 10% of Basic salary
Net salary = Basic salary + D.A. + H.R.A. - P.F.
Also show the use of cell references.

5. Create a worksheet to calculate hotel bill

Enter fields Sr. No., Name of customer, Date of check in, Date of check out, Room type.
Calculate total days, Total amount using function and formula.

The charges of the rooms are as under:

Room type	Charges
A	Rs. 1,000
B	Rs. 750
C	Rs. 500

6. Create a worksheet for sales analysis during the year:
- Find the total sales of each salesman month wise.
 - Find minimum and maximum sales of each salesman.
 - Find the minimum and maximum sales during the year.
 - Find the average of each salesman and monthwise average sale.
7. Create a worksheet containing following fields:
- Roll No., Name of the students, marks of accounts, economics, computer, total marks, percentage, Rank.
 - Each subject contains maximum 50 marks.
 - Find the total marks and percentage using formula.
 - Sort data in descending order of marks.
 - Give rank to all the students.
8. Create a worksheet to generate 15 random numbers in column A.
- Multiply each random number by 1000 in column B.
 - Find rounded numbers upto 2 decimals and integer number of column B and store them in column C and D respectively.
 - Find the square root and logarithm of column C and D and store it in column E and F respectively.
9. Create a worksheet as under and fill the column OVER using series.
- | | OVER | RUNS OF COUNTRY-1 | RUNS OF COUNTRY-2 |
|----|------|-------------------|-------------------|
| 5 | | | |
| 10 | | | |
| 15 | | | |
| 20 | | | |
| 25 | | | |
| 30 | | | |
| 35 | | | |
| 40 | | | |
| 45 | | | |
| 50 | | | |
- Draw a line chart, Bar chart, X-Y chart, Series chart for the above information.
10. A customer has given a loan of Rs. 10,000.00 for a period of 12 installments each of two months with a fix interest rate of 15%. What will be the installment of 2 months payment? Also find total interest paid by the customer.
11. Create a worksheet of balance sheet of any company, which contains sales and purchase account, income and expenditure account.

12. A customer has purchased TV set at the cost of Rs. 15,000. After 8 years he sales at the cost of Rs. 2,000. Find depreciation by using DDB, SLN and SYD method.

Second Year B.Com.

Computers in Business Operation--Paper II (New Course)

(List of Practicals inforce for the year 1999-2000)

It is recommended that:

- All the prescribed practicals should be written in a neat journal.
 - The index and the certificate in the journal should be certified by the concerned Faculty and the Principal of the college.
 - The certified journal should be produced at the time of University practical examination and the Principal of the college.
- List of practicals : (a) Database Management System GUI based FoxPro 2.6 OR MS Access (b) Internet and Web designing (c) Utilities and Viruses.
- Enough emphasis should be given on algorithm to help the students in performing problem analysis.

- (a) GUI based FoxPro 2.6

- Introduction to FoxPro. How to start FoxPro. Show the different menus in FoxPro. Introduction to command menu.
 - Creating a database (table) and introduction to other files like Query, Screen, Report, Label, etc. Demonstrating the difference extension of the files.
 - Create a database Employee.dbf having field structure as
- | Field Name | Type | Width |
|------------|-----------|-------|
| Empno | Numeric | 5 |
| Name | Character | 20 |
| Join date | Date | 8 |
| Basic | Numeric | 5 + 2 |
| DA | Numeric | 4 + 2 |
| HRA | Numeric | 4 + 2 |
| PF | Numeric | 9 + 2 |
| Gross | Numeric | 8 + 2 |
| Net | Numeric | |
- Explain the different types of the fields and save the above structure.
- Open the database created in practical No. 3. Add atleast 10 records in the database. Show the commands Append, Go to, Locate, Continue, Delete, Recall from record menus as well as from command window.
 - Open the database created in practical No. 3. Show the commands Append, Browse, Copy to, Sort, Total, Average, Count, Sum from Database menu.
 - Create a table structure as under and save it as EMPMAN
- | Field name | Type | Width |
|-------------|-----------|-------|
| 1. name | Character | 15 |
| 1. name | Character | 15 |
| 1. name | Character | 30 |
| Add 1 | Character | 30 |
| Add 2 | Character | 25 |
| City | Numeric | 6 |
| Pincode | Character | 15 |
| Destination | Character | 5 |
| Basic | Numeric | 8 |
| Date_jm | Date | 1 |
| Sex | Character | 1 |
- Add atleast 10 records. Save the Table. Show how to edit the Records.
- Show the difference between edit and browse.
- Open the database created in Practical No. 6.
 - Index the table on F_name and 1. name.
 - Sort the Table on F_name and 1. name. Discuss the difference between sort and index.
 - Open the database created in Practical No. 6 and create a label.

9. Create a table as below :

Field	Type	Width
Bill_no	Numeric	4
Bill_date	Date	8
Party_name	Character	30
Cash_Cr	Character	1 (1-Cash, 2-Credit)
Amount	Numeric	8 + 2

—Enter atleast 10 records. Modify the structure as :

Sales_tax	Numeric	5 + 2
Commission	Numeric	4 + 2
Net_Amount	Numeric	8 + 2

- Replace all Sales_tax with 10% of Amount for sales in Cash.
- Replace all Sales_tax with 15% of Amount for sales in Credit.
- Replace all Net_Amount with Amount + Sales_tax + Commission.

10. Open the database created in practical No. 9.

- Create a report for sales in cash.
- Create another report for sales in credit.

11. Create the following table :

Field name	Type	Width
Roll_no	Numeric	3
Name	Character	30
Accounts	Numeric	3
Economics	Numeric	3
English	Numeric	3
Computer	Numeric	3
Total	Numeric	5
Percentage	Numeric	3 + 2

- Enter values in the field Roll_no, Name, Accounts, Economics, English, Computer for 10 records.
- Calculate Total with : Total = Accounts + Economics + English + Computer.
- Calculate the Percentage for each record.

12. Open a database created in practical No. 11. Create a query to display the records which has name = "AMIT". Show the use of RQBE (Relational Query by Example).

13. Open a table created in Example 11 and create different queries as follows :
- Display all records of the students who get more than 60% marks.
 - Display all records of the students who get less than 60% marks.
 - Display all records of the students who fail (marks < 35) in any one of the subjects.

14. Open a table created in example 6 and generate the queries as follows.
- Display all records of the employees whose Designation is "MANAGER".
 - Display all records of the employees whose Designation is "MANAGER" and their date of increment.

15. Create a table as follows :

Field name	Type	Width
Roll_no	Numeric	3
Name	Character	30
Class	Character	3
Division	Character	1

- Add 10 records in this table.
- Use the table created in example 11 and the above table and generate the following queries.
- List class wise names of the students who secured first class.
- List the students who stood first in their class.

16. Create a screen to add the record for the table created in table 6

17. Check the different character functions used in FoxPro using command window. Check the different Numeric functions used in FoxPro using command window.
18. Check the different logical functions used in FoxPro using command window. Check the different date functions use in FoxPro using command window.
19. Discuss different types of variables. Show how to store the data into the variables.
20. Create a report to print the complete list of result of the students created in table 11.

- (a) List of practicals M. S. Access :

1. Introduction to M. S. Access.—How to open M. S. Access.—Introduction to database window.—Description of Tables, Queries, Forms, Reports, Macros, Modules.
2. Creating a database using Access wizard. Description of fields, datatypes, field properties, format, etc. Save the database.
3. Open a database created in practical No. 2 Describe type, data types as input mask, indexed, default value, validation rule etc.
4. Create a table using design view for the fields Roll No, Students name, marks of CC, Eco, BOM, A/C, Computer, Total marks.
—Enter 10 data in the table.—Edit the data and data types of the fields
5. Open a table created in practical No. 4, add new 5 records.
—Show how to sort, filter the data. See the layout of the datasheet
6. Designing a form using a form wizard of an existing database
7. Customizing the form appearance
8. Introduction to queries :
—Creating and modifying simple queries.—Use of multiple tables in queries
—Performing calculations and expressions in queries

9. Create a student data table and generate the queries.

- To search a particular record for given roll no
- To search all students having B Com Degree.
- To search all students whose surname is "Patel".
- To search all students whose surname is "Patel".
- Write the queries for the database for the table created in practical No. 9
- To search all students who are born between 1-1-70 to 1-1-97
- To search the students who have secured first class in last year
- To search the students having the qualification as B.A. or B.Com
- To search the students having the qualification as B.A. or B.Com

11. Generating the reports using report wizard

12. Introduction to different report design

13. Create a employees table having fields code, name, date of joining, designation, basic, DA, HRA, PF, gross total and generate the queries
- To search a particular record for given employee name
 - To search all employees having the designation "Manager"
 - To search all employees who are retiring on a particular date
 - To search all employees who are retiring on a particular date

14. Generate a report for the above table

15. Design a screen layout to add the details of the table inventory

16. Create a query for above table
- To search the details of particular item
 - To search the total sales of the given date

17. Generate a report to print summary for the inventory table created in practical No. 16

- (b) Internet and Web designing :

1. Design the Web page to introduce your college profile using Front page or any other Web page designer.
2. Create a Web page to give the publicity of any product along with proper slogan

- (c) Utilities and Viruses :

1. Show how to take backups using Norton Utility. Also show the disk information available in Norton Utility.
2. Show the different types of Viruses. Use any Vaccine to show how to remove the Viruses.

પરિશિષ્ટ "૩/૧૭"
કમ્પાટિબલ ક્રમાંક ૪(૧૭)

ગુજરાત કોં સોમશી, અમદાવાદ તરફથી એમ.સી.એ.નો અભ્યાસક્રમ શરૂ કરવા અનેની જોડાણની સરણે

સંસ્થાએ નીચે પ્રમાણે શરતોનો પરિધાન ૧૦મી ઓગસ્ટ, ૧૯૯૮ સુધીમાં કરે તે સરતે ૧૯૯૮-૨૦૦૦ના શૈક્ષણિક વર્ષ માટે એમ.સી.એ.નો અભ્યાસક્રમ શરૂ કરવા મંજૂરી આપવી.

- લાઇ ગુજરાત પુનિર્વાહિતમાં અનુભવન શિક્ષણ પુનિર્વાહિતમાં કેન્દ્રો દ્વારા ચલાવવામાં આવે છે, અને તે કમ્પાટિબલ જોવામાં તેમજ પદ્ધતિ અમલમાં છે, આ અભ્યાસક્રમ ગુજરાત પુનિર્વાહિતના એક કેન્દ્ર તરીકે ચલાવવાનો રહેશે.
- આ પ્રકારના અભ્યાસક્રમમાં શિક્ષક-નિમ્નશિક્ષકવર્ગના કર્મચારીઓના પગારો સહિત કોઈ પણ સુવિધા અનુકૂળ નિવાસની વ્યાવસાયિક (પ્રોફેશનલ) સંસ્થાઓના ધોરણે રહેશે, એટલે કે, આ અભ્યાસક્રમ "સેલ્ફ ફાઇનાન્સ" રહેશે.
- એ.આઈ.સી.ટી.ઈ.એ નિયત કર્યા મુજબ પૂર્ણ સમયના અભ્યાસક્રમમાં વધુમાં વધુ ૪૦ (ચાલીસ) વિદ્યાર્થીઓને પ્રવેશ આપી શકાશે, આ પ્રવેશ કેન્દ્રનીય ધોરણે ગુજરાત પુનિર્વાહિત દ્વારા આપવામાં આવશે, આ માટે રોડવાળા કોમ્પ્યુટર સેન્ટરમાં પ્રવેશ માટે લેવામાં આવતા ટેસ્ટ સહિત કોઈ પણ ગુરુત્વાપના આધારિત પદ્ધતિ પુનિર્વાહિત નક્કી કરશે અને વખતોવખત જો કોઈ નીતિ કે પદ્ધતિ પુનિર્વાહિત નક્કી કરે તે મુજબ જ પ્રવેશદર્શક થશે.
- ઉપર મુજબની ભવત્કામાં કીનું ધોરણ ત્રણ પ્રકારનો રહેશે.
 - (અ) ૫૦ ટકા વિદ્યાર્થીઓ માટે વાર્ષિક ફી રૂ. ૧૨,૦૦૦ ૫૦ ટકા એટલે કે ૨૦ બેઠકો.
 - (આ) ૪૫ ટકા વિદ્યાર્થીઓ માટે વાર્ષિક ફી રૂ. ૪૦,૦૦૦ ૪૫ ટકા એટલે કે ૧૮ બેઠકો.
 - (ક) ૫ ટકા એન.આર.આઈ.એન.આર.આઈ. સ્પોન્સર્ડ વિદ્યાર્થીઓ માટે વાર્ષિક ફી રૂ. ૧,૨૦,૦૦૦ રહેશે. ૫ ટકા એટલે કે ૨ બેઠકો.
- પુનિર્વાહિતને વખતોવખત નક્કી કરેલ અભ્યાસક્રમ તેની પદ્ધતિઓ તેમ જ મુલ્યાંકન અને વાર્ષિક પરીક્ષાઓ સહિત તમામ મામતો અને પુનિર્વાહિતને કરેલા નિયમો અને જોડાણોનો સંસ્થાએ ચુસ્તપણે પાલન કરવાનો રહેશે.
- એ.આઈ.સી.ટી.ઈ.ના નોર્સ અને સ્ટાન્ટનું અનુસાર જરૂરી સુવિધાઓ મકાન (વર્ગખંડો) કોમ્પ્યુટર લેબોરેટરી, નિયામકશ્રી તથા સ્ટાફ માટેના ખંડોની સુવિધા, ગ્રંથાલય, ટોઈલેટ તથા અન્ય જરૂરી સુવિધાઓની વ્યવસ્થા ૧૦મી ઓગસ્ટ, ૧૯૯૮ સુધીમાં કરવાની રહેશે. તેમજ જરૂરી શૈક્ષણિક સાધનો (ઈન્સ્ટ્રુમેન્ટ્સ) કોમ્પ્યુટર હાર્ડવેર અને સોફ્ટવેર, ફર્નિચર વગેરે એ.આઈ.સી.ટી.ઈ.ના નોર્સ અને સ્ટાન્ટનું મુજબ ચાલવવાની રહેશે.
- શૈક્ષણિક સ્ટાફ : (As per AICTE Norms from time to time)

પ્રમુખ વર્ગ :	૧ પ્રોફેસર/પ્રોફેસર, ૨ લેક્ચરર
દ્વિતીય વર્ગ :	૧ રીડર, ૧ લેક્ચરર
તૃતીય વર્ગ :	૧ રીડર, ૧ લેક્ચરર

Supporting Staff as per AICTE Norms

Computer Hard-Ware and Software as per AICTE Norms.

એ.આઈ.સી.ટી.ઈ.ના નોર્સ અને સ્ટાન્ટનું અનુસાર અન્ય જરૂરી શૈક્ષણિક અને લાઈવલી કર્મચારીઓની નિમણૂક કરવાની રહેશે. તેમજ ગ્રંથાલયમાં પુસ્તકો અને જર્નલોની વ્યવસ્થા કરવાની રહેશે.

- C. સંસ્થાએ પ્રતિવર્ષ પ્રવેશદર્શક પુરું થાય પછી વધુમાં વધુ પંદર દિવસમાં નીચે પ્રમાણેની રકમ પુનિર્વાહિતના રિસર્ચ એન્ડ ડેવલપમેન્ટ મેઈન્ટેનન્સ ફંડમાં જમા કરાવવાની રહેશે :

(અ) અભ્યાસક્રમના પહેલા વર્ષ	રૂ. ૧,૦૦,૦૦૦
(બ) અભ્યાસક્રમના બીજા વર્ષ	રૂ. ૨,૦૦,૦૦૦
(ક) અભ્યાસક્રમના ત્રીજા વર્ષ	રૂ. ૩,૦૦,૦૦૦
ત્યાર માટે પ્રતિવર્ષ	રૂ. ૩,૦૦,૦૦૦

કુલસચિવ વતી

એમ.સી.એ.નો અભ્યાસક્રમ શરૂ કરવા માટેની ડૉ. એસ. એલ. સંસ્થાની અરજ પર પુનિર્વાહિતની કમિટીનો રિપોર્ટ

તા. ૨૨-૭-૧૯૯૮ના રોજ નીચેના કમિટી સભ્યો સંજોગે ૫ વાને ક.એલ.એસ. ઈન્સ્ટિટ્યુટની મુલાકાતે એમ.સી.એ. અભ્યાસક્રમની માન્યતા અને ગયા હતા.

(૧) ડૉ. એમ. એન. દેસાઈ

(૨) શ્રી આર. પી. સોની

(૩) ડૉ. સરલામહેન અમ્મુન

એ.આઈ.સી.ટી.ઈ.એ આ સંસ્થાને તેમની શરતોની પૂર્ણતાની અપેક્ષાએ એમ.સી.એ. કોર્સની પરવાનગી આ વર્ષથી આપી છે. ૪૦ વિદ્યાર્થીઓને એમ.સી.એ. કોર્સમાં પ્રવેશ આપવાની પરવાનગી એ.આઈ.સી.ટી.ઈ.એ આપી છે. કમિટીએ સંસ્થાના સેક્રેટરી સુધીરભાઈ નાલાવાડી તેમજ અન્ય ડિરેક્ટરો અને સંસ્થાના ડિરેક્ટર પ્રો. એન.

આર. શાહ સાથે ચર્ચા કરી હતી.

એમ.સી.એ. માટે મંજૂર રહેલું મકાન પણ કમિટીએ જોઈ એ.આઈ.સી.ટી.ઈ.ના ધારાધોરણ અનુસાર આ બિલ્ડિંગમાં એમ.સી.એ. અભ્યાસક્રમની જરૂરિયાતો ઊભી થઈ છે. આ સાથે ૪૦ વિદ્યાર્થીઓને માટે જરૂરી વર્ગખંડો અને લેબોરેટરીઓ તેમ જ લાઈબ્રેરીની કામચલાઉ ગોઠવણી કરવામાં આવી છે. દિવાળી પછી નવું મકાન ઉપલબ્ધ થશે. તેમ જ જણાય છે.

એમ.સી.એ. કોર્સ અને આ સંસ્થાએ પૂર્વની પૂરી તૈયારી કરી છે. એવી છાપ કમિટીને થઈ છે. શૈક્ષણિક સ્ટાફ, એમ.સી.એ. કોર્સ અને અભ્યાસક્રમની જરૂરિયાતો ઊભી થઈ છે. એ.આઈ.સી.ટી.ઈ. તેમ જ પુનિર્વાહિતની શરતોને વિનિયમિત સ્ટાફ, લેબોરેટરીઓ, કોમ્પ્યુટર સંપત્તિ વગેરે માટે એ.આઈ.સી.ટી.ઈ. તેમ જ પુનિર્વાહિતની શરતોને આધીન આ સંસ્થાને એમ.સી.એ.ની કોર્સ શરૂ કરવા માટે મંજૂરી આપવાની ભલામણ આ કમિટી પુનિર્વાહિતને આપીને આ સંસ્થાને એમ.સી.એ.ની કોર્સ શરૂ કરવા માટે મંજૂરી આપવાની ભલામણ છે.

સહી

ડૉ. એમ. એન. દેસાઈ

ડૉ. સરલામહેન અમ્મુન

શ્રી આર. પી. સોની

(૧)

અંકેશિક કાઉન્સિલ નિયમણ

આથી કરાવવામાં આવે છે કે અમ. કે. આદર્શ કોલેજ, અમદાવાદ નિયમણે અંગેની શરત સંબંધિત નીચે જણાવેલ શરતોનું પાલન અંકેશિક કાઉન્સિલને સંતોષ થાય તે રીતે તા. ૩૧-૮-૧૯૯૯ સુધીમાં કરે તો તેને બી.એ. (નોંધ)માં ટ્રિકેસ સહીતના અભ્યાસક્રમો શીખવવા માટે તા. ૧૫-૬-૧૯૯૬થી કામગીરી શરૂ કરાવવા માટે અંકેશિક કાઉન્સિલને જવાબદારી આપવામાં કરવી :

- (૧) ટ્રિકેસ સહીતના વિષય માટે આપવાની નિમણૂક કરવામાં આવે;
- (૨) સંચાલન માટે અભ્યાર સુધી વખતોવખત મુકેલી શરતોના સંદર્ભમાં કોલેજ પોતાના બંટોલમાંથી ફરક કુલ ખર્ચનો આંકડો મોકલવામાં આવે અને અભ્યાર સુધીની શરતોના સંદર્ભમાં ખર્ચ કરવામાં લીધા પડેલી જથ્થા પો તેટલી રકમના પુત્રકોની ખરીદી કરીને તેમ કમ્પાની જાણ કરવામાં આવે;
- (૩) પુત્રકો અને સામગ્રી માટે પ્રત્યેક વિદ્યાર્થીના પ્રતિવર્ષ આંકડો આજીરૂ રૂ. ૪,૦૦૦નો આવકદંડ ખર્ચ કરવામાં આવે;
- (૪) ટ્રિકેસ સહીતના વિષયના પુત્રકો માટે રૂ. ૨,૦૦૦નો આવકદંડ ખર્ચ કરવામાં આવે;
- (૫) પુનિવર્તિતના ધારાધોરણ મુજબ શિક્ષકવર્ગના તેમજ બિન-શિક્ષકવર્ગના કમ્પાનીઓને પગારધોરણ, મોંઘવારી ભથ્થુ, પ્રોવિડન્ટ ફંડ, રેન્જુસ્ટરી અને ધારવાલા ભથ્થુ આપવામાં આવે તથા તેમને તેમજ છુટા સ્વેચ્છા શિક્ષકવર્ગના તેમજ બિન-શિક્ષકવર્ગના કમ્પાનીઓને વેતન, વળતર કે અન્ય કોઈ લેણું ચૂકવવાનું બાકી નથી તેનું પ્રમાણપત્ર આપવામાં આવે અને જો કોઈ લેણું બાકી હોય તો તે ચૂકવી આપવામાં આવે, તેમજ વિદ્યાર્થીની સંખ્યાને લઈ મહેકમ અંગેના પુનિવર્તિતના ધારાધોરણ મુજબ બિન-શિક્ષકવર્ગના પાંચમી કમ્પાનીઓની નિમણૂક કરવામાં આવે અને મહેકમના સંદર્ભમાં કોઈ નિમણૂક બાકી રહેવા પામી નથી તેનું પ્રમાણપત્ર આપવામાં આવે;
- (૬) ગુજરાત સરકાર, ભારત સરકાર અને મુજકસીએ વિદ્યાર્થી પ્રવેશ, શિક્ષક-બિનશિક્ષકવર્ગના કમ્પાનીઓની નિમણૂક, બહરી, મહત્તી ઉપચારી અને અનુસૂચિત જાતિ, અનુસૂચિત જનજાતિ અને ખાસિય દ્વારા આપેલી લેણવેલ સામાજિક અને શૈક્ષણિક રીતે પગલ સાંતિ તેમજ શારીરિક બોડગમલ કરવાના ઉમેદવારોની અમલદાર જથ્થા ભરવામાં પુનિવર્તિતને વખતોવખત નિયત કરેલ ધારાધોરણોનો અમલ કરવામાં આવે છે-આથી.

અમ. કે. આદર્શ કોલેજ, અમદાવાદને સ્થાનિક તપાસકમિટીનો રેવેલ
અને શનિવાર, તા. ૨૬ જુન, ૧૯૯૯ના રોજ અમ. કે. આદર્શ કોલેજની પ્રમુખ મુલાકાત લીધી હતી. અમ. કે. આદર્શ કોલેજ દરમિયાન અમદાવાદ કમ્પાનીમાં અને "Defence Studies"ને લગતી બધી જ માનનીય પુત્રી પાલી હતી. પ્રમુખને અને તેમના સામગ્રીમાં હોલ પસા છે જે સુસજ્જ છે. આ હોલ આ વિષયના અભ્યાસ માટે ખૂબ જ ઉપયોગી છે. એમાં વિવિધ Models બનાવ્યા છે જે અભ્યાસ કરવામાં લેવાઈ શકાય. Maps પણ પુરાતા પ્રમાણમાં છે. સંદર્ભ સાહિત્ય તૈયાર કર્યું છે. પ્રદર્શન પણ મેળવ્યું છે. પુન્ય સંચાલનમાં આ વિષય પસંદ કર્યો છે. અમને આપવામાં આવેલ માહિતી અનુસાર અમદાવાદ પુનિવર્તિતમાં હવે આ એક ખાસ કોલેજ છે જેમાં આ વિષય શિક્ષકવર્ગને જોઈ વિષયમાં પસંદગી માટે ઉપલબ્ધ છે. અમને મેનેજિંગ ટ્રસ્ટી અને આચાર્યશ્રીએ ખાસી સાચી છે કે આ વિષય પસંદ કરી હવે કોઈ જ જટિલિયત પુનિવર્તિત સુધરતી તો અને એ માટે કટિબદ્ધ છીએ. અને આ કોલેજના આ વિષય માટે કામગીરી શરૂ કરવા આપવા ભલામણ કરીએ છીએ.

સહી

ડૉ. અંજના દેસાઈ

મો. એ. આર. શાહ

(૨)

અંકેશિક કાઉન્સિલ નિયમણ

આથી કરાવવામાં આવે છે કે અમ. સી. રાઘવ આદર્શ કોલેજ, પાલી-જેતપુર નિયમણે અંગેની શરત સંબંધિત નીચે જણાવેલ શરતોનું પાલન અંકેશિક કાઉન્સિલને સંતોષ થાય તે રીતે તા. ૧૫-૮-૧૯૯૯

અંકેશિક કાઉન્સિલ : તા. ૧૮-૧૧-૧૯૯૯

સુધીમાં કરે તો તેને બી.એ. (બિ.સિ.)માં ગુજરાતી, અંગ્રેજી, સંસ્કૃત; બી.એ. (નોંધ)માં સમાજશાસ્ત્ર, માનસશાસ્ત્ર, ગણિતના સંદર્ભમાં શીખવવા માટે તા. ૧૫-૬-૧૯૯૬થી શરૂ કરવા માટે અંકેશિક કાઉન્સિલને જવાબદારી આપવામાં કરવી :
(૧) આંદો. ૧૨૦એ અનુસાર ગુજરાતી, અંગ્રેજી, સંસ્કૃત વિષયોમાં સંબંધિતના સંદર્ભમાં જરૂરી શિક્ષકવર્ગની નિમણૂક કરવામાં આવે, મહેકમના સંદર્ભમાં બિન-શિક્ષકવર્ગના કમ્પાનીઓની નિમણૂક કરવામાં આવે;

(૨) સંચાલન માટે અભ્યાર સુધી વખતોવખત મુકેલી શરતોના સંદર્ભમાં કોલેજ પોતાના બંટોલમાંથી ફરક કુલ ખર્ચનો આંકડો મોકલવામાં આવે અને અભ્યાર સુધીની શરતોના સંદર્ભમાં ખર્ચ કરવામાં લીધા પડેલી જથ્થા પો તેટલી રકમના પુત્રકોની ખરીદી કરીને તેમ કમ્પાની જાણ કરવામાં આવે.

(૩) પુત્રકો અને સામગ્રી માટે પ્રત્યેક વિદ્યાર્થીના પ્રતિ વર્ષ આંકડો આજીરૂ રૂ. ૪,૦૦૦નો આવકદંડ ખર્ચ કરવામાં આવે;

(૪) પુનિવર્તિતના ધારાધોરણ મુજબ શિક્ષકવર્ગના તેમજ બિન-શિક્ષકવર્ગના કમ્પાનીઓને પગારધોરણ, મોંઘવારી ભથ્થુ, પ્રો. ફંડ, રેન્જુસ્ટરી અને ધારવાલા ભથ્થુ આપવામાં આવે તથા તેમને તેમજ છુટા સ્વેચ્છા શિક્ષકવર્ગના તેમજ બિન-શિક્ષકવર્ગના કમ્પાનીઓને વેતન વળતર કે અન્ય કોઈ લેણું ચૂકવવાનું બાકી નથી તેનું પ્રમાણપત્ર આપવામાં આવે અને જો કોઈ લેણું ચૂકવવાનું બાકી હોય તો તે ચૂકવી આપવામાં આવે, તેમજ વિદ્યાર્થીની સંખ્યાને લઈ મહેકમ અંગેના પુનિવર્તિતના ધારાધોરણ મુજબ અમલ કરવામાં આવે તેમજ વિદ્યાર્થીની સંખ્યાને લઈ મહેકમ અંગેના પુનિવર્તિતના ધારાધોરણ મુજબ બિન-શિક્ષકવર્ગના પાંચમી કમ્પાનીઓની નિમણૂક કરવામાં આવે અને મહેકમના સંદર્ભમાં બાકી રહેવા બિન-શિક્ષકવર્ગના પાંચમી કમ્પાનીઓની નિમણૂક કરવામાં આવે અને મહેકમના સંદર્ભમાં બાકી રહેવા બિન-શિક્ષકવર્ગના પાંચમી નથી, તેનું પ્રમાણપત્ર આપવામાં આવે.

(૫) ગુજરાત સરકાર, ભારત સરકાર અને મુજકસીએ વિદ્યાર્થી પ્રવેશ, શિક્ષક-બિનશિક્ષકવર્ગના કમ્પાનીઓની નિમણૂક, બહરી, ભરતી, ઉપચારી અને અનુસૂચિત જાતિ, અનુસૂચિત જનજાતિ અને ખાસિય દ્વારા આપેલી લેણવેલ સામાજિક અને શૈક્ષણિક રીતે પગલ સાંતિ તેમજ શારીરિક બોડગમલ કરવાના ઉમેદવારોની અમલદાર જથ્થા ભરવામાં પુનિવર્તિતને વખતોવખત નિયત કરેલ ધારાધોરણોનો અમલ કરવામાં આવે છે-આથી.

અમ. સી. રાઘવ આદર્શ કોલેજ, પાલી-જેતપુરને સ્થાનિક તપાસકમિટીનો રેવેલ

અને સ્થાનિક તપાસકમિટીના સભ્યો તરીકે ઉપરોક્ત સંખ્યાની તા. ૬-૭-૧૯૯૯ના રોજ રૂ. ૨૬૨ મુલાકાત લીધી હતી.

કોલેજના આચાર્યશ્રીએ નીચેની વિગતો માન્યા પ્રમાણે સહકાર પૂર્વક પુરી પામી હતી :

૧. કોલેજને ૧૭ વખતોવખત ધારાધોરણ વિચાર્યું પડ્યું છે.
૨. આચાર્યશ્રીની પંડ, આંદોશ, વિદ્યાર્થી પંડ, અભ્યાસક્રમો પંડ, આ ભવ્ય જરૂરી સંચાલન વહેંચેની જનવલ.
૩. કોલેજના મકાનમાં અનગણી કાલવેલ છે.
૪. અભ્યાસક્રમોની ૧૩ અને બિન-શિક્ષકવર્ગની ૧૧ જરૂરી પુત્રી સંખ્યા છે.
૫. સંચાલનમાં ફરક રૂ. ૧,૨૮,૪૦૦ જેટલો રૂપિય એક હાથ મોંઘવારી લગતર આંકડો પસાલ પુત્રકોના ૨,૮૫૫ જેટલા પુત્રકો ઉપરથી અને ૨૩ જેટલા મેનેજિંગ મોંઘવારમાં આવે છે.
૬. ગુજરાતી, અંગ્રેજી, અંગ્રેજી અને સંસ્કૃત મુખ્ય વિષયમાં કાર્યકર અને વિદ્યાર્થી સંખ્યાના પ્રમાણમાં જરૂરી શિક્ષકવર્ગની નિમણૂકની શરતે ઉપરોક્ત સંખ્યાના અને ૧૯૯૮-૯૯ના વર્ષ પુત્રનું જોડાણ આપવા ભલામણ કરીએ છીએ.

પ્રો. સી. કે. દસર

ડૉ. ક્રિષ્ણકાંત શાહ

(૩)

અંકેશિક કાઉન્સિલ નિયમણ

આથી કરાવવામાં આવે છે કે અમ. સી. આદર્શ કોલેજ, દેવલગામિયાની નિમણૂક અંગેની સંબંધિત નીચે જણાવેલ શરતોનું પાલન બી.એ. (બિ.સિ.)માં અંગ્રેજી, સંસ્કૃત, ગ્રીકી, ગાંધીશાસ્ત્ર, બી.એ. (નોંધ)માં કોમ્પ્યુટર મેથડ; બી.એ. (નોંધ)માં કોમ્પ્યુટર સામગ્રીના અભ્યાસક્રમો શીખવવા માટે તા. ૧૫-૬-૧૯૯૬થી તા. ૧૪-૬-૨૦૦૦ સુધીનું ચાલુ જોડાણ આપવા માટે અંકેશિક કાઉન્સિલને જવાબદારી આપવામાં કરવી :
(૧) આંદો. ૧૨૦એ અનુસાર કમ્પાનીઓની વખતોવખત મુકેલી શરતોના સંદર્ભમાં કોલેજ પોતાના બંટોલમાંથી ફરક કુલ ખર્ચનો આંકડો મોકલવામાં આવે અને અભ્યાર સુધીની શરતોના સંદર્ભમાં ખર્ચ કરવામાં લીધા પડેલી જથ્થા પો તેટલી રકમના પુત્રકોની ખરીદી કરીને તેમ કમ્પાની જાણ કરવામાં આવે.

(૨) સંચાલન માટે અભ્યાર સુધી વખતોવખત મુકેલી શરતોના સંદર્ભમાં કોલેજ પોતાના બંટોલમાંથી ફરક કુલ ખર્ચનો આંકડો મોકલવામાં આવે અને અભ્યાર સુધીની શરતોના સંદર્ભમાં ખર્ચ કરવામાં લીધા પડેલી જથ્થા પો તેટલી રકમના પુત્રકોની ખરીદી કરીને તેમ કમ્પાની જાણ કરવામાં આવે.

(૫)
અંકેશિક કાઉન્સિલની ભલામણ

આથી દરાવવામાં આવે છે કે વામ, એલ. આર.એન. એન. કોપર્સ કોલેજ, દેવગઢવાડિયાની નિમણૂકો અંગેની શરત મોટીની નીચે જણાવેલ શરતોનું પાલન બી.એ. (બિનિ)માં અંગ્રેજ, સંસ્કૃત, હિન્દી, ઉપનિષદ; બી.એ. (ગૌર)માં કોમ્પ્યુટર ગ્રાહક; બી.એ. (ગૌર)માં કોમ્પ્યુટર સાયન્સ અભ્યાસક્રમો શીખવા માટે તા. ૧૫-૬-૨૦૦૦થી તા. ૧૪-૬-૨૦૦૧ સુધીનું બહુ જોડાણ આપવા માટે અંકેશિક કાઉન્સિલને ભલામણ કરવી :

- (૧) ઓરિ. ૧૨૦એ અનુસાર કમ્પ્યુટરના જરૂરી વિદ્યાર્થીની નિમણૂક કરવામાં આવે;
- (૨) સંચાલક માટે અનુસૂચી વખતોવખત મુકેલી શરતોનાં સંદર્ભમાં કોલેજ પોતાનાં બંધોબંધોથી કસ્ટ ફ્રમ બોર્ડની ઓફીસ મોકલવામાં આવે અને અનુસૂચીની શરતોનાં સંદર્ભમાં ખર્ચ કરવામાં ઊભા રહેશે જણાવ તો તેટલી રકમનાં પ્રસ્તુતોની ખરીદી કરીને તેમ કમ્પની જાણ કરવામાં આવે;
- (૩) પુતલકો અને સામગ્રી માટે પ્રયત્ન વિદ્યાભાગદીઠ પ્રતિષ્ઠાને આજ્ઞામાં આજ્ઞા રૂ. ૪,૦૦,૦૦૦નો આરંભક ખર્ચ કરવામાં આવે;
- (૪) પુનિવિદિટીના પગારપોસ્ટના મુજબ શિક્ષકશ્રવનાં તેમજ બિન-શિક્ષકશ્રવનાં કર્મચારીઓને પગારપોસ્ટના, મોંઘવાલી ભણ્ણ, પ્રોવિડન્ટ ફંડ, સેમેષ્ટરી અને પરવાઢા ભણ્ણ આપવામાં આવે તથા તેમનાં તેમજ છુટા થયેલા શિક્ષકશ્રવનાં તેમજ બિન-શિક્ષકશ્રવનાં કર્મચારીઓને વેતન વખતર કે અન્ય કોઈ લેણું ચુકવવાનું બાકી નથી. તેનું પ્રમાણરૂપ આપવામાં આવે અને જો કોઈ લેણું ચુકવવાનું બાકી હોય તો તે ચુકવી આપવામાં આવે તેમજ વિદ્યાર્થીઓની સંખ્યાને લક્ષમાં લઈ મહેતમ બેંગના પુનિવિદિટીના પારાધોરણ મુજબ બિન-શિક્ષકશ્રવનાં પબ્લિક કર્મચારીઓની નિમણૂક કરવામાં આવે અને પ્રતેકક્રમાં સંદર્ભમાં બાકી રહેલા પામી નથી, તેનું પ્રમાણરૂપ આપવામાં આવે;
- (૫) ગુજરાત સરકાર, બારડોલ સરકાર અને વૃક્ષાલીએ વિદ્યાર્થી-પ્રવેશ, શિક્ષક બિન-શિક્ષકશ્રવનાં કર્મચારીઓની નિમણૂક, બહરી, બહરી, ઉપનિષદ અને અનુ. જાતિ, અનુ. જનજાતિ અને બસીયમ દ્વારા આપત્તી લેવાયેલ આમદાકિ અને સેલેક્શન રીત પછલ જાતિ તેમજ સાર્વજિક ખોટાખોટા પરવાસ ઉપરદરારોની અનામત જગ્યા ભરવામાં પુનિવિદિટીએ વખતોવખત નિમત્ત કરેલ પારાધોરણોનો અમલ કરવામાં આવે કે-આવશ્યક.

અમ. એસ. આર.એન. એન. કે. એલ. શાહ કોમર્સ કોલેજનો સ્થાનિક તપાસરતિબિનો તેવાલ

૧. અમ. સંચાલકનાં પામી બી જ રીને સુધિવાચના છે, તેમજ વખતે તેમના સેલેક્શન જરૂરીયોવાચના છે.
૨. કોલેજનું પુનરાગ્રહ અનિમમુદ છે, અને આ દિશામાં સંચાલની મેનેજમેન્ટ તેમજ આચાર્યશ્રી અને અધ્યાપકશ્રી દ્વારા જાનુ. છે.
૩. અમ. સંચાલકનાં શિક્ષકશ્રી સંદર્ભમાંની ભાગવાચનો અને પોતાની કરજના પાલન માટે તત્પર છે.
૪. આ પ્રત સંચાલકનાં તરફથી ભાગવામાં આવેલા જોડાણો અંગે કેટલીક વર્લોઃ વગેરે અંગેની રિવાતો જરૂરી જવાઈ હતી તે મધ્ય માઢ આ સિવિન નીચે પ્રમાણેનો અભિપ્રાય વ્યક્ત કરે છે.
(અ) કોલેજમાં કોલેજમાં મુખ્ય વિષય તરીકે હિન્દી, સંસ્કૃત, અંગ્રેજી અને ઉપનિષદ વિષય પાઠનું જોડાણ તા. ૧૪-૬-૨૦૦૦ સુધી ભણે તે માટેની ભલામણ કરવામાં આવે છે.
૫. આર.એન. કોલેજમાં ગોલા વિષય તરીકે કોમ્પ્યુટર સાયન્સ તેમજ આંકડાશાસ્ત્રની પદવિઓ એ બે વિષય તરીકે કોલેજ તા. ૧૪-૬-૨૦૦૧ સુધી બળે તેવી ભલામણ કરવામાં આવે છે.
- (બ) કોમર્સ કોલેજમાં ગોલા વિષય તરીકે કોમ્પ્યુટર સાયન્સ માટેનું જોડાણ તા. ૧૪-૬-૨૦૦૧ સુધી ભણે તેવી ભલામણ કરવામાં આવે છે.

ઉપર મુજબની જોડાણને અનુસરીને આંકડાશાસ્ત્ર વિષયમાં ખંડ સંખ્યાના વ્યાખ્યાનાને ખડલે પૂર્ત સંખ્યાના વ્યાખ્યાનીની જરૂરિયાત રીતી થાય તેમ છે. તે કામ અંગે કોલેજ જરૂરી કાર્યવાહી કરશે તે શરતે ઉપરોક્ત વિષય અંગેની ભલામણ કરવામાં આવે છે.

દા. બી. બી. જાની
બી. એમ. પટેલ

(૬)
અંકેશિક કાઉન્સિલની ભલામણ

આથી દરાવવામાં આવે છે કે શિદાર્થ લો કોલેજ, ગોધીનગરની નિમણૂકો અંગેની શરત સહિતની નીચે જણાવેલ શરતોનું પાલન એડિટિયુટિવ કાઉન્સિલને સંભવ થાય તે રીતે તા. ૧૫-૧૦-૧૯૯૯ સુધીના કરે તો તેને થઈ એલએલ.બી.ના અભ્યાસક્રમ શીખવા માટે કામની જોડાણ આપવા અંગેઅંકેશિક કાઉન્સિલને ભલામણ કરવી :

૧. આર કાઉન્સિલ ઓફ ઈન્ડિયાની માન્યતા મેળવી હોય તો તેનો આધાર રજૂ કરશે અને જો ન મેળવી હોય તો તાકીદ મેળવી રજૂ કરવી.
૨. ઓરિ. ૧૨૦એ અનુસાર શિક્ષકશ્રવની નિમણૂક વ્યવિત કરવામાં આવે;
૩. બિન-શિક્ષકશ્રવનાં કર્મચારીઓની ખોલમ અનુસાર ખરૂટી નિમણૂકો કરવી જાણ કરવામાં આવે;
૪. સંચાલક માટે અનુસૂચી વખતોવખત મુકેલી શરતોનાં સંદર્ભમાં કોલેજ પોતાનાં બંધોબંધોથી રકમ કૂટ પામી તો તેટલી રકમનાં પ્રસ્તુતોની ખરીદી કરીને તેમ કમ્પની જાણ કરવામાં આવે;
૫. પુતલકો અને સામગ્રી માટે પ્રયત્ન વિદ્યાભાગદીઠ પ્રતિષ્ઠાને આજ્ઞામાં આજ્ઞા રૂ. ૪,૦૦,૦૦૦નો આરંભક ખર્ચ કરવામાં આવે;
૬. પુનિવિદિટીના પગારપોસ્ટના મુજબ શિક્ષકશ્રવનાં તેમજ બિન-શિક્ષકશ્રવનાં કર્મચારીઓને પગારપોસ્ટના, મોંઘવાલી ભણ્ણ, પ્રોવિડન્ટ ફંડ, સેમેષ્ટરી અને પરવાઢા ભણ્ણ આપવામાં આવે તથા તેમનાં તેમજ છુટા થયેલા શિક્ષકશ્રવનાં તેમજ બિન-શિક્ષકશ્રવનાં કર્મચારીઓને વેતન વખતર કે અન્ય કોઈ લેણું ચુકવવાનું બાકી નથી, તેનું પ્રમાણરૂપ આપવામાં આવે અને જો કોઈ લેણું ચુકવવાનું બાકી હોય તો તે ચુકવી આપવામાં આવે તેમજ વિદ્યાર્થીઓની સંખ્યાને લક્ષમાં લઈ મહેતમ બેંગના પુનિવિદિટીના પારાધોરણ આપવામાં આવે તેમજ વિદ્યાર્થીઓની સંખ્યાને લક્ષમાં લઈ મહેતમ બેંગના પુનિવિદિટીના પારાધોરણ આપવામાં આવે તેમજ વિદ્યાર્થીઓની નિમણૂક કરવામાં આવે અને પ્રતેકક્રમાં સંદર્ભમાં બાકી રહેલા પામી નથી, તેનું પ્રમાણરૂપ આપવામાં આવે;
૭. ગુજરાત સરકાર, બારડોલ સરકાર અને વૃક્ષાલીએ વિદ્યાર્થી-પ્રવેશ, શિક્ષક બિન-શિક્ષકશ્રવનાં કર્મચારીઓની નિમણૂક, બહરી, બહરી, ઉપનિષદ અને અનુ. જાતિ, અનુ. જનજાતિ અને બસીયમ દ્વારા આપત્તી લેવાયેલ આમદાકિ અને સેલેક્શન રીત પછલ જાતિ તેમજ સાર્વજિક ખોટાખોટા પરવાસ ઉપરદરારોની અનામત જગ્યા ભરવામાં પુનિવિદિટીએ વખતોવખત નિમત્ત કરેલ પારાધોરણોનો અમલ કરવામાં આવે કે-આવશ્યક.

શિદાર્થ લો કોલેજ, ગોધીનગરના કમ્પની જોડાણ અને સ્થાનિક તપાસરતિબિનો તેવાલ

૧. અમ. સંચાલકનાં પામી બી જ રીને સુધિવાચના છે, તેમજ વખતે તેમના સેલેક્શન જરૂરીયોવાચના છે.
૨. કોલેજનું પુનરાગ્રહ અનિમમુદ છે, અને આ દિશામાં સંચાલની મેનેજમેન્ટ તેમજ આચાર્યશ્રી અને અધ્યાપકશ્રી દ્વારા જાનુ. છે.
૩. અમ. સંચાલકનાં શિક્ષકશ્રી સંદર્ભમાંની ભાગવાચનો અને પોતાની કરજના પાલન માટે તત્પર છે.
૪. આ પ્રત સંચાલકનાં તરફથી ભાગવામાં આવેલા જોડાણો અંગે કેટલીક વર્લોઃ વગેરે અંગેની રિવાતો જરૂરી જવાઈ હતી તે મધ્ય માઢ આ સિવિન નીચે પ્રમાણેનો અભિપ્રાય વ્યક્ત કરે છે.
(અ) કોલેજમાં કોલેજમાં મુખ્ય વિષય તરીકે હિન્દી, સંસ્કૃત, અંગ્રેજી અને ઉપનિષદ વિષય પાઠનું જોડાણ તા. ૧૪-૬-૨૦૦૦ સુધી ભણે તે માટેની ભલામણ કરવામાં આવે છે.
૫. આર.એન. કોલેજમાં ગોલા વિષય તરીકે કોમ્પ્યુટર સાયન્સ તેમજ આંકડાશાસ્ત્રની પદવિઓ એ બે વિષય તરીકે કોલેજ તા. ૧૪-૬-૨૦૦૧ સુધી બળે તેવી ભલામણ કરવામાં આવે છે.
- (બ) કોમર્સ કોલેજમાં ગોલા વિષય તરીકે કોમ્પ્યુટર સાયન્સ માટેનું જોડાણ તા. ૧૪-૬-૨૦૦૧ સુધી ભણે તેવી ભલામણ કરવામાં આવે છે.

ઉપર મુજબની જોડાણને અનુસરીને આંકડાશાસ્ત્ર વિષયમાં ખંડ સંખ્યાના વ્યાખ્યાનાને ખડલે પૂર્ત સંખ્યાના વ્યાખ્યાનીની જરૂરિયાત રીતી થાય તેમ છે. તે કામ અંગે કોલેજ જરૂરી કાર્યવાહી કરશે તે શરતે ઉપરોક્ત વિષય અંગેની ભલામણ કરવામાં આવે છે.

શ્રી. ડી. એમ. શીખ
જો. એન. કે. પટેલ

- (૮) સંસ્થા ધાર્મિક અભ્યાસક્રમનો સરકારી અર્થ કરવા પુરતી નાણાકીય જોગવાઈ છે.
 (૯) અભ્યાસક્રમ સરકારની મંજૂરી મેળે તો ફક્ત સમયમાં જ શૈક્ષણિક તેમ જ વિનયશીલ સ્વરૂપે પુનિવર્તિતીના ધારાધોરણ પ્રમાણે નીચવાની સંસ્થાએ તૈયારી ખતાવી છે.
 (૧૦) પ્રવેશ, અભ્યાસક્રમ, પરીક્ષા, સંકલન, પુનઃ સમીક્ષા, સંચાલન ઈત્યાદિ અને પુનિવર્તિતીના વખતોવખતના વિષયોનું પાલન કરવાની તેમણે પુરતી તૈયારી ખતાવી છે.

ઉપરોક્ત હકીકત જોતાં આ સાર્વેશીક જોડાણની શરતોને આધીન આ સંસ્થા ધર્મશિલ દેશાઈ કાર્ડિનલ દ્વારા, નિધાનને તેમજ સંકુલમાં બી.સી.એ.નો અભ્યાસક્રમ (એક વિભાગમાં ૬૦ વિદ્યાર્થીનો પ્રમાણે) વધુમાં વધુ બે વિભાગ સાર્વેશીક ૧૯૯૯-૨૦૦૦ના વર્ષથી સરકાર જોડાણ આપવા સમિતિ બહાન કરે છે.

સહી
 ડૉ. સરલાબેન અચ્યુતન
 શ્રી આર. પી. સોની

પરિશિષ્ટ "૩/૨૦"
 કામચાલ કામચાલ (૨૦)

Minimum Qualification for the Post of Director, Lecturer, Programmer-cum-Lecturer, Computer Operator etc. in Bachelor of Computer Application

1. Director :
 M.E./M.Tech with First class, B.E./B.Tech. in Computer Science/Engineering/Technology and 10 years experience in Teaching/Research/Computing out of which at least 5 years must be at the level of Reader or equivalent.

OR

- M.C.A. or M.Sc. (Computer Science) and at least 10 years relevant experience in Industry/Profession/Teaching.

Note : Candidate from Industry/Profession/ Education with recognised professional work of high standard at national/international level would also be eligible. Requirement of above qualifications could be relaxed in view of very long experience in computing/teaching Computer Science in a senior supervisory position equivalent to at least a Reader.

Experience should be after the academic qualifications acquired.
 Responsibility : The Director will be in over all charge of the course and will make academic schedules conduct examinations, guide teachers in their teaching programmes, maintain discipline, take part in laboratory establishment, curriculum design/upgradation. He will effectively monitor the progress of the entire BCA course.

2. Lecturer :
 First class B.E./B.Tech. in Computer Science/Engineering Technology

OR

M.C.A. or M.Sc. (Computer Science).

Note : Unless otherwise specified the Masters/Bachelors degree should be with minimum second class and 55% marks.

Responsibility : Lecturer will engage theory and laboratory classes in allotted subjects, conduct tutorials, conduct examinations and tests, provide guidance in development of software for academic administration and help the Director in maintaining good progress of the course. Candidates having teaching experience will be preferred.

3. Programmer-cum-Lecturer
 Qualification as prescribed for lecturer candidate having experience of software development and network administration will be preferred.

Responsibilities : In addition to discharging duties as Lecturer, he will also conduct laboratory classes, develop software for academic administration, manage Laboratory equipment and ensure optimum availability of laboratory facilities. He/She will be required to work in shifts.

1. Computer Operator (to work in shift)
 Post Diploma from recognised University with one year experience of operating computer equipment.

OR

BCA or DEACC 'A' level examination passed

Responsibilities : Provide help in conducting the laboratory classes, development and maintenance and administrative/academic software do all data entry operations, day to day management/maintenance of computer and related equipment and ensure optimum availability of laboratory facilities. He/She will be required to work in shifts.

(9)

૧. શ્રી નરહરિભાઈ એમ. પરીખ	ગેરહાજર
૨. ડૉ. વાપ. કે. અગ્રવાલ	હાજર
૩. પ્રિ. દર્શનસિંહ એમ. શીખ	ગેરહાજર
૪. શ્રી મુકુન્દભાઈ એમ. દેસાઈ	ગેરહાજર
૫. શ્રી બી. એમ. મોદી	હાજર
૬. ડૉ. સી. એ. દેસાઈ	હાજર
૭. ડૉ. હર્ષદભાઈ એમ. દેસાઈ	ગેરહાજર

- [illegible]

१७ + २ + ३ योग तो आपसता आपसी.

२. प्रहसन नेनल सापक्षिती डुमुमेनेन सेन्टर द्वारा लेवामां आलती (असोसिएशन्) (Association)
 in Information Society) वीरसामे आपसी मुनिजिडीनी (M.Lib Soc) नेन्टर ओई लासुमेरी नेन-
 उ-कमेनेन सयसने सपक्ष सामं करल अमे तो बेल्ला तडकुमी आलत त. ३-१०-१९८८तऱा पड. ८
 वी. आसिरीनर-२८१-७५ना पत्र पर बियारसल करवां आपन. (सदरुव पयनी नडल पसिपिड "अम")
 श्री सानेल छे.

૧૦. આ સાથેની યાદીમાં જણાવેલ કુલ ૪૩૩ વિદ્યાર્થીઓને તેમનાં નામ સામે જણાવેલ અભ્યાસક્રમ માટે તરફી પોરબોલ પ્રવેશપાત્ર ગણીને એલિજિબિલિટી સર્ટિફિકેટ આપ્યાના કુલપતિશ્રીના કાર્યની નોંધ લેવા બાબત. (વિદ્યાર્થીઓનાં નામોની યાદી પરિશિષ્ટ "ક" તરીકે સામેલ છે.)

कुलसखिव

એડહોક યાદી-૧૯૯૯

એડહોક યાદી-૧૯૯૭

44 44

युनि.जं नाम

પાસ કરેલ પરીક્ષા

1. કુમાર રાહો, અમદાવાદ
2. નજીલી શાહી દરિદરિદી
3. મેલસા આરુષી દેવી નીમગ
4. યદેરે રાજેશ્વરી રાજીવ
5. પાપાયા આનુકુલ
6. વરરાણીમણી સ્ત્રીના જીવનોઆમ
7. શાહીના બાબરાબ, સોનીનર
8. જુસી રામી મુજીની, અમદાવાદ
9. રામના જી. પંચાલ, મહિસાનગર
10. આશિશ શર્મા, અમદાવાદ
11. સ્ત્રીના આનુકુલ, અમદાવાદ
12. મુંજુ મનર, અંબેના તીમર
13. એન. નાર. કુલપાનક
14. મહેલ જીના સોનીવાર, અમદાવાદ
15. પંચાલ રંજીપાનકેન નંદરવરનાઈ
16. રાણી જેસુ સીરિલ, અમદાવાદ
17. પાનું અમદાવાદ જુસીદા
18. ગુવારાના રામકે અરજી
19. અમદાવાદ
20. અમદાવાદ અમદાવાદ મોહમદ
21. અમદાવાદ રાહુક
22. પાપાયામણ વરરાણીમણ, અમદાવાદ
23. અજિતાના પસરેર, રામની

કયા વર્ષમાં
પ્રવેશ લીધેલ છે ?

સેકન્ડ બી.કોમ
પીએચ.ડી. (સાપકોલોજી)
ફર્સ્ટ એલએલ.બી.
ફર્સ્ટ બી.એ.
બી.ઈ. ૧

કર્ણ બી.એ.
સેકન્ડ બી.એ.
સેકન્ડ બી.એ.
એકન્ડ બી.એસસી.

કચ્છ બી.એ.
સેકન્ડ બી.કૉમ.
સેકન્ડ બી.એ.

(ફિઝિક્સ)
કર્સ્ટ બી.એસસી

એમ.એ.
(હોમ સાયન્સ)
પીએચ.ડી.
(સાંસ્કૃતિકશાસ્ત્ર)
એલએલ.એમ.
બી.ઈ. ૧

કર્ષક બી.એ.

સેકન્ડ બી.કેમ.
બી.ઈ. ૧

(1)

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer in Accountancy in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 10th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri Girish B. Patel, C.A.	Expert
(2) Shri Samir N. Dveta, C.A.	Expert
(1) Shri M. N. Desai	Invitee
(2) Shri R. P. Soni	Invitee
(3) Shri H. K. Trivedi	Invitee
(4) Shri N. R. Sheth	Invitee

After interviewing 19 (Nineteen) candidates who remained present for the interview and considering their relative merits, the Committee recommends to appoint the following candidates :

- (1) Mr. Hetal D. Mehta
- (2) Mrs. R. Radha.

(2)

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer in Management (Finance) in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 10th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri Rajesh Agrawal	Expert
(1) Shri M. N. Desai	Invitee
(2) Shri R. P. Soni	Invitee
(3) Shri H. K. Trivedi	Invitee
(4) Shri N. R. Sheth	Invitee

After interviewing 65 (Sixty Five) candidates who remained present for the interview and considering their relative merits, the Committee recommends to appoint the following candidates :

- (1) Ms. Dpti Swaminarayan
- (2) Mr. Kausik N. Trivedi.

(3)

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer in Management (Marketing) in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 10th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri M. N. Vora	Expert
(1) Shri M. N. Desai	Expert
(2) Shri R. P. Soni	Invitee
(3) Shri H. K. Trivedi	Invitee
(4) Shri N. R. Sheth	Invitee

After interviewing 80 (Eighty) candidates who remained present for the interview and considering their relative merits, the Committee recommends to appoint the following candidates :

- (1) Ms. Minati V. Shah
- (2) Mr. Rajendra Sharma.

(4)

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer in Economics in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 11th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri H. K. Trivedi	Expert
(2) Shri B. M. Mule	Expert
(3) Shri P. M. Narsinhwala	Expert
(1) Shri M. N. Desai	Invitee
(2) Shri R. P. Soni	Invitee
(3) Shri N. R. Sheth	Invitee

After interviewing 24 (Twenty Four) candidates who remained present for the interview and considering their relative merits, the Committee recommends to appoint the following candidates :

- (1) Mr. Ashwini Gupta (The candidate's present salary is Rs. 20,000 per month. It is recommended that the candidate may be appointed as a Senior Lecturer in Economics).
- (2) Ms. Anjali Gokhru (The candidate may be appointed as a Lecturer in Economics).

(5)

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer in Mathematics in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 10th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Dr. J. P. Sharma	Expert
(2) Shri I. H. Sheth	Expert
(1) Shri M. N. Desai	Invitee
(2) Shri R. P. Soni	Invitee
(3) Shri H. K. Trivedi	Invitee
(4) Shri N. R. Sheth	Invitee

After interviewing 41 (Forty one) candidates who remained present for the interview and considering their relative merits, the Committee recommends to appoint the following candidates :

- (1) Ms. Nandita Goswami
- (2) Ms. T. Vasudha

(6)

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer in Statistics in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 10th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri A. V. Gajjar	Expert
(2) Shri J. D. Patel	Expert
(1) Shri M. N. Desai	Invitee
(2) Shri R. P. Soni	Invitee
(3) Shri H. K. Trivedi	Invitee
(4) Shri N. R. Sheth	Invitee

After interviewing 16 (Sixteen) candidates who remained present for the interview and considering their relative merits, the Committee recommends to appoint the following candidates :

- (1) Dr. Jayesh R. Purohit
- (2) Ms. M. Aparna S. Murthy.

(7)

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer in Communication Skills (English) in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 11th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri V. J. Trivedi	Expert
(1) Shri Digvijay Mehta	Expert
(2) Shri B. Singh	Expert
(3) Shri M. N. Desai	Invitree
(1) Shri R. P. Soni	Invitree
(3) Shri H. K. Trivedi	Invitree
(4) Shri N. R. Sheth	Invitree

After interviewing 22 (Twenty two) candidates who remained present for the interview and considering their relative merits, the Committee recommends to appoint the following candidates :

- (1) Mr McDonald Kytte.

(8)

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer in Taxation in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 11th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri Girish B. Patel, C.A.	Expert
(2) Shri Samir Divetia, C.A.	Expert
(1) Shri M. N. Desai	Invitree
(2) Shri R. P. Soni	Invitree
(3) Shri H. K. Trivedi	Invitree
(4) Shri N. R. Sheth	Invitree

After interviewing 3 (Three) candidates who remained present for the interview and considering their relative merits, the Committee recommends as under :

No Candidate was found suitable for the post.

(9)

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer in Mercantile Law in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 11th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri Samir N. Divetia, C.A.	Expert
(1) Shri M. N. Desai	Invitree
(2) Shri R. P. Soni	Invitree
(3) Shri H. K. Trivedi	Invitree
(4) Shri N. R. Sheth	Invitree
(5) Shri Girish B. Patel, C.A.	Invitree

After interviewing 4 (Four) candidates who remained present for the interview and considering their relative merits, the Committee recommends as under :

No candidate was found suitable for the post.

(10)

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer -cum Placement Officer in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 11th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri M. N. Desai	Expert
(2) Shri R. P. Soni	Expert
(3) Shri H. K. Trivedi	Expert
(4) Shri N. R. Sheth	Expert

After interviewing 8 (Eight) candidates who remained present for the interview and considering their relative merits, the Committee recommends to appoint the following candidates :

- (1) Ms Ingita Jain

(11)

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer in Computer Science/Computer Engineering/Information Technology in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 9th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri V. H. Patel, ISRO	Expert
(2) Shri Dholakia, ISRO	Expert
(3) Shri P. S. Shah	Expert
(1) Shri M. N. Desai	Invitree
(2) Shri R. P. Soni	Invitree
(3) Shri H. K. Trivedi	Invitree
(4) Shri N. R. Sheth	Invitree

After interviewing 45 (Forty Five) candidates who remained present for the interview and considering their relative merits, the Committee recommends to appoint the following candidates :

- (1) Ms. Sona Shah
(2) Ms. Gopi Trivedi
(3) Mr. Subodh Shah
(4) Ms. Gayatri Shah
(5) Mr. Sanjay Sheth.

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Lecturer-cum-Programmer in Computer Science/Computer Engineering/Information Technology in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 9th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri V. H. Patel, ISRO	Expert
(2) Shri Dholakia, ISRO	Expert
(3) Shri P. S. Shah	Expert
(1) Shri M. N. Desai	Invitree
(2) Shri R. P. Soni	Invitree
(3) Shri H. K. Trivedi	Invitree
(4) Shri N. R. Sheth	Invitree

After interviewing 35 (Thirty Five) candidates who remained present for the interview and considering their relative merits, the Committee recommends to appoint the following candidates :

- (1) Mr. Harshal Shah
- (2) Ms. Shigra Kohli
- (3) Mr. Hemal Shah.

Confidential

A meeting of the Selection Committee for recommending names for appointment to the post of Computer Operator in the K. S. School of Business Management, Gujarat University, Ahmedabad-380 009 was held on the 9th October, 1999.

The attendance of the Selection Committee Member was as under :

(1) Prof. N. M. Parikh	Director
(1) Shri V. H. Patel, ISRO	Expert
(2) Shri Dholakia, ISRO	Expert
(3) Shri P. S. Shah	Expert
(1) Shri M. N. Desai	Invitree
(2) Shri R. P. Soni	Invitree
(3) Shri H. K. Trivedi	Invitree
(4) Shri N. R. Sheth	Invitree

After interviewing 35 (Thirty Five) candidates who remained present for the interview, the committee does not recommend any names.

MEDICAL COUNCIL OF INDIA

Minimum Qualifications for Teachers in Medical Institutions Regulations, 1998

TABLE-1**REQUIREMENTS OF ACADEMIC QUALIFICATIONS, TEACHING AND RESEARCH EXPERIENCE**

Post	Academic qualifications	Teaching/Research Experience
Principal/ Dean/Director of Medical Institution	Should possess the recognised post-graduate medical qualification and other academic qualification from a recognised institution with a minimum of ten years' teaching experience as Professor/Associate Professor/Reader in a medical college/Institution out of which atleast five years should be as Professor in a department. Preference for these appointments may be given to the Heads of the Departments.	
Director/ Medical Superintendent of the affiliated teaching hospital	Should possess a recognised post-graduate medical qualification from a recognised institution with 10 yrs. administrative experience.	
	ANATOMY	
(a) Professor	M.Sc. (Anatomy)/M.D. (Anatomy) M.B.B.S. with M.Sc. (Anatomy) M.Sc. (Med. Anatomy) with Ph.D. (Med. Anatomy) M.Sc. (Med. Anatomy) with D.Sc. (Med. Anatomy)	(i) As Reader/Associate Professor in Anatomy for four years in a recognised medical college. Desirable (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal. (iii) As Assistant Professor/Lecturer in Anatomy for five years in a recognised medical college. Desirable (iv) Minimum of four Research publications indexed in index Medicus/national journals. (v) Require recognised post graduate qualification in the subject. (vi) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor
(b) Reader/Associate Professor	-do-	
(c) Assistant Professor -do- Lecturer	-do-	
(d) Tutor/ Demonstrator/ Resident/Registrar	M.B.B.S./M.Sc. (Medical Anatomy) for non-medical persons.	

PHYSIOLOGY

(a) Professor M.D.(Physiology)M.B.B.S. with M.Sc.(Physiology) M.Sc.(Med. Physiology) with Ph.D.(Med. Physiology) M.Sc.(Med. Physiology) with D.Sc.(Med. Physiology)

(b) Reader/Associate Professor do-

(c) Assistant Professor do- Lecturer

(d) Tutor: M.B.B.S./M.Sc.(Medical Demonstration/Resident/Registrar persons)

BIOCHEMISTRY

(a) Professor M.D.(Biochemistry)M.B.B.S. with M.Sc.(Med. Biochemistry) M.Sc.(Med. Biochemistry) with Ph.D.(Med. Biochemistry) M.Sc.(Med. Biochemistry) with D.Sc.(Med. Biochemistry)

(b) Reader/Associate Professor do-

(c) Assistant Professor do- Lecturer

(d) Tutor: M.B.B.S./M.Sc.(Medical Demonstration/Resident/Registrar persons)

(i) As Reader/Associate Professor in Physiology for four years in a recognised medical college.

Desirable

(ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.

(iii) As Assistant Professor/Lecturer in Physiology for five years in a recognised medical college.

Desirable

(iv) Minimum of four Research publications indexed in index Medicus/national journals.

(v) Regulate recognised post graduate qualification in the subject.

(vi) Three years teaching experience in the subject in a recognised medical college as Resident Registrar/Demonstrator/Tutor.

(i) As Reader/Associate Professor in Biochemistry for four years in a recognised medical college.

Desirable

(ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.

(iii) As Assistant Professor/Lecturer in Biochemistry for five years in a recognised medical college.

(iv) Minimum of four Research publications indexed in index Medicus/national journals.

(v) Regulate recognised post graduate qualification in the subject.

(vi) Three years teaching experience in the subject in a recognised medical college as Resident Registrar/Demonstrator/Tutor.

BIO-PHYSICS

(a) Professor M.D.(Bio-Physics)/ M.Sc.(Med. Bio-Physics or Med. Biochemistry) with Ph.D.(Med. Bio-Physics) M.D.(Physiology) or M.D.(Biochemistry) with one year training in Bio-Physics

(b) Reader/Associate Professor do-

(c) Assistant Professor do- Lecturer

(d) Tutor: M.B.B.S./M.Sc.(Medical Demonstration/Resident/Registrar persons)

(i) As Reader/Associate Professor in Bio-Physics for four years in a recognised medical college.

Desirable

(ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.

(iii) As Assistant Professor/Lecturer in Bio-Physics for five years in a recognised medical college.

Desirable

(iv) Minimum of four Research publications indexed in index Medicus/national journals.

(v) Regulate recognised post graduate qualification in the subject.

(vi) Three years teaching experience in the subject in a recognised medical college as Resident Registrar/Demonstrator/Tutor.

PHARMACOLOGY

(a) Professor M.D.(Pharmacology)M.B.B.S. with Ph.D.(Med. Pharmacology) M.Sc.(Med. Pharmacology) with Ph.D.(Med. Pharmacology) M.Sc.(Med. Pharmacology) with D.Sc.(Med. Pharmacology)

(b) Reader/Associate Professor do-

(c) Assistant Professor do- Lecturer

(i) As Reader/Associate Professor in Pharmacology for four years in a recognised medical college.

(ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.

(iii) As Assistant Professor/Lecturer in Pharmacology for five years in a recognised medical college.

(iv) Minimum of four Research publications indexed in index Medicus/national journals.

(v) Regulate recognised post graduate qualification in the subject.

(vi) Three years teaching experience in the subject in a recognised medical college as Resident Registrar/Demonstrator/Tutor.

(vii) As Assistant Professor/Lecturer in Pharmacology for five years in a recognised medical college.

(viii) Minimum of four Research publications indexed in index Medicus/national journals.

(ix) Regulate recognised post graduate qualification in the subject.

(x) Three years teaching experience in the subject in a recognised medical college as Resident Registrar/Demonstrator/Tutor.

- (d) Lecturer in Pharmaceutical Chemistry M.Sc. (Pharmaceutical Chemistry)
- (e) Tutor/ Demonstrator/ Resident/Registrar M.B., B.S./M.Sc. (Medical Pharmacology) for non-medical persons.

PATHOLOGY

- (a) Professor M.D. (Pathology)/ Ph.D. (Pathology)/ D.Sc. (Pathology)
- (b) Reader/Associate Professor -do-
- (c) Assistant Professor Lecturer -do-
- (d) Tutor/ Demonstrator/ Resident/Registrar/ Clinical Pathologist M.B., B.S.
- (i) As Reader/Associate Professor in Pathology for four years in a recognised medical college. *Desirable*
- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.
- (i) As Assistant Professor/Lecturer in Pathology for five years in a recognised medical college. *Desirable*
- (ii) Minimum of four Research publications indexed in index Medicus/national journals.
- (i) Requisite recognised post-graduate qualification in the subject.
- (ii) Three years teaching experience in the subject in a recognised medical college as resident/ Registrar/Demonstrator/Tutor.

MICROBIOLOGY

- (a) Professor M.L. (Bacteriology)/ M.D. (Microbiology)/ M.B., B.S. with M.Sc. (Med. Bacteriology)/ M.Sc. (Med. Microbiology)/ Ph.D. (Med. Bacteriology)/ M.Sc. (Med. Bact.) with Ph.D. (Med. Bacteriology)/ M.Sc. (Med. Bact.) with D.Sc. (Med. Bacteriology)/ M.Sc. (Med. Microbiology) with Ph.D. (Med. Microbiology)/ M.Sc. (Med. Microbiology) with D.Sc. (Med. Microbiology)
- (b) As Reader/Associate Professor in Microbiology for four years in a recognised medical college. *Desirable*
- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.

- (b) Reader/Associate Professor -do-

- (c) Assistant Professor Lecturer -do-

- (d) Tutor/ Demonstrator/ Resident/Registrar/ Clinical Pathologist M.B., B.S. M.Sc. (Med. Microbiology) for non-Medical persons.

COMMUNITY MEDICINE

- (a) Professor M.D. (Social & Preventive Medicine)/ M.D. (Community Med.)
- (b) Reader/Associate Professor -do-
- (c) Assistant Professor Lecturer -do-
- (d) Lecturer in Statistics M.Sc. (Statistics)
- (e) Tutor/ Demonstrator/ Resident/Registrar/ Epidemiologist/ Health Officer M.B., B.S.
- (i) As Reader/Associate Professor in Community Medicine/Social and Preventive Medicine for four years in a recognised medical college. *Desirable*
- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.
- (i) As Assistant Professor/Lecturer in Community Medicine/Social and Preventive Medicine for five years in a recognised medical college. *Desirable*
- (ii) Minimum of four Research publications indexed in index Medicus/national journals.
- (i) Requisite recognised post-graduate qualification in the subject.
- (ii) Three years teaching experience in the subject in a recognised medical college as resident/ Registrar/Demonstrator/Tutor.

FORENSIC MEDICINE

- (a) Professor M.D.(Forensic Med.)
- (i) As Reader/Associate Professor in Forensic Medicine for four years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in Index Medicus/National journal and one research publication in International journal.
- (ii) As Assistant Professor/Lecturer in Forensic Medicine for five years in a recognised medical college.
Desirable
- (iii) Minimum of four Research publications indexed in Index Medicus/National journals.
- (iii) Qualifying recognised postgraduate qualification in the subject.
- (iv) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor.
- (b) Reader/Associate Professor -do-
- (c) Assistant Professor -do-
Lecturer
- (d) Tutor M.B.B.S.
Demonstrator/
Resident/Registrar/
Casualty Medical
Officer/Resident
Pathologist

GENERAL MEDICINE

- (a) Professor M.D.(Medicine/General Medicine)
- (i) As Reader/Associate Professor in General Medicine/General Medicine for four years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in Index Medicus/National journal and one research publication in International journal.
- (ii) As Assistant Professor/Lecturer in General Medicine for five years in a recognised medical college.
- (iii) Minimum of four Research publications indexed in Index Medicus/National journals.
- (iii) Qualifying recognised postgraduate qualification in the subject.
- (iv) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor.
- (b) Reader/Associate Professor -do-
- (c) Assistant Professor -do-
Lecturer
- (d) Tutor M.B.B.S.
Demonstrator/
Resident/Registrar

GENERAL SURGERY

- (a) Professor M.S. (Surgery)
M.S. (General Surgery)
- (i) As Reader/Associate Professor in General Surgery/Surgery for four years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in Index Medicus/National journal and one research publication in International journal.
- (ii) As Assistant Professor/Lecturer in General Surgery/Surgery for five years in a recognised medical college.
Desirable
- (iii) Minimum of four Research publications indexed in Index Medicus/National journals.
- (iii) Qualifying recognised postgraduate qualification in the subject.
- (iv) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor.
- (b) Reader/Associate Professor -do-
- (c) Assistant Professor -do-
Lecturer
- (d) Tutor M.B.B.S.
Demonstrator/
Resident/Registrar

OBSTETRICS Gynaecology

- (a) Professor M.D. (Obst. & Gynaec.)
M.S. (Obst. & Gynaec.)
- (i) As Reader/Associate Professor in Obstetrics & Gynaecology for four years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in Index Medicus/National journal and one research publication in International journal.
- (ii) As Assistant Professor/Lecturer in Obstetrics & Gynaecology for five years in a recognised medical college.
Desirable
- (iii) Minimum of four Research publications indexed in Index Medicus/National journal.
- (iii) Qualifying recognised postgraduate qualification in the subject.
- (iv) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor.
- (b) Reader/Associate Professor -do-
- (c) Assistant Professor -do-
Lecturer
- (d) Tutor M.B.B.S.
Demonstrator/
Resident/Registrar

PAEDIATRICS

- (a) Professor M.D. (Paediatrics)
- (b) Reader/Associate Professor -do-
- (c) Assistant Professor Lecturer -do-
- (d) Tutor M.B.B.S.
Demonstrator/
Resident/Registrar
- (i) As Reader/Associate Professor in Paediatrics for four years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.
- (i) As Assistant Professor/Lecturer in Paediatrics for five years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in index Medicus/national journals.
- (i) Requisite recognised post-graduate qualification in the subject.
- (ii) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor.

TUBERCULOSIS & RESPIRATORY MEDICINE/PULMONARY MEDICINE

- (a) Professor M.D. (Tuberculosis)
M.D. (T.B. & Respiratory Disease)
M.D. (Medicine) with T.D.D.,
D.T.D. or D.T.C.D./M.D.
(T.B. & Chest Diseases)
- (b) Reader/Associate Professor -do-
- (c) Assistant Professor Lecturer -do-
- (d) Tutor M.B.B.S.
Demonstrator/
Resident/Registrar
- (i) As Reader/Associate Professor in Tuberculosis and Respiratory Diseases for four years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.
- (i) As Assistant Professor/Lecturer in Tuberculosis and Respiratory diseases for five years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in index Medicus/national journals.
- (i) Requisite recognised post-graduate qualification in the subject.
- (ii) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor.

PSYCHIATRY

- (a) Professor M.D. (Psychiatry)
M.D. (Psychological Med.)/
M.D. in Medicine with
Diploma in Psychological Med.
- (b) Reader/Associate Professor -do-
- (c) Assistant Professor Lecturer -do-
- (d) Tutor M.B.B.S.
Demonstrator/
Resident/Registrar
- (i) As Reader/Associate Professor in Psychiatry for four years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.
- (i) As Assistant Professor/Lecturer in Psychiatry for five years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in index Medicus/national journals.
- (i) Requisite recognised post-graduate qualification in the subject.
- (ii) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor.

Note : For all teaching appointments in Psychiatry to be made after 31st May, 1997 the candidates must possess the M.D. degree in Psychiatry and the holders of D.P.M. qualifications (irrespective of the duration of the course) will not be eligible for such appointments thereafter.

Provided that the requirements of possessing M.D. degree in Psychiatry shall not be applicable for higher appointments in the case of existing teachers holding regular position post whose appointment was initially made on the basis of holding D.P.M. qualifications of two years duration.

DERMATOLOGY, VENEREOLOGY AND LEPROSY

- (a) Professor M.D. (Derm. & Ven.)/
M.D. (Derm., Ven. & Leprosy)
M.D. (Dermatology)
M.D. (Derm. including Ven./Lep)
M.D. (Derm. & Ven.)
M.D. (Medicine) with D.V.D.
or D.D.
- (b) Reader/Associate Professor -do-
- (c) Assistant Professor Lecturer -do-
- (i) As Reader/Associate Professor in Dermatology & Venereology/Leprosy for four years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.
- (i) As Assistant Professor/Lecturer in Dermatology & Venereology/Leprosy for five years in a recognised medical college.
Desirable
- (ii) Minimum of four Research publications indexed in index Medicus/national journals.
- (i) Requisite recognised post-graduate qualification in the subject.
- (ii) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor.

able Tutor. M.B.B.S.
Demonstrator/
Resident/Registrar

Note: Where the department of Venerology and Dermatology are bifurcated the following qualification will be required in the bifurcated departments of Venerology and Dermatology

For Venerology
M.D. (Venerology)
M.D. (Dermatology & Venerology)
M.D. in Medicine with Diploma
in Venerology

For Dermatology
M.D. (Dermatology)
M.D. (Dermatology & Venerology)
M.D. in Medicine with Diploma
in Dermatology

ORTHOPAEDICS

(a) Tutor M.S. (Orthopaedics)

(b) Reader/Associate
Professor

(c) Assistant Professor/
Lecturer

(d) Tutor M.B.B.S.

(e) Demonstrator/
Resident/Registrar

ORTHOPAEDIC SURGERY

(a) Reader/Associate Professor
M.D. (Orthopaedics)

(b) Reader/Associate
Professor

(c) Assistant Professor/
Lecturer

(i) As Reader/Associate Professor in Orthopaedics for four years in a recognised medical college.

Desirable
(ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in international journal.

(iii) As Assistant Professor/Lecturer in Orthopaedics for five years in a recognised medical college.

Desirable
(iv) Minimum of two Research publications indexed in index Medicus/national journals.

(v) Response recognised postgraduate qualification in the subject.

(vi) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor

(i) As Reader/Associate Professor in Orthopaedics for four years in a recognised medical college.

Desirable
(ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in international journal.

(iii) As Assistant Professor/Lecturer in Orthopaedics for five years in a recognised medical college.

Desirable
(iv) Minimum of two Research publications indexed in index Medicus/national journals.

(c) Assistant Professor -do-
Lecturer

(d) Tutor M.B.B.S.
Demonstrator/
Resident/Registrar

RADIO-DIAGNOSIS

(a) Professor M.D. (Radio-Diagnosis)/
M.D. (Radiology)/
M.S. (Radiology)

(b) Reader/Associate
Professor -do-

(c) Assistant Professor/
Lecturer -do-

(d) Tutor M.B.B.S.
Demonstrator/
Resident/Registrar

RADIO-THERAPY

(a) Professor M.D. (Radio-Therapy)/
M.D. (Radiology)/
M.S. (Radiology)

(b) Reader/Associate
Professor -do-

(c) Assistant Professor -do-
Lecturer

(i) Response recognised postgraduate qualification in the subject.
(ii) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor.

(i) As Reader/Associate Professor in Radio-Diagnosis for four years in a recognised medical college.

Desirable
(ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in international journal.

(iii) As Assistant Professor/Lecturer in Radio-Diagnosis/Radiology for five years in a recognised medical college.

Desirable
(iv) Minimum of four Research publications indexed in index Medicus/national journals.

(v) Response recognised postgraduate qualification in the subject.

(vi) Three years teaching experience in the subject in a recognised medical college as resident/Registrar/Demonstrator/Tutor.

(i) As Reader/Associate Professor in Radio-Therapy for four years in a recognised medical college.

Desirable
(ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in international journal.

(iii) As Assistant Professor/Lecturer in Radio-Therapy for five years in a recognised medical college.

Desirable
(iv) Minimum of four Research publications indexed in index Medicus/national journals.

(v) Response recognised postgraduate qualification in the subject.

(d) Tutor/
Demonstrator/
Resident/Registrar

M.B.B.S.

Note : The combined department of Radiology wherever it exists should be bifurcated into Radio-Diagnosis and Radio-Therapy within five years from the date of publication of these regulations.

OTO-RHINO-LARINGOLOGY

- (a) Professor M.S. (Oto-Rhino-Laryngology)
- (i) As Reader/Associate Professor in Oto-Rhino-Laryngology for four years in a recognised medical college.
- Desirable*
- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal
- (b) Reader/Associate Professor do-
- (i) As Assistant Professor/Lecturer in Oto-Rhino-Laryngology for five years in a recognised medical college.
- Desirable*
- (ii) Minimum of four Research publications indexed in index Medicus/national journals.
- (c) Assistant Professor/ Lecturer do-
- (i) Requisite recognised post-graduate qualification in the subject.
- (ii) Three years teaching experience in the subject in a recognised medical college as Reader/Registrar/Demonstrator/Tutor
- (d) Tutor/
Demonstrator/
Resident/Registrar
- M.B.B.S.

OPHTHALMOLOGY

- (a) Professor M.S. (Ophthalmology)
- (i) As Reader/Associate Professor in Ophthalmology for four years in a recognised medical college.
- Desirable*
- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.
- (b) Reader/Associate Professor do-
- (i) As Assistant Professor/Lecturer in Ophthalmology for five years in a recognised medical college.
- Desirable*
- (ii) Minimum of four Research publications indexed in index Medicus/national journals.
- (c) Assistant Professor/ Lecturer do-
- (i) Requisite recognised post-graduate qualification in the subject.
- (ii) Three years teaching experience in the subject in a recognised medical college as Reader/Registrar/Demonstrator/Tutor
- (d) Tutor/
Demonstrator/
Resident/Registrar
- M.B.B.S.

NUCLEAR MEDICINE

- (a) Professor M.D. (Nuclear Medicine)/ M.D. (Radio-Therapy) with two years experience in Medicine in a Nuclear recognised centre/M.D. (Medicine) with D.R.M. or D.N.M./M.D. (Radio-Diagnosis) with two years experience in Nuclear Medicine in a recognised centre/ M.D. (Bio-Physics) or its equivalent qualification in Bio-Physics with D.R.M. or D.N.M. or D.N.B. in Nuclear Medicine with two years experience in Nuclear Medicine in a recognised centre
- (b) Reader do-
- (c) Lecturer do-
- (d) Tutor/
Registrar/Resident
- M.B.B.S.
- (i) As Reader in Nuclear Medicine for four years in a recognised medical college
- (ii) Requisite recognised post-graduate qualification in the subject

NUTRITION

- (a) Professor M.D. Biochemistry/Physiology/ Pathology/Medicine/Social and Preventive Medicine/Community Medicine or Paediatrics with M.Sc. in applied Nutrition or special training for a period of one year
- (b) Reader/Associate Professor do-
- (c) Assistant Professor/ Lecturer do-
- (d) Tutor/
Demonstrator/
Resident/Registrar
- M.B.B.S.
- (i) As Reader/Associate Professor in Nutrition for four years in a recognised medical college.
- Desirable*
- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal
- (iii) As Assistant Professor/Lecturer in Nutrition for five years in a recognised medical college.
- Desirable*
- (iv) Minimum of four Research publications indexed in index Medicus/national journals.
- (v) Requisite recognised post-graduate qualification in the subject.
- (vi) Three years teaching experience in the subject in a recognised medical college as Reader/Registrar/Demonstrator/Tutor

PHYSICAL MEDICINE AND REHABILITATION

- (a) Professor M.D. (P.M.P.) / M.D. (Medicine) with Diploma in P.M.P. or M.D. (General Surgery) / M.N. (Orthopaedics) with two years special training in the specialty
- (b) Reader/Associate Professor in Physical Medicine and Rehabilitation for four years in a recognised medical college.
- Desirable*

Desirable

- (ii) Minimum of four Research publications indexed in index Medicus/ational journal and one research publication in International journal
- (i) As Assistant Professor/Lecturer in Family Medicine/General Medicine for five years in a recognised medical college

Desirable

- (ii) Minimum of four Research publications indexed in index Medicus/ational journals
- (i) Requisite recognised post-graduate qualification in the subject
- (ii) Three years teaching experience in the subject in a recognised medical college as Resident/Registrar/Demonstrator/Tutor

(d) Tutor M.B.B.S
Demonstrator/
Resident/Registrar

AVIATION MEDICINE/AEROSPACE MEDICINE

(i) M.D. (Aviation Medicine)/
M.D. (Aerospace Medicine)

(ii) Reader/Associate
Professor

(iii) Assistant Professor
Lecturer

(iv) Tutor M.B.B.S
Demonstrator/
Resident/Registrar

(v) Assistant Professor M.D. (Family Medicine/
M.D. (General Medicine)
M.D. (Geriatrics)

- (i) As Reader/Associate Professor in Aviation Medicine/Aerospace Medicine for four years in a recognised medical college

Desirable

- (ii) Minimum of four Research publications indexed in index Medicus/ational journal and one research publication in International journal

- (i) As Assistant Professor/Lecturer in Aviation Medicine/Aerospace Medicine for five years in a recognised medical college

Desirable

- (ii) Minimum of four Research publications indexed in index Medicus/ational journals
- (i) Requisite recognised post-graduate qualification in the subject
- (ii) Three years teaching experience in the subject in a recognised medical college as Resident/Registrar/Demonstrator/Tutor

GERIATRICS

- (i) As Reader/Associate Professor in Family Medicine/General Medicine/Geriatrics for four years in a recognised medical college

Desirable

- (ii) Minimum of four Research publications indexed in index

(ii) Reader/Associate
Professor

(iii) Assistant Professor
Lecturer

(iv) Tutor M.B.B.S
Demonstrator/
Resident/Registrar

(v) Professor

(vi) Reader/Associate
Professor

(vii) Assistant Professor/
Lecturer

(viii) Tutor M.B.B.S
Demonstrator/
Resident/Registrar

(ix) Professor

(x) Assistant Professor/
Lecturer

(xi) Tutor M.B.B.S
Demonstrator/
Resident/Registrar

HEALTH ADMINISTRATION

M.D. (Health Administration)
M.D. (Hospital Administration)
M.D. (Community Health
Administration)

(xii) Reader/Associate
Professor

(xiii) Assistant Professor/
Lecturer

(xiv) Tutor M.B.B.S
Demonstrator/
Resident/Registrar

(xv) Professor

(xvi) Assistant Professor/
Lecturer

(xvii) Tutor M.B.B.S
Demonstrator/
Resident/Registrar

(i) Assistant Professor/
Lecturer

(ii) Reader/Associate
Professor

(iii) Assistant Professor/
Lecturer

(iv) Tutor M.B.B.S
Demonstrator/
Resident/Registrar

(v) Professor

(vi) Assistant Professor/
Lecturer

(vii) Reader/Associate
Professor

(viii) Assistant Professor/
Lecturer

(ix) Tutor M.B.B.S
Demonstrator/
Resident/Registrar

(x) Professor

(xi) Assistant Professor/
Lecturer

(xii) Reader/Associate
Professor

(xiii) Assistant Professor/
Lecturer

(xiv) Tutor M.B.B.S
Demonstrator/
Resident/Registrar

(xv) Professor

(xvi) Assistant Professor/
Lecturer

(xvii) Reader/Associate
Professor

(xviii) Assistant Professor/
Lecturer

(xix) Tutor M.B.B.S
Demonstrator/
Resident/Registrar

(xx) Professor

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Multidisciplinary journal and one research publication in International Journal

(b) Reader/Associate Professor

do

- (i) As Assistant Professor/lecturer in Hospital Administration/Community Medicine/S.P.M./Health Administration for five years in a recognised medical college.

Desirable

- (ii) Minimum of four Research publications indexed in Index Medicus/national journals
- (iii) Research experience/professional qualification in the subject
- (iv) Three years teaching experience in the subject in a recognised medical college in India or foreign

(c) Assistant Professor Lecturer

do

(d) Tutor Demonstrator/Resident/Registrar

M.B.B.S.

SPORTS MEDICINE

Professor

M.D. (Sports Medicine)
M.S. (Orthopaedics)
M.D. (Physical Medicine & Rehabilitation) 11 years experience in Sports Medicine

- (i) As Assistant Professor/lecturer in Sports Medicine and Rehabilitation for five years in a recognised medical college

Desirable

- (ii) Minimum of four research publications indexed in Index Medicus/national journals

Desirable

- (iii) Research experience/professional qualification in the subject

Desirable

- (iv) Three years teaching experience in the subject in a recognised medical college in India or foreign

PHYSIOLOGY

M.D. (Physiology)
M.D. (Physiology)
M.D. (Physiology)
Two years experience in Physiology

- (i) As Assistant Professor/lecturer in Physiology for five years in a recognised medical college

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(b) Reader/Associate Professor

do

(c) Assistant Professor Lecturer

do

(d) Tutor Demonstrator/Resident/Registrar

M.B.B.S.

RHEUMATOLOGY

(a) Professor

M.D. (Rheumatology)
M.D. (Medicine)
Two years experience in Rheumatology/Immunology

- (i) As Assistant Professor/lecturer in Rheumatology and Immunology for five years in a recognised medical college

Desirable

- (ii) Minimum of four research publications indexed in Index Medicus/national journals

Desirable

- (iii) Research experience/professional qualification in the subject

Desirable

- (iv) Three years teaching experience in the subject in a recognised medical college in India or foreign

(b) Reader/Associate Professor

do

(c) Assistant Professor Lecturer

do

(d) Tutor Demonstrator/Resident/Registrar

M.B.B.S.

PHYSIOLOGY

(a) Professor

M.D. (Physiology)
M.D. (Physiology)
Two years experience in Physiology

- (i) As Assistant Professor/lecturer in Physiology for five years in a recognised medical college

Desirable

- (ii) Minimum of four research publications indexed in Index Medicus/national journals

(b) Reader/Associate Professor

(c) Assistant Professor Lecturer

(d) Tutor/Demonstrator/Resident/Registrar

(e) Professor M.D. (Physiology/M.D. (Medicine) with two years' special training in Marine Medicine

(f) Reader/Associate Professor

(g) Assistant Professor Lecturer

(h) Tutor/Demonstrator/Resident/Registrar

(i) Professor M.D. (Physiology/M.D. (Medicine) with two years' special training in Occupational Health

(j) Reader/Associate Professor

MARINE MEDICINE

(1) As Assistant Professor/Lecturer in Health Education for five years in a recognised medical college.

Desirable:
(ii) Minimum of four Research publications indexed in Index Medicus/national journals.

(iii) Recognised post-graduate qualification in the subject.

(iv) Three years teaching experience in the subject in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

(1) As Reader/Associate Professor in Marine Medicine for four years in a recognised medical college.

Desirable:
(ii) Minimum of four Research publications indexed in Index Medicus/national journal and one research publication in international journal.

(iii) As Assistant Professor/Lecturer in Marine Medicine for five years in a recognised medical college.

Desirable:
(iv) Minimum of four Research publications indexed in Index Medicus/national journals.

(v) Recognised post-graduate qualification in the subject.

(vi) Three years teaching experience in the subject in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

(1) As Assistant Professor/Lecturer in Health Education for five years in a recognised medical college.

Desirable:
(ii) Minimum of four Research publications indexed in Index Medicus/national journals.

(iii) Recognised post-graduate qualification in the subject.

(iv) Three years teaching experience in the subject in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

(v) Minimum of four Research publications indexed in Index Medicus/national journals.

(vi) Recognised post-graduate qualification in the subject.

PUBLIC HEALTH

(1) As Assistant Professor/Lecturer

(2) As Assistant Professor Lecturer

(3) As Professor M.D. (Community Med./M.D. (Social & Prev. Med.)/M.D. (Health Administration)

(4) As Reader/Associate Professor

(5) As Assistant Professor Lecturer

(6) As Tutor/Demonstrator/Resident/Registrar

(7) As Professor M.D. (Physiol./Chem./Biophysics) with Ph.D. (Physiol./Chem./Biophysics)

(8) As Reader/Associate Professor

(9) As Assistant Professor Lecturer

(10) Requisite recognition of post-graduate qualification in the subject.
(11) Three years teaching experience in the subject in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

(12) As Reader/Associate Professor in Public Health for four years in a recognised medical college.

Desirable:
(13) Minimum of four Research publications indexed in Index Medicus/national journal and one research publication in international journal.

(14) As Assistant Professor/Lecturer in Public Health for five years in a recognised medical college.

Desirable:
(15) Minimum of four Research publications indexed in Index Medicus/national journal.

(16) Requisite recognition of post-graduate qualification in the subject.

(17) Three years teaching experience in the subject in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

(18) As Reader/Associate Professor in Radiological Physics for four years in a recognised medical college.

Desirable:
(19) Minimum of four Research publications indexed in Index Medicus/national journal and one research publication in international journal.

(20) As Assistant Professor/Lecturer in Radiological Physics for five years in a recognised medical college.

Desirable:
(21) Minimum of four Research publications indexed in Index Medicus/national journal.

(22) Requisite recognition of post-graduate qualification in the subject.

ଉପସ୍ଥାପନା କରାଯିବ : ଡି. ୧୮-୧୧-୧୯୯୯

- (ii) Three years teaching experience in the subject in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

(d) Tutor/
Demonstrator/
Resident/Registrar M.Sc. (Phy./Chem./Biophysics)

VIROLOGY

(a) Professor M.D. (Microbiology)/
M.D. (Pathology)/
M.D. (Medicine) with two
years special training in Virology/
M.Sc. (Medical Virology with
Ph.D. in Virology.

(b) Reader/Associate
Professor do-

(c) Assistant Professor
Lecturer do-

(d) Tutor/
Demonstrator/
Resident/Registrar M.B.B.S.

(a) Professor M.D.S.

DENTISTRY

(b) Assistant Professor
Lecturer do-

(c) Assistant Professor
Lecturer B.D.S. preferably
with M.B.B.S.

- (i) As Reader/Associate Professor in Virology for four years in a recognised medical college.
Desirable

- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.

- (iii) As Assistant Professor/Lecturer in Virology for five years in a recognised medical college.
Desirable

- (iv) Minimum of four Research publications indexed in index Medicus/national journals.

- (v) Requisite recognised post-graduate qualification in the subject.

- (vi) Three years teaching experience in the subject in a recognised medical college as Resident/Registrar/Demonstrator/Tutor

- (i) As Reader/Associate Professor in Dentistry for four years in a recognised Medical College/Dental College.
Desirable

- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one research publication in International journal.

- (iii) As Assistant Professor/Lecturer in Dentistry for five years in a recognised Medical College/Dental College.
Desirable

- (iv) Minimum of four Research publications indexed in index Medicus/national journals.

- (v) Requisite recognised post-graduate qualification in the subject.

- (vi) Three years teaching experience in the subject in a recognised medical college as Resident/Registrar/Demonstrator/Tutor

ଉପସ୍ଥାପନା କରାଯିବ : ଡି. ୧୮-୧୧-୧୯୯୯

(d) Tutor/

Demonstrator/

Resident/Registrar.

TABLE - 2 REQUIREMENT OF SPECIAL ACADEMIC QUALIFICATION AND TEACHING RESEARCH EXPERIENCE FOR SUPER-SPECIALITY TEACHERS

CARDIOLOGY

(a) Professor

M.D. (Cardiology)

(b) Reader/Associate
Professor

do-

(c) Assistant Professor
Lecturer

do-

(d) Tutor/Resident/
Registrar/
Demonstrator.

M.B.B.S.

CLINICAL HAEMATOLOGY

(a) Professor

M.D. (Clinical Haematology)
M.D. (Medicine) or
M.D. (Pathology) or
M.D. (Pathology) with 2 years
special training in Clinical
Haematology

(b) Reader/Associate
Professor

do-

(c) Assistant Professor
Lecturer

do-

- (i) As Reader/Associate Professor in Cardiology for four years (recognised Medical College) Teaching position
Desirable

- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one in International journal.

- (iii) As Assistant Professor/Lecturer in Cardiology for five years in a recognised Medical College Teaching position
Desirable

- (iv) Minimum of four Research publications indexed in index Medicus/national journals.

- (v) Requisite recognised post-graduate qualification in the subject.

- (vi) Three years teaching experience in the Cardiology in a recognised medical college as Resident/Registrar/Demonstrator/Tutor

- (i) As Reader/Associate Professor in Clinical Haematology for four years in a recognised Medical College Teaching position
Desirable

- (ii) Minimum of four Research publications indexed in index Medicus/national journal and one in International journal.

- (iii) As Assistant Professor/Lecturer in Clinical Haematology for five years in a recognised Medical College Teaching position
Desirable

- (iv) Minimum of four Research publications indexed in index Medicus/national journals.

- (v) Requisite recognised post-graduate qualification in the subject.

- (vi) Three years teaching experience in the Clinical Haematology in a recognised medical college as Resident/Registrar/Demonstrator/Tutor

(d) Tutor/Resident/
Registrar/
Demonstrator

M.B.B.S.

CLINICAL PHARMACOLOGY

(a) Professor
D.M. (Clinical Pharmacology)
M.D. (Pharmacology)
with 2 years special training
in Clinical Pharmacology

(i) As Reader/Associate Professor
in Clinical Pharmacology for
four years in a recognised
Medical College/ Teaching
Institution.
Desirable

(ii) Minimum of four Research
publications indexed in index
Medicobiosnational journal and one
in International journal

(i) As Assistant Professor/Lecturer
in Clinical Pharmacology for two
years in a recognised Medical
College/Teaching Institution.
Desirable

(ii) Minimum of four Research publi-
cations indexed in index Medicobio-
national journals

(i) requisite recognised specialisation
qualification in the subject.

(ii) Three years teaching experience
in the Clinical Pharmacology in a
recognised medical college as
Resident/Registrar/Demonstrator/
Tutor.

(d) Reader/Associate
Professor

-do-

(c) Assistant Professor/
Lecturer

-do-

(d) Tutor/Resident/
Registrar/
Demonstrator

M.B.B.S.

ENDOCRINOLOGY

(a) Professor
D.M. (Endocrinology)
M.D. (Medicine) or
M.D. (Paediatrics) with
2 years special training
in Endocrinology

(i) As Reader/Associate Professor
in Endocrinology for
four years in a recognised
Medical College/ Teaching
Institution.
Desirable

(ii) Minimum of four Research
publications indexed in index
Medicobiosnational journal and one
in International journal

(i) As Assistant Professor/Lecturer
in Endocrinology for two years in
a recognised Medical College/ Teaching
Institution.
Desirable

(ii) Minimum of four Research publi-
cations indexed in index Medicobio-
national journals

(i) requisite recognised specialisation
qualification in the subject

(ii) Three years teaching experience
in the Endocrinology in a
recognised medical college as
Resident/Registrar/Demonstrator/
Tutor.

(d) Reader/Associate
Professor

-do-

(c) Assistant Professor/
Lecturer

-do-

(d) Tutor/Resident/
Registrar/
Demonstrator

M.P.B.S.

IMMUNOLOGY

(a) Professor

D.M. (Immunology/
M.D. (Medicine) or
M.D. (Pathology) or
M.D. (Microbiology) or
M.D. (Paediatrics) with
2 years special training
in Immunology

(i) As Reader/Associate Professor
in Immunology for
four years in a recognised
Medical College/ Teaching
Institution.
Desirable

(ii) Minimum of four Research
publications indexed in index
Medicobiosnational journal and one
in International journal

(i) As Assistant Professor/Lecturer
in Immunology for two years in
recognised Medical College/Teaching
Institution.
Desirable

(ii) Minimum of four Research publi-
cations indexed in index Medicobio-
national journals

(i) requisite recognised specialisation
qualification in the subject.

(ii) Three years teaching experience
in the Immunology in a recognised
medical college as Resident/Regis-
trar/Demonstrator/Tutor.

(b) Reader/Associate
Professor

-do-

(c) Assistant Professor/
Lecturer

-do-

(d) Tutor/Resident/
Registrar/
Demonstrator

M.B.B.S.

MEDICAL GASTROENTEROLOGY

(a) Professor

D.M. (Med. Gastroenterology/
M.D. (Gastroenterology) or
M.D. (Medicine) or
M.D. (Paediatrics)
with 2 years special
training in Gastroenterology

(i) As Reader/Associate Professor
in Gastroenterology for
four years in a recognised
Medical College/ Teaching
Institution.
Desirable

(ii) Minimum of four Research
publications indexed in index
Medicobiosnational journal and one
in International journal

(i) As Assistant Professor/Lecturer
in Gastroenterology for two years
in a recognised Medical College/
Teaching Institution.
Desirable

(ii) Minimum of four Research publi-
cations indexed in index Medicobio-
national journals

(i) requisite recognised specialisation
qualification in the subject

(ii) Three years teaching experience
in the Gastroenterology in a
recognised medical college as
Resident/Registrar/Demonstrator/
Tutor.

(b) Reader/Associate
Professor

-do-

(c) Assistant Professor/
Lecturer

-do-

(d) Tutor/Resident/
Registrar/
Demonstrator

M.B.B.S.

MEDICAL GENETICS (SUPER-SPECIALITY)

- (a) Professor D.M. (Med. Genetics)/
M.D. (Paediatrics) or
M.D. (Medicine) or
M.S. (Anatomy)
with two years special
training in Med. Genetics
- (b) Reader/Associate
Professor -do-
- (c) Assistant Professor
Lecturer -do-
- (d) Tutor/Resident/
Registrar/
Demonstrator M.B.B.S.

MEDICAL ONCOLOGY

- (a) Professor D.M. (Medical Oncology)/
M.D. (Medicine) or
M.D. (Radio-therapy) or
M.S. (Paediatrics)
with two years special
training in Medical Oncology
- (b) Reader/Associate
Professor -do-
- (c) Assistant Professor
Lecturer -do-
- (d) Tutor/Resident/
Registrar/
Demonstrator M.B.B.S.
- (i) As Reader/Associate Professor
in Medical Oncology
for four years in a
recognised Medical College/
Teaching Institution.
Desirable
- (ii) Minimum of four Research
publications indexed in index
Medicus/national journal and one
in International journal.
- (iii) As Assistant Professor/Lecturer
in Medical Oncology for two
years in a recognised Medical
College/Teaching Institution.
Desirable
- (iv) Minimum of four Research publi-
cations indexed in index Medicus/
national journals.
- (v) Requisite recognised specialisation
qualification in the subject.
- (vi) Three years teaching experience
in the Medical Oncology in a
recognised medical college as
Resident/Registrar/Demonstrator/
Tutor.

NEONATOLOGY

- (a) Professor D.M. (Neonatology)/
M.D. (Paediatrics)
with two years special
training in Neonatology
- (b) Reader/Associate
Professor -do-
- (c) Assistant Professor
Lecturer -do-
- (d) Tutor/Resident/
Registrar/
Demonstrator M.B.B.S.
- (i) As Reader/Associate Professor
in Neonatology for four years in
a recognised Medical College/
Teaching Institution.
Desirable
- (ii) Minimum of four Research
publications indexed in index
Medicus/national journal and one
in International journal.
- (iii) As Assistant Professor/Lecturer
in Neonatology for two years
in a recognised Medical College/
Teaching Institution.
Desirable
- (iv) Minimum of four Research publi-
cations indexed in index Medicus/
national journals.
- (v) Requisite recognised specialisation
qualification in the subject.
- (vi) Three years teaching experience
in the Neonatology in a recognised
medical college as Resident/Reg-
istrar/Demonstrator/Tutor.

NEPHROLOGY

- (a) Professor D.M. (Nephrology)
- (b) Reader/Associate
Professor -do-
- (c) Assistant Professor
Lecturer -do-
- (d) Tutor/Resident/
Registrar/
Demonstrator M.B.B.S.
- (i) As Reader/Associate Professor in
Nephrology for four years in a
recognised Medical College/
Teaching Institution.
Desirable
- (ii) Minimum of four Research
publications indexed in index
Medicus/national journal and one
in International journal.
- (iii) As Assistant Professor/Lecturer
in Nephrology for two years in a
recognised Medical College/
Teaching Institution.
Desirable
- (iv) Minimum of four Research publi-
cations indexed in index Medicus/
national journals.
- (v) Requisite recognised specialisation
qualification in the subject.
- (vi) Three years teaching experience
in the Nephrology in a recognised
medical college as Resident/Reg-
istrar/Demonstrator/Tutor.

NEUROLOGY

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Professor	D.M. (Neurology)	(i) As Reader/Associate Professor in Neurology for four years in a recognised Medical College/Teaching Institution. <i>Desirable</i>
Reader/Associate Professor	-do-	(ii) Minimum of four Research publications indexed in index Medicus/national journal and one in International journal.
Assistant Professor/Lecturer	-do-	(i) As Assistant Professor/Lecturer in Neurology for two years in a recognised Medical College/Teaching Institution. <i>Desirable</i>
Resident/Demonstrator	M.B.B.S.	(ii) Minimum of four Research publications indexed in index Medicus/national journals.
		(i) Requisite recognised specialisation qualification in the subject.
		(ii) Three years teaching experience in the Neurology in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

CARDIO VASCULAR & THORACIC SURGERY

Professor	M.Ch. (Cardio Vascular & Thoracic Surgery) or M.B. (Cardiac Surgery)/ M.Ch. (Thoracic Surgery) M.Ch. (Vascular Surgery)	(i) As Reader/Associate Professor in Cardio Vascular & Thoracic Surgery/Cardiac Surgery/Vascular Surgery/Thoracic Surgery for four years in a recognised Medical College/Teaching Institution. <i>Desirable</i>
Reader/Associate Professor	-do-	(ii) Minimum of four Research publications indexed in index Medicus/national journal and one in International journal.
Assistant Professor/Lecturer	-do-	(i) As Assistant Professor/Lecturer in Cardio Vascular & Thoracic Surgery/Cardiac Surgery/Vascular Surgery/Thoracic Surgery for two years in a recognised Medical College/Teaching Institution. <i>Desirable</i>
Resident/Demonstrator	M.B.B.S.	(ii) Minimum of four Research publications indexed in index Medicus/national journals.
		(i) Requisite recognised specialisation qualification in the subject.
		(ii) Three years teaching experience in Cardio Vascular & Thoracic Surgery in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

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(d) Tutor/Resident/Registrar/Demonstrator.

UROLOGY

(a) Professor	M.Ch. (Urology)	(i) As Reader/Associate Professor in Urology for four years in a recognised Medical College/Teaching Institution. <i>Desirable</i>
(b) Reader/Associate Professor	-do-	(ii) Minimum of four Research publications indexed in index Medicus/national journal and one in International journal.
(c) Assistant Professor/Lecturer	-do-	(i) As Assistant Professor/Lecturer in Urology for two years in a recognised Medical College/Teaching Institution. <i>Desirable</i>
(d) Tutor/Resident/Registrar/Demonstrator	M.B.B.S.	(ii) Minimum of four Research publications indexed in index Medicus/national journals.
		(i) Requisite recognised specialisation qualification in the subject.
		(ii) Three years teaching experience in the Urology in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

NEURO SURGERY

(a) Professor	M.Ch. (Neuro Surgery)	(i) As Reader/Associate Professor in Neuro Surgery for four years in a recognised Medical College/Teaching Institution. <i>Desirable</i>
(b) Reader/Associate Professor	-do-	(ii) Minimum of four Research publications indexed in index Medicus/national journal and one in International journal.
(c) Assistant Professor/Lecturer	-do-	(i) As Assistant Professor/Lecturer in Neuro Surgery for two years in a recognised Medical College/Teaching Institution. <i>Desirable</i>
		(ii) Minimum of four Research publications indexed in index Medicus/national journals.
		(i) Requisite recognised specialisation qualification in the subject.
		(ii) Three years teaching experience in the Neuro Surgery in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

(d) Tutor/Resident/
Registrar/
Demonstrator

M.B.B.S.

PAEDIATRIC SURGERY

(a) Professor M.Ch. (Paediatric Surgery)

(i) As Reader/Associate Professor in Paediatric Surgery for four years in a recognised Medical College/Teaching Institution
Desirable

(ii) Minimum of four Research publications indexed in index Medicus/national journal and one in International journal.

(b) Reader/Associate Professor -do-

(i) As Assistant Professor/Lecturer in Paediatric Surgery for two years in a recognised Medical College/Teaching Institution.
Desirable

(ii) Minimum of four Research publications indexed in index Medicus/national journals.

(c) Assistant Professor Lecturer -do-

(i) Requisite recognised specialisation qualification in the subject.

(ii) Three years teaching experience in the Paediatric Surgery in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

(d) Tutor/Resident/
Registrar/
Demonstrator

M.B.B.S.

PLASTIC AND RECONSTRUCTIVE SURGERY

(a) Professor M.Ch. (Plastic and
Reconstructive Surgery)/
M.Ch. (Blastic Surgery)

(i) As Reader/Associate Professor in Plastic and Reconstructive Surgery for four years in a recognised Medical College/Teaching Institution.
Desirable

(ii) Minimum of four Research publications indexed in index Medicus/national journal and one in International journal.

(b) Reader/Associate Professor -do-

(i) As Assistant Professor/Lecturer in Plastic and Reconstructive Surgery for two years in a recognised Medical College/Teaching Institution.
Desirable

(ii) Minimum of four Research publications indexed in index Medicus/national journals.

(c) Assistant Professor Lecturer -do-

(i) Requisite recognised specialisation qualification in the subject.

(ii) Three years teaching experience in the Plastic and Reconstructive Surgery in a recognised medical college as Resident/Registrar/Demonstrator/Tutor.

(d) Tutor/Resident/
Registrar/
Demonstrator

M.B.B.S.

SURGICAL GASTROENTEROLOGY

(a) Professor M.Ch. (Surgical
Gastroenterology)/
M.S. (Surgery) with two
years special training in
Surgical Gastroenterology

(i) As Reader/Associate Professor in Surgical Gastroenterology for four years in a recognised Medical College/Teaching Institution.
Desirable

(ii) Minimum of four Research publications indexed in index Medicus/national journal and one in International journal.

(b) Reader/Associate Professor -do-

(i) As Assistant Professor/Lecturer in Surgical Gastroenterology for two years in a recognised Medical College/Teaching Institution.
Desirable

(ii) Minimum of four Research publications indexed in index Medicus/national journals.

(c) Assistant Professor Lecturer -do-

(i) Requisite recognised specialisation qualification in the subject.

(ii) Three years teaching experience in the Surgical Gastroenterology in a recognised Medical College as Resident/Registrar/Demonstrator/Tutor.

(d) Tutor/Resident/
Registrar/
Demonstrator

M.B.B.S.

SURGICAL ONCOLOGY

(a) Professor M.Ch. (Surgical Oncology)/
M.S. (Surgery)/M.S. (F.N.T.)
M.S. (Orthopaedics) or
M.D. (Obs. & Gynaec.) with
two years special training in
Surgical Oncology

(i) As Reader/Associate Professor in Surgical Oncology for four years in a recognised Medical College/Teaching Institution.
Desirable

(ii) Minimum of four Research publications indexed in index Medicus/national journal and one in International journal.

(b) Reader/Associate Professor -do-

(i) As Assistant Professor/Lecturer in Surgical Oncology for two years in a recognised Medical College/Teaching Institution.
Desirable

(ii) Minimum of four Research publications indexed in index Medicus/national journals.

(c) Assistant Professor Lecturer -do-

(i) Requisite recognised specialisation qualification in the subject.

(ii) Three years teaching experience in the Surgical Oncology in a recognised Medical College as Resident/Registrar/Demonstrator/Tutor.

(d) Tutor/Resident/
Registrar/
Demonstrator

M.B.B.S.

SCHEDULE - II

The following qualifications be treated at par with M.D./M.S. awarded by Indian Universities :

1. 'Facharzt Fuer Chirurgia' (Specialist Surgen) (West Germany)
2. 'Facharzt Fuer Gynaekologie' (Specialist of Gynaecology) (West Germany)
3. F.R.C.S. (Fellowship of the Royal Australian College of Surgens)
4. 'Diploma in Certificate D Eludes Specialist D of Medicine Electro-Radiologie (Certificate of Special Studies of Medical Electro-Radiology) (Paris, France)
5. F.R.C.S. (Canada), F.R.C.S. (Canada)
6. M.C.P.A. (Membership of the College of Pathologist of Australia).
7. Diploma in Psychiatry (Mc Gill University) (Montreal, Canada)
8. Diploma in Psychiatry (Edinburgh University)
9. Dr. P.H. of John Hopkins, Harward and California Universities (U.S.A.)
10. M.R.C. Path (Lond.) F.R.C. Path (London)
11. 'Facharzt Fuer Innera Frankheiten' (Specialist Internal Medicine) (West Germany)
12. Candidate of Science (Doctor of Philosophy) in Medicine Branch Plastic Surgery (Hungary) awarded by Hungarian Academy of Medical Science, Budapest.
13. 'Facharzt Fuer Kinderheikunde' (Children Specialist) (West Germany)
14. M.A.M.S./M.N.A.M.S./D.N.B. qualification when granted on or after 1st June, 1976 granted National Board of Examinations, New Delhi after due examination and fulfilling one year research experience.
15. F.F.R. of U.K. by examination
16. F.R.C.S. or M.R.C.P. of Royal Colleges of U.K.
17. M.Ch. (Orthopaedics) (Liverpool)
18. Approved qualifications from speciality Boards of U.S.A.
19. Ph.D. awarded by Supreme Attestation Commission (Moscow) granted to students sponsored by Medical Council of India or to other students fulfilling the minimum eligibility criteria for admission to undergraduate courses in India and admitted in the institutions of erstwhile U.S.S.R., recognised by the Medical Council of India, for undergraduate or postgraduate courses upto 1989.

Note : Other qualifications will be evaluated by the Council as and when reference is received.

N.B. —

1. M.R.C.P., M.R.C. (Path.), F.R.C.S., F.F.A.R.C.S. refer to the Diploma of Membership and Fellowship awarded by all the Royal Colleges of U.K., prior to 11-11-1978.
2. Holders of Speciality Boards of U.S.A. qualifications should complete the entire requirements of the Board concerned
3. In the case of qualifications in higher specialities (M.Ch./D.M.), the holder should have also obtained M.D. (Gen. Medicine) or M.S. (Gen. Surgery) or an equivalent qualification as prescribed by the Council in its recommendations on Postgraduate Medical Education. This requirement may be relaxed in suitable cases in cases of candidates who have obtained M.Ch./D.M. after a direct 5 years, which are recognised by the Council.
4. After 31st May, 1977, for all teaching appointments to posts higher than tutor in higher specialities i.e. Cardiology, Neurology, Thoracic-Surgery, Neuro-Surgery, Plastic-Surgery, Paediatric-Surgery, Urology, the candidates must possess postgraduate degree qualifications in the speciality concerned i.e. D.M./M.Ch. approved by the Council from time to time. Where teachers with D.M./M.Ch. qualifications are not available in respects of the courses which have not yet been started, matter regarding relaxation of qualification and experience of Postgraduate teachers may be taken up with the Medical Council of India.
Provided that the requirements of possessing Post-graduate degree qualification in the concerned higher speciality shall not be applicable for higher appointments in the case of existing teachers holding regular teaching post whose appointment was initially made on the basis of two years special training in the speciality after the requisite M.D./M.S.
5. All British qualifications obtained after 11-11-1978 will cease to be recognised qualifications.
6. From January, 1985 all fresh entrants as teachers in Medical College should have the requisite recognised Indian Postgraduate medical qualifications (recognised by the Medical Council of India).

Sd Dr. M. Sachdeva
Secretary