



RANI CHANNAMMA UNIVERSITY, BELAGAVI

WEL-COME

**TO THE COURSE STRUCTRE AND SYLLABUS OF UNDER GRADUATE
PROGRAMMES – B.Sc/B.H.Sc.**

I Semester

**with effect from
Academic Year 2014-15 and onwards**

B.Sc/B.H.Sc.

I – SEMESTER Group – II

OPTIONAL / COMPULSORY SUBJECT FOR THE DEGREE IN SCIENCE SUBJECTS

Science Subjects: (any three subject of equal importance to be chosen as per the grouping given by Rani Channamma University, Belagavi)

DETAILED SYLLABUS OF FOLLOWING PAPERS WITH PRACTICALS

1. BOTANY (optional)

Course pattern

Semester	Title of the paper	Number of hours/week/paper	Duration of Examination	Internal Assement Marks - 20/10				Semester end Examination Marks
				I Test	II Test	SEMI/PROJ/ASIGN	ATTENDANCE	
I	PLANT ANATOMY & EMBRYOLOGY	04 HOURS	03 HOURS	04	10	03	03	80
	LAB	04 HOURS	04 HOURS	10				40
II	PLANT PHYSIOLOGY / BIOCHEMISTRY AND PHARAMACOGNOSY	04 HOURS	03 HOURS	04	10	03	03	80
	LAB	04 HOURS	04 HOURS	10				40
III	ALGAE FUNGL,BRYO PHYTES,PTERIOOPHYTES,GYMNOSPERMS	04 HOURS	03 HOURS	04	10	03	03	80
	LAB	04 HOURS	04 HOURS	10				40
IV	DIVERSITY OF ANGIOSPERMS AND THEIR SYSTEMATIC	04 HOURS	03 HOURS	04	10	03	03	80

	LAB	04 HOURS	04 HOURS	10				40
V Paper-I	PLANT BREEDING, TISSUE CULTURE, HARVEST TECHNOLOGY AND WEED MANAGEMENT	04 HOURS	03 HOURS	04	10	03	03	80
	LAB	04 HOURS	04 HOURS	10				40
V Paper-II	ECOLOGY, ENVIRONMENTAL BIOLOGY AND PHYTOGEOGRAPHY	04 HOURS	03 HOURS	04	10	03	03	80
	LAB	04 HOURS	04 HOURS	10				40
VI Paper-I	CELL BIOLOGY, GENETICS AND EVOLUTION	04 HOURS	03 HOURS	04	10	03	03	80
	LAB	04 HOURS	04 HOURS	10				40
VI Paper-II	MOLECULAR BIOLOGY, BIOTECHNOLOGY AND IMMUNOLOGY	04 HOURS	03 HOURS	04	10	03	03	80
	LAB	04 HOURS	04 HOURS	10				40

Individual passing is required in theory and practical.

BOTANY SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc. I – SEMESTER

Paper-I PLANT ANATOMY AND EMBRYOLOGY

UNIT-I

10 Hours

Tissues- meristems , types , characters, histological organisation of root & shoot apices theories.

Permanent tissues- simple & complex. Types of vascular bundles.

Tissue systems- dermal, secretory, mechanical, nectory, laticiferous & oil Glands.

UNIT-II

10 Hours

Internal structure of primary plant body- root, stem & leaf (dicot & monocot)

Secondary growth – root & stem.

Abnormal secondary growth – general account with the examples Bignonia, Boerhaavia, Dracaena & Beetroot.

UNIT-III

10 Hours

Wood anatomy- General account, ring porous, diffuse porous, distribution & types of wood parenchyma, Tracheary elements, fibre types.

UNIT-IV

10 Hours

Anther – development, microsporogenesis & male gametophyte, .MGU. Palynology applications of palynology in taxonomy, coal, oil exploration & forensic science.

Ovule – development, types, structure of anatropous ovule, megasporogenesis, development of gametophyte-monosporic, bisporic & tetrasporic types (Peperomia, Drusa, Fritillaria & Adoxa.) & FGU.

UNIT-V

10 Hours

Fertilization – Pollen –pistil interaction, entry of pollen tube into the stigma, style & embryo sac, double fertilization.

Endosperm – Types. Embryogeny – dicots (crucifer) & monocot (grass). A brief account of polyembryony & apomixis & their significance.

BOTANY PRACTICALS

B.Sc. I - SEMESTER

Practical-I

Total number of hours per week: 04

Internal Assessment=10 Marks

Total No. of hours per Semester: 52

Practicals: 40 Marks

Non- living cell inclusions – reserve, secretory & excretory.

Demonstration of double–staining technique (sectioning, staining & mounting)

Tissue organisation in root & shoot using permanent slides, Simple tissues:different types of parenchyma, collenchyma & sclerenchyma (sclereids & fibres).

Complex tissues – xylem & phloem (in T.S & L.S) & maceration technique.

Primary internal structures of root, stem and leaf (dicot & monocot).

Normal secondary growth – dicot stem and root (stelar and extra stelar)

Abnormal secondary growth – Bignonia, Boerhaavia, Dracaena & Beet root.

Microscopic study of wood in T.S, TLS & RLS.

Demonstration of Microtomy.

Study of microsporogenesis, Ovule types and megasporogenesis by using permanent slides.

Structure of pollen grain using whole mounts (Catharanthes and Hibiscus),.

Structure of endosperm (nuclear & cellular), development types of dicot & monocot embryos using permanent slides.

Isolation & mounting of endosperm & embryo (cucumis and maize grain).

1. Make a double stained micropreparation of T.S of material. 'A' Draw a labelled diagram & mention the features of anatomical interest (show the preparation to the examiner)

Marks 08

2. Make a temporary micropreparation of specimen 'B' so as to expose and draw the diagram. (show the preparation to the examiner)

Marks 05

3. Mount non- living cell inclusion in this specimen 'C' and draw the diagram (show the preparation to the examiner).

Marks 05

4. Mount endosperm/embryo in the specimen 'D' and draw the diagram (show the preparation to the examiner)

Marks 05

5. Identify & mention the important features observed in the slide / material E ,F ,G and H Marks

6. Journal

Marks 05

B.Sc. I Semester
Practical Examination
Subject: Botany

Instructions to Examiners.

- Q.1. Material A- Bignonia, Boerhaavia, Dracaena stem. **8 marks**
(Preparation -4 marks, Diagram- 2 marks, Explanation- 2 marks).
- Q.2. Specimen B- Sclereids, Vascular bundles, Lenticel, Tylosis, Stomata,
Types of wood. **5 marks**
(Preparation -3 marks, Diagram- 1mark, oral- 1mark).
- Q.3. Specimen C- Reserve, Secretory and Excretory Products. 5 marks
(Preparation -3 marks, Diagram- 1mark, oral- 1mark).
- Q.4. Specimen D- Mounting of Embryo /Endosperm- Cucumis seeds/Maize
grain. **5 marks**
(Preparation -3 marks, Diagram- 2 marks).
- Q.5. E- Slide from anatomy. **12 marks**
F- Material from microtomy.
G and H – Slides from Embryology.
- Q.6. Journal **5 marks**

Books for Reference:

1. Sundara Rajan (1998) College Botany, Himalaya Publication House
Vol.1 and Vol. 2 Nagapur
2. Dutta A.C. (1968) A Botany for Degree Oxford Press, London
3. Tayal M.S. (1983) Plant Anatomy Rastogi Publication,
Meerut
4. Ganguli, Das, Dutta (1981) College Botany New Central Book
Agency Vol. 1 Kolkatta
5. Pandey B.P. (1993) Plant Anatomy S.Chand & Co. Pvt. Ltd.
6. Saxena A.K. & R.P. Sarabhai A text Book of Botany Kitab Ghar, Gwalior
Vol. 2 Embryophyta Pergamon Press, Oxford
7. Fahn A (1967) Plant Anatomy
8. Singh V, Pande P.C. D.K. Anatomy of Seed Plants Restogi Publication,
Meerut
9. Esau K (1977) Anatomy of Seed Plants John Wiley & Sons, New York.
10. Earnes A.J. & Introduction to Plant Mc. Graw Hill Book Pub.
L.H. MacDaniel (1947) Anatomy New York.
11. Maheshwari P. (1972) An Introduction to Tata Mc Graw Hill Book
Pub. Embryology of Angiosperms
12. Bhojwani S.S. Bhatnagar S.P. Embryology of Angiosperms Vikas Pub. House. Pvt.
Ltd. New York .
13. Pandey B.P. (2003) Embryology of Angiosperms S. Chand & Co. Pvt. Ltd.

B.Sc I Semester

Theory Examination Subject: Botany Pattern of Question Paper

Time: 3 Hours

Max Marks: 80

All Questions are compulsory

Q.I - Answer any ten out of twelve (1 to 12 sub- questions)

10x2=20

From Unit 1- Plant Anatomy: 05 sub- questions.

From Unit 2- Plant Embryology: 07 sub- questions.

Q.II -Answer any six out of Eight
(13 to 20 sub- questions)

6x5=30

From Unit 1- Plant Anatomy: 4 sub- questions.

From Unit 2- Plant Embryology: 4sub -questions.

Q.III- Descriptive Answers.

21. From Unit 1- Plant Anatomy.

1x10=10

Or

From Unit 1- Plant Anatomy.

22. From Unit 2- Plant Embryology.

1x10=10

Or

From Unit 2- Plant Embryology.

23. From Unit 1- Plant Anatomy.

1x10=10

Or

From Unit 2- Plant Embryology.

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2. BIOTECHNOLOGY (Optional)

SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc. I Semester

COURSE STRUCTURE AND SCHEME OF EXAMINATION FOR BIOTECHNOLOGY(Optional)

sem	Paper Title	Instruction Hrs per week		Examination Marks		Internal Assessment Marks		Duration of Examination Hrs		Total Marks
		Theory	Practical	Theory	Practical	Theory	Practical	Theory	Practical	
I	Paper 1.1 Cell Biology and Genetics	4		80		20		3		150
	Practical 1.2 Cell Biology and Genetics		4		40		10		4	
II	Paper 2.1 Biomolecules and Analytical Techniques	4		80		20		3		150
	Practical 2.2 Biomolecules and Analytical Techniques		4		40		10		4	
	Practical 5.4 Genetic Engineering		4		40		10		4	
	Practical 6.4 Agricultural and Medical Biotechnology		4		40		10		4	

SYLLABUS FOR BIOTECHNOLOGY (Optional)

B.Sc I Semester

PAPER-I CELL BIOLOGY AND GENETICS

Total hours allotted: 60

PART A: CELL BIOLOGY

Total hours allotted: 30

1. General Introduction and Cell as a basic unit of life: Introduction to Biotechnology, scope and branches of Biotechnology. Historical perspectives, the cell theory, Ultra structure of plant and Animal cell and different types of cells.

(05 Hrs)

2. **Ultra structure of cell organelles:** Cell wall, Plasma membrane, Mitochondria, Chloroplast, Ribosome, Golgi Complex, Endoplasmic reticulum, Nucleus, Lysosome, Peroxisomes, Vacuoles, Cytosol and Cytoskeleton structures, Cell –Cell interaction

(08 Hrs)

3. **Chromosomes:**

Discovery, morphology and structural organization: number, size and types, Chromosomal morphology, fine structure and models, heterochromatin and Euchromatin, giant chromosomes.

(05 Hrs)

4. **Cell Division:**

Cell cycle, Mitosis and Meiosis and applications.

(03 Hrs)

5. **Transport across Cell Membrane:** Active and passive transport.

(02Hrs)

6. **Muscle and Nerve cell:** structure and functions in brief.

(03 Hrs)

7. **Gametogenesis:** Spermatogenesis and Oogenesis.

(02 Hrs)

8. Cell senescence and programmed cell death.

(02 Hrs)

PART B: GENETICS

Total hours allotted: 30

1. Introduction:

History and scope and branches of Genetics. (02 Hrs)

2. Mendelism:

Mendel's work, Laws of heredity, Test-cross, Incomplete Dominance and simple problems.
(02 Hrs)

3. Interaction of Genes:

Supplementary factors : Comb pattern in Fowls
Complementary factors : Flower color in sweet pea
Multiple factors : Skin color in human beings
Multiple allelism : Blood group in human beings
Epistasis : Plumage color in Poultry (05 Hrs)

4. Sex determination in Plants and Animals:

Concept of allosomes and autosomes, XX-XY, XX-XO, ZW-ZZ,ZO-ZZ Types (02 Hrs)

5. Linkage and crossing over:

Coupling and repulsion hypothesis, Linkage in maize and Drosophila,
Mechanism of crossing over and its importance, chromosomal mapping-
Linkage map in maize (04 Hrs)

6. Chromosomal variation:

Structural and numerical aberration, chromosomal evolution in Wheat and Cotton (03 Hrs)

7. Cytoplasmic inheritance:

Plastid inheritance in Mirabilis, Petite character in yeast and Kappa particles in
paramecium. (02 Hrs)

8. Mutations:

Types-Spontaneous and Induced; Mutagens – Physical and chemical mutagens, Induced mutations in Plants, Animals and Microbes for economic benefit. (04Hrs)

9. Population Genetics: Hardy Weinberg law and its role in evaluation and speciation. (03 Hrs)

10. Human Genetics:

Karyotype in man, Inherited disorders – Allosomal (Klenfelters and Turner's syndrome), Autosomal (Downs and Cri-du-chat syndrome) (03 Hrs)

PRACTICALS-I CELL BIOLOGY AND GENETICS

- 1. Study of fixatives and stains:** Preparation of Formaldehyde (4-10%), Alcohol (70- 100%), Bouin's fixative, Carnoy's solution, Borax carmine (alcoholic), Eosin (alcoholic), Heamatoxylin, Acetocarmine, Aceto-orcein, Schiff's reagent (Feulgen method), Giemsa Stain.
- 2. Squash preparation:** Onion root tip to study stages of mitosis.
- 3. Squash preparation:** Grasshopper testis to study stages of meiosis.
- 4. Squash preparation of salivary gland chromosomes:**
Drosophila/Chironomous larva.
5. Karyotyping analysis.
6. Micrometry.
7. Buccal epithelial smear and Barr body.
8. Extraction of cellular materials in saline buffers, solvents and precipitation.
9. Demonstration of Laws of inheritance by using color beads
 - a) Law of segregation
 - b) Law of independent assortment
 - c) Solve genetic problems

10. Each student is required to submit 5 permanent slides of Mitosis and Meiosis: at

least two from each.

References:

CELL BIOLOGY:

Alberts, B. Bray, D. Lewis, J. Roff, M. Roberts, K, and Watson, J D 1994: 3rd edition, molecular biology of "The Cell".

Bolsover, S.R Hysams, J.E Jones, S. Shepherd, E.A and White, ,

H.A.1997:From genes to cells wileys-less .Inc New York.

Cambell, N .A .Mitchell, L .G. and Reece, J.B. 1996:General Biology.

Benjamin cunning .

Cooper , GM. 1997 The Cell : A molecular approach , ASM press , USA .

De- Robertis , E.D.P. and Robertis , E.M.S. 1996 : Cell and Molecular Biology , Holt Saunders International .

Garrett , R.H. and Gresham , C.M. 1995 : Molecular aspects of cell biology , International edition , Saunders college publishing

P.K.Gupta Cell and molecular. Biology:

Gilbert and Raunio 1997 : Embryology – constructing the organism

Holly Ahern 1992 : Introduction to Experimental Cell biology , W.M.C.

Brown publishers

Inder Singh , 1997: Text book of human Histology , Jaypee brothers

Medical publishers , New Delhi.

Karp , G. 2000 Cell and Molecular Biology : Concepts and Experiments , John Willey and sons Inc. New York .

Lodish .H.Berk. A. Zipursky , S.L. Matsiduvavia . P. Baltimore , D.

Darnell ,J . 2000: Molecular cell Biology , Freeman W.H. and co. New York .

Singh , H.R. 2000 : Animal Physiology and related Biochemistry , S.

Loban lal Nagin Chand and co. Educational publishers , New Delhi.

Smith and Wood 1992 : Cell biology , Chapman and Hall .

Tobin and Morel 1997 ; Asking about “ Cells “ Saunders College Publishing .

Vasudev Rao , K.1994 : Developmental Biology – A modern Synthesis ,
Oxford IBH publishing .

Wilson , E.B. : Cells in Development and inheritance , Mac Millan , New York.

GENETICS :

Daniel .L Hartl , “ Basic Genetics” , Jones and Barlett Publishers USA.

Edgar Attenburg , “ Genetics” , Oxford and IBH Publications .

Fairbanks , D.J.R. Anderson , W.R. 1999 : Genetics , the continuity of
life . Brooke and Cole Publication. Co. New York.

Lewin . B. 2000 : Gene VII , Oxford University Press , New York .

Lewin , R 1999 : Human Genetics : Concept and applications , 3 edition
WCB , Mc Graw Hills Dubuque , IA.

Miglani G.S. 2000, “ Basic Genetics” Narosa publishing house . New Delhi .

Sandhya Mitra , “ Genetics – Blue print of life” Tata Mc. Graw Hill
publications

Snuustad , P.D. and Simmons , M.J. 2000 : Principles of Genetics , 2nd
Ed. John Wiley and Sons Inc. New York.

Stricberger , M.W. 1995 : Genetics 3 Ed. Prentice Hall Inc. London .

Sturitevant , A. Hand Bredle , G.W. 1989: An Introduction to genetic W.B. Saunders Philadelphia .

Tamarin , R.M. 2000: Principles of genetics 6 Ed. WMC Publication co. London.

Winchester Sinnot and Dorm , “ Principles of Genetics” .

3.CHEIMSTRY (Optional)

SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc I Semester

Optional Subject : **CHEMISTRY (Optional)** Teaching and Evaluation Scheme

COURSE PATTERN

Semester	Particulars	Instruction Hours per week	Duration of Exams	Internal Assessment Marks	Examination Marks
I	Theory Paper-I	4hrs	3hrs	20	80
	Practical-I	4 hrs	4 hrs	10	40
II	Theory Paper-II	4hrs	3hrs	20	80
	Practical-II	4 hrs	4 hrs	10	40

CHEMISTRY SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc I Semester

Paper-I

Teaching Hours : 50 Hours

Inorganic Chemistry

UNIT-I Atomic structure and Periodic trends 6 hours

Review of Bohr's model of hydrogen atom-Postulates of Bohr's theory, Bohr's theory of hydrogen atom, calculation of radius and energy of nth orbital, electronic transitions and origin of spectral lines of hydrogen atom.

Quantum numbers and their significance, electronic configuration of the elements up to atomic number 60, Aufbau principle, Hund's rule, (n+1) rule, Pauli's exclusion principle.

UNIT-II Chemical bonding- I 4 hours

Ionic bonding: factors affecting the formation of ionic bonding, Lattice energy and its determination by Born-Haber cycle.

Covalent bond: Types, factors favouring covalent bond, properties of covalent compounds.

Valence bond theory with respect to H₂, F₂, HCl molecules and its limitations.

UNIT-III Methods of analysis 3 hours

Errors in quantitative analysis, classification and minimization, accuracy, precision, standard deviation, t-test, significant figure and rules for computations.

UNIT-IV Principles of volumetric analysis 4 hours

Concentration terms, normality, molarity, mole fraction, percentage, primary standard solution, titration-acid-base, precipitation, iodometric, redox and complexometric(with reference to EDTA) titrations, choice of indicators in the above titrations.

Organic Chemistry

UNIT-I Purification of organic compounds 05 hours

Methods of purification of solids: Crystallization, fractional crystallization and sublimation.

Method of purification of liquids: Distillation, fractional distillation, distillation under reduced pressure, steam distillation.

Chromatography: General principles, types, brief outline of thin layer chromatography, paper chromatography and column chromatography, solvent extraction.

Criteria of purity: Melting point and boiling point.

UNIT-II Spectroscopy 06 hours

Introduction to conventional methods of elucidation of structure of organic compounds (chemical degradation) and comparison with spectroscopic methods, electromagnetic spectrum.

UV spectroscopy: Principle, types of transitions, chromophores, concept of auxochromes and their effect on λ_{\max} , bathochromic shift, hypsochromic shift, hypochromic and hyperchromic shift.

Woodward and Fieser rules and illustration of calculation of λ_{\max} taking myrcene and B-phelladrene as examples.

UNIT-III Stereochemistry of organic molecules

06 hours

Cycloalkanes: Baeyer's strain theory, calculation of angle strain, Sachse Mohr theory of strainless rings. Chair and boat forms of cyclohexane. Axial and equatorial bonds.

Conformational isomerism: Basic concept of conformational analysis with reference to ethane and butane.

Geometrical isomerism: definition, E and Z notation for 2-butene and butenedioic acid, rules for assigning notations. Determination of configuration of butenedioic acid by anhydride formation, dipole moment measurement, melting point and stability.

Optical isomerism: Chirality, van't Hoff-Lebel hypothesis, optical activity, D and L-configurations, R and S notations, sequence and priority rules, enantiomers, distereoisomers, epimers, anomers, racemic and meso (with suitable examples like lactic and tartaric acids.), racemisation, resolution of racemic mixture by chemical method, asymmetric synthesis, Walden inversion.

Physical Chemistry

UNIT-I Gaseous State

07 hours

Real gas isotherms, Andrew's experiment of CO_2 , PV-relationship, critical phenomenon of gases.

Critical constants(P_c , V_c , T_c) – Definition, of critical temperature, critical pressure & critical volume. Relationship between critical constants and Vanderwaals constants, experimental determination of critical constants, reduced equation of state and statement of law of corresponding states.

Liquification of gases(Linde's method only), Maxwell's law of distribution of molecular velocities(No derivation), effect temperature on distribution of molecular velocities.

UNIT-II Solutions

04hours

Solution of gas in liquid – Henry's law and limitations.

Completely miscible liquid pairs. azeotropes, theory of azeotropic mixtures, partially miscible liquid systems, critical solution temperature with respect to phenol water, triethyl amine-water and nicotine-water system.

UNIT-III Salt-hydrolysis

4 hours

Types of salts, definition of degree of hydrolysis and hydrolysis constant derive the relation between K_h , K_a & K_w and expression for pH in case of hydrolysis of the following - salts of weak base and strong acid, weak acid and strong base. Numerical problems.

UNIT-IV Nernst distribution law

2 hours

Statement and limitations, applications of Nernst distribution law in solvent extraction.

Reference books for inorganic chemistry

- | | |
|--|-------------------------------|
| 01. Advanced Inorganic Chemistry | Cotton and Wilkinson |
| 02. Concise Inorganic Chemistry | J.D. Lee |
| 03. Inorganic Chemistry | Huhe and Keiter |
| 04. Inorganic Chemistry | Shriver and Atkin |
| 05. Principles of Inorganic Chemistry | Puri and shrama |
| 06. Inorganic Chemistry | A. G. Sharpe |
| 07. Essential Chemistry | R. Chand |
| 08. University Chemistry | Mahan and Myers |
| 09. Modern Inorganic Chemistry | Madan |
| 10. Modern Inorganic Chemistry | Satya prakash |
| 11. Inorganic Chemistry for Under graduates | R. Gopalan |
| 12. College Practical Chemistry | Ahluwalia, Dhingra and Gulati |
| 13. Instrumental method of chemical analysis | Willard, Martin and Dean |

Books recommended for organic chemistry:

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|------------------------------------|--------------------------|
| 01. Text Book of Organic Chemistry | Bahl and Bahl |
| 02. Organic Spectroscopy | P.S. Kalsi |
| 03. Organic Chemistry | I. L. Finar Vol I and II |
| 04. Advanced Organic Chemistry | Jerry March |
| 05. Organic Chemistry | Morrison & Boyd |
| 06. Modern Organic Chemistry | Norman & Wadding |

Books recommended for physical chemistry:

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|--|------------------------|
| 01. Physical Chemistry | P.W. Atkins |
| 02. Introduction to Physical Chemistry | Mark Latd |
| 03. Text Book of Physical Chemistry | S. Glastone |
| 04. Principles of Physical Chemistry | Puri Sharma & Pathania |
| 05. Text Book of Physical Chemistry | P.L.Soni |
| 06. Text Book of Physical Chemistry | M.V. Sangaranarayanan |

CHEMISTRY PRACTICALS

B.Sc I Semester

Practical-I

Total number of hours per week: 04

Internal Assessment=10 Marks

Total No. of hours per Semester: 52

Practicals: 40 Marks

- A. Demonstration of calibration of glasswares(burette, pipette) and weights(grams and milligrams).
- B. Preparation of standard solution, calculation of mass of the solute to be dissolved in 250ml solution to get required normality.
- C. Volumetric estimations
 - 01. Estimation of NaOH using standard oxalic acid solution.
 - 02. Estimation of KMnO_4 using standard oxalic acid solution.
 - 03. Estimation of KMnO_4 using standard FAS solution.
 - 04. Estimation of iodine using standard thiosulphate solution.
 - 05. Estimation of zinc using standard EDTA solution.
 - 06. Estimation of total hardness using standard EDTA solution.
 - 07. Estimation of available chlorine in bleaching powder by iodometric method.
 - 08. Estimation of carbonate and bicarbonate in a mixture using phenolphthalein and methyl orange indicators.
- D. Simple gravimetric experiments
- E. Determination of the percentage loss in weight of I) Zinc carbonate II) barium chloride III) mixture of barium sulphate and ammonium chloride IV) Mixture of Zinc oxide and Zinc carbonate on heating.

CHEMISTRY (Optional)

QUESTION PAPER PATTERN FOR ALL SEMESTER (w. e. f 2014-15 onwards)

Time : 3 Hours] [Max. Marks: 80

Section-A

- 01) Answer any ten questions, each carries two marks. 2x10=20
- a)
 - b)
 - c)
 - d)
 - e)
 - f)
 - g)
 - h)
 - i)
 - j)
 - k)
 - l)

Section-B

- Answer any five questions. 5X4=20
- 02)
 - 03)
 - 04)
 - 05)
 - 06)
 - 07)

Section-C

- Answer any four questions. 5X8=40
- 07)
 - 08)
 - 09)
 - 10)
 - 11)
 - 12)

4. COMPUTER SCIENCE (Optional)

Subject Code	Subject Name	Workload		Max Marks	IA	Total Marks
		Hrs/week Th	Pr			
Semester - I						
14BSCCSCT11	Computer Concepts & C- Programming	04	-	80	20	100
14BSCCSCP12	C- Programming Lab	-	04	40	10	50
Semester - II						
14BS CSCT21	Data Structure Using C	04	-	80	20	100
14BSCCSCP2	Data Structure Lab	-	04	40	10	50
Semester - III						
14BSCCSCT31	OOPs Using C++	04	-	80	20	100
14BSCCSCP32	C++ Programming Lab	-	04	40	10	50
Semester - IV						
14BSCCSCT41	Introduction to UNIX	04	-	80	20	100
14BSCCSCP42	UNIX Programming Lab	-	04	40	10	50
Semester - V						
14BSCCSCT51	Operating System	04	-	80	20	100
14BSCCSC 5	Operating System Lab	-	04	40	10	50
14BSCCSCT53	Database Management System	04	-	80	20	100
14BSCCSCP5	DBMS Lab	-	04	40	10	50
Semester – VI						
14BSCCSCT61	Computer Networks	04	-	80	20	100
14BSCCSCP62	Computer Networks Lab	-	04	40	10	50
14BSCCSCT63	Core Java	04	-	80	20	100
14BSCCSCP64	Java Programming Lab	-	04	40	10	50

B.Sc I Semester

Paper-I Computer Concepts & C- Programming Teaching Hours : 50 Hours

COMPUTER SCIENCE (Optional)

Unit 1:

Introduction to Computer: definition of computer, history and generation of computers, characteristics of computer, classification of computer, uses of computer. System logical organization, Block diagram of computer system-Central Processing unit (ALU, CU, Main memory), Input / Output unit.

Hardware: Input devices – Keyboard, Mouse, Light pen, Joystick, Scanner, and Digitizer. Output devices- monitor, projector, printers (dot matrix, inkjet, laser, Plotter), Secondary storage devices –Hard disk, Optical disk, Floppy disk, CD-ROM.

Software: System software, Operating, System Application Software, high level, Machine and Assembly level language. Translator, compiler, interpreter, Assembler and editor. Merits and demerits of all the language. **10 Hrs**

Unit 2:

Number System: decimal, binary, octal and hexadecimal number systems and their conversions. Addition, and subtraction of binary numbers, one's complement, two's complement.

Computer Programming: Basic Programming concept : Modular Programming and structured programming. Algorithm and Flowcharts.

Overview of C : Introduction, Importance of 'C', Basic structure of 'C' program, sample 'C' Programs , Executing a 'C' Program.

Constants, Variables and Data types: character set, 'C' Tokens, keywords, identifiers, constants, variables, data types, declaration of variables, assigning values to variables, defining symbolic constants. **10 Hrs**

Unit 3:

Operators and expression : Arithmetic operators, Relational operators, Logical operators, bitwise operators, Assignment operators, increment and decrement operators, conditional operators, special operators, some computational problems type conversion in expressions, operator precedence and associativity. Mathematical functions.

Managing input and output operators: Input and Output statements, reading a character, writing characters, formatted input, formatted output statements. **08 Hrs**

Unit 4:

Decision making, Branching and looping: Decision making with IF statements, simple IF statements, The IF-ELSE statements, nesting of IF..ELSE statements, The ELSE- IF ladder, The switch statement, The ?: operator, The GOTO statement, The WHILE statement, The DO statements, The FOR statements, jumps in loops.

Arrays: Definition of array, One Dimensional arrays- definition, declaring, initializing and processing of 1-D array. Two-dimensional arrays - definition, initializing and processing of 2-D array. Multidimensional arrays.

Handling of character strings: Declaring and initializing string variables, reading string from terminal, writing string to screen, arithmetic operation on characters, putting string together. Comparison of two strings, string handling functions, two dimensional array of character. **12 Hrs**

Unit 5:

User defined functions: Need for user-defined function, a multi-functional program the form of 'C' function, Return values and their types, calling a function, category of function- No arguments and no return values, arguments but no return values, arguments with return values, handling of non integer functions, nesting of functions, functions with arrays.

Structure and union: Structure definition, giving values to members, initialization, comparison of structure variables, array as structure, array within union. **10 Hrs**

Text Books:

1. E.Balaguruswamy: Programming in ANSI C Tata Mc Graw-Hill
2. Kamthane, Programming with ANSI and Turbo C. Pearson Education

References:

1. V.Rajaraman : " Fundamentals of Computers "
2. S.Byron Gottfried : Programming with C,Tata McGraw-Hill
3. Yashawant Kanetkar " Let us C"
4. Brain Verminghan & Dennis M.Ritchie " ANSI C Programming "
5. Ramkumar & Rakesh Aggarwal " ANSI C Programming"
6. Kernighan, C – Programming Language ANSI C Version. Pearson Education.
7. Venkateshmurthy, Programming Techniques through C. Pearson Education.
8. P. B. Kotur "Computer Concepts and C Programming".
9. A. M. Padma Reddy "Concepts of computer and C Programming"

COMPUTER SCIENCE PRACTICALS

B.Sc I Semester

Practical-I

Programs.

1. Write a C program to find root of the given quadratic equation using switch case.
2. Write a C program to generate and print n Fibonacci number.
3. Write a C program to find gcd and lcm of two integer number.
4. Write a C program to reverse a given number and check whether the number is palindrome or not.
5. Write a C program to find whether a given number is prime or not.
6. Write a C program to input numbers and to find mean, variance and standard deviation.
7. Write a C program to read two matrices and perform addition and subtractions of two matrices.
8. Write a C program to find the given string is palindrome or not.
9. Write a C program to find the factorial of a number using function.
10. Write a C program to find if a character is alphabetic or number or special Character.
11. Write a C program to compute the sum of even numbers and the sum of odd numbers using a function.
12. Write a C program to find trace and normal of a square matrix using function.
13. Write a C program to convert a sentence from lower case to upper case.
14. Write a C program to find string length of without using library function.
15. Write a C program to swap two number using functions.

Practical Examination

Evaluation criteria for practical examinations shall be as follows:

1. Writing of Programs -15 Marks

- a. One program from the journal list – 08 Marks
- b. Another program given by examiner based on the concepts studied -07Marks

2. Execution of programs – 15 Marks

- a. Journal Program - 08 Marks
- b. Program of Examiner's Choice -07 Marks

3. Viva-Voce -05 Marks

4. Journal / Laboratory Report – 5 Marks

Total Marks -40 Marks

COMPUTER SCIENCE (Optional)

B.Sc I Semester

QUESTION PAPER PATTERN FOR ALL SEMESTER

THEORY PAPERS

Question paper has to be set for total marks of 80.

Section–A: Ten questions to be answered out of twelve each carry 2 marks

$$2 \times 10 = 20$$

Note: Two questions to be set from each unit, and last two questions from any unit.

Section–B: Five questions to be answered out of six each carry 5 marks

$$4 \times 5 = 20$$

Section–C: Four questions to be answered out of six each carry 10 marks

$$10 \times 4 = 40$$

Total Marks = 80

Practical Examination

Evaluation criteria for practical examinations shall be as follows:

1. Writing of Programs -15 Marks

a. One program from the journal list – 08 Marks

b. Another program given by examiner based on the concepts studied -07Marks

2. Execution of programs – 15 Marks

a. Journal Program - 08 Marks

b. Program of Examiner's Choice -07 Marks

3. Viva-Voce -05 Marks

4. Journal / Laboratory Report – 5 Marks

Total Marks -40 Marks

COMPUTER SCIENCE (Optional)

**QUESTION PAPER PATTERN FOR ALL SEMESTER
(w. e. f 2014-15 onwards)**

Time : 3 Hours]

[Max. Marks: 80

Section A

1) Answer any ten questions, each carries two marks. $2 \times 10 = 20$

- a)
- b)
- c)
- d)
- e)
- f)
- g)
- h)
- i)
- j)
- k)
- l)

Section B

Answer any five questions, each carries 4 marks.

$4 \times 5 = 20$

- 2)
- 3)
- 4)
- 5)
- 6)

Section C

Answer any four questions, each carries 10 marks.

$10 \times 4 = 40$

- 7)
- 8)
- 9)
- 10)
- 11)
- 12)

5. ELECTRONICS (Optional)

SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc I Semester

Paper-I BASICS OF CIRCUIT ANALYSIS & INSTRUMENTS

Teaching Hours : 50 Hours

UNIT – I

PASSIVE CIRCUIT ELEMENTS & NETWORK ANALYSIS (10hrs)

Basic principle of Transformer. Wave form types (Sine, Square , Triangular, Trigger pulses & Saw tooth) . Voltage & Current sources. Kirchoff's laws- Statement & Problems related to voltage & current division in series & parallel network. Node & mesh analysis for DC networks.

Network theorems: Thevnin's and Norton's theorem, Superposition theorem, Reciprocity theorem, Millman's theorem, Maximum power transfer theorem(statement, proof, simple numerical examples applicable to DC only).

Problems.

UNIT – II

TRANSIENT CIRCUITS AND AC CIRCUITS (10hrs)

Growth and Decay of current in series RL circuit , Study of charging and discharging of capacitor through RC circuit. Time constant.

Operator j , Argand diagram, LCR Series and parallel circuits, Expression for current, impedance, admittance and phase using j operator. Condition for Resonance, Resonant Frequency, Band width and Q factor.

Problems.

UNIT – III

NETWORK PARAMETERS (10hrs)

Two port network (Definition) Z ,Y and h-parameters. Relation between parameter sets, Equivalent model representation of two port network. T and π network(Network transformation T to π and vice versa) short circuit impedance, Open circuit impedance and characteristic impedance.

Problems.

UNIT – IV

FILTERS

(10hrs)

Concept of filters, Constant K-type filters ; Low pass filter, high pass filters, band pass filters & band elimination. Derivation(Design impedance, Characteristic impedance, Cut off Frequencies, Attenuation constant and Phase constant) and design of filters.

Problems.

UNIT – V

MEASURING INSTRUMENTS

(10hrs)

DC indicating Instruments: PMMC Galvanometer (D'Arsonal Movement) Principle, Construction and Working - Current Sensitivity, - Advantages and Disadvantages - Conversion of Galvanometer into Ammeter, Multirange ammeter, Voltmeter, Loading Effect, Multirange voltmeter and Ohmmeter (Series and Shunt Types qualitative only).Multimeter. Functional block diagram of CRO, Use of CRO in measurements (frequency, voltage & phase). Frequency and Phase measurement using Lissajous pattern.

Problems.

Reference Books:

1. Integrated Electronics- Millman and Halkias
2. Principal of Electronics – Malvino
3. Devices and Circuit – G.K.Mithal
4. Principles of Electronics – Boylested
5. Devices and Circuit – Allen Mottershed
6. Networks, Lines and Fields – John D Ryder
7. Network Analysis – Van Valkamburg
8. Basic Electronics and Linear Circuits Bargav, etal (TTTI Publications)
9. Principles of electronics Volume –I &III - B.V.Narayan Rao
10. Network Analysis by GK Mittal
11. Electrical and Electronic Instrumentation By Shawney.
12. Modern Electronic Instrumentation and Measurement Techniques. By, A.D. Helfrick and W.D. Cooper
13. Electronic Instrumentation By, Kalsi.

ELECTRONICS PRACTICALS

B.Sc I Semester

Practical-I

LIST OF EXPERIMENTS

Lab-1:

Each experiment is of four hours duration. Minimum EIGHT experiments are to be performed in the semester course

1. Determine unknown resistance using colour code.(minimum six resistors)
2. Verification of Thevinin's and Norton's theorem (Ladder network).
3. Verification of Thevinin's and Norton's theorem (Unbalanced Bridge)
4. Maximum power transfer theorem(For DC and AC)
5. Millman's theorem.
6. Superposition theorem.
7. Multirange ammeter
8. Multirange voltmeter.
9. Ohmmeter.
10. Use of CRO(Frequency, voltage measurement of sine and square waves)
11. Lissajous pattern study using CRO.

12. Low-Pass filter (constant K type T and
13. High-Pass filter (constant K type T and
14. Band-Pass filter/Band Elimination filter (constant K type networks)
15. h-parameters for a two port resistive network.

6. GEOLOGY (Optional)

SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS B.Sc I Semester

COURSE STRUCTURE FOR GEOLOGY

S. No.	Paper Code	Title of the Paper	Marks			Exam Time	Inst. Hrs/ week
			Theory/ Practical	Internal	Total		
B.Sc Semester I							
1.	14BSCGEOLT11	DYNAMIC GEOLOGY & CRYSTALLOGRAPHY	80	20*	100	3 hrs	4
2.	14BSCGEOLP11	PRACTICAL : STUDY OF TOPOSHEETS, CLINOMETER; GEOMORPHOLOGICAL MODELS; CRYSTALLOGRAPHY	40	10**	50	4 hrs	4
B.Sc Semester II							
3.	14BSCGEOLT21	MINERALOGY & OPTICAL MINERALOGY	80	20*	100	3 hrs	4
4.	14BSCGEOLP21	PRACTICAL MINERALOGY & OPTICAL MINERALOGY	40	10**	50	4 hrs	4
INTERNAL ASSESSMENT: *Theory Internal 20 marks covers: Two theory tests in each semester (20 marks reduced to 10 marks); AND **One Practical internal test (20 marks reduced to 10 marks).							

- a) Student batch: As this is a semi technical and at present available only at GSS College, each batch should consist of not more than 10 students for the regular practical classes.
 - b) Study Tour: There will be a Geological Study Tour to the places of geological interest mainly to study the field occurrence of geological features. It carries 5 marks. Each student shall submit a consolidated study tour report along with the journal. The time spent in the field shall be of THREE-FIVE days (minimum 8 hours per day) during each SEMESTER.
 - c) Practical Record: Submission of a well-maintained Journal of the Practical Work done during the semester is necessary before the Practical Examination.
 - d) Assignments: The students will be given assignments, which are to be submitted during the practical examination.
- All this carries 10 marks including viva-voce.

OBJECTIVES: Introduce the ward to the geological processes, earth resources, our natural environment and the human interactions from a geological perspective. Topics to be covered will include; Earth Materials and Structure, Human interactions with nature, Environmental Hazards, Pollution of the Environment, Natural Resources, Energy Sources and their exploitation. Through these objectives the students will achieve the following know how:

- Develop the understanding of earth and its material.
- Develop greater self-awareness of personal role regarding environmental issues.
- Increase awareness of environmental issues and how they affect society.
- Develop skills and insight into critical thinking and situational awareness of surrounding environment.
- Gain an understanding of the physical processes that operate in and on earth.

Understand the interactions between humans and the geological processes.
Understand past, present, and future environmental issues and how they affect the earth and our society.

NATURE OF THEORY AND PRACTICAL EXAMINATION

a) Theory Examination: (Total 100 Marks)

i) There will be one theory paper of 80 marks in each semester.

Each paper will contain THREE Sections, which are to be written in the same answer book.

PART A: Question 1 with TWELVE sub Questions (Definitions/two sentence answers) numbered a-l, each of 2 marks. Students need to answer ANY TEN questions. (2x10 = 20 Marks)

PART B: SIX Questions (Short answers) numbered as 2,3,4,5,6 & 7. Each of FIVE marks students need to answer ANY FOUR questions (4x5 = 20 Marks)

PART C: FIVE Questions (Descriptive answers) numbered 8,9,10,11 & 12. Each of TEN marks, students need to answer ANY FOUR questions (4x10 = 40 Marks)

ii) The remaining 20 marks are allotted for Internal Assessment Marks – of 1 hour 15 minutes for two internal tests in theory.

Two internal tests of 20 marks each reduced to 10 marks.

Internal Assignment/Seminars/Student project work/Viva-voce (10 marks): Students are given assignments/seminars on the subject taught or a student project work.

b) Practical Examination: Total 50 Marks.

Practical examination will have 3 or 4 Questions of 30 marks.

Practical Record (Journal), Study tour report and Viva Voce carry 10 marks.

Practical Internal test: One internal test of 20 marks reduced to 10. (10 marks).

GEOLOGY SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc I Semester

Paper-I Teaching Hours : 50 Hours

UNIT-I

10 Hours

Introduction: Definition of Geology, branches of geology, role of geology in the development of mankind.

Origin of Earth: Nebular– Planetesimal; Big bang theory, cooling and consolidation of earth.

Interior of Earth: Interpretation of interior of earth using seismic waves, Mohorovicic and Gutenberg discontinuities. General description of Crust, Mantle and Core.

Geological Agents: Epigene and Hypogene agents.

Epigene agents: atmospheric- heat, gases, moisture, surface-subsurface water, sea water, wind and ice.

Hypogene agents: Internal heat, hydrothermal solutions, magma.

UNIT-II

10 Hours

Weathering: Definition, agents of weathering- Physical, Chemical and Biological. Physical weathering: frost action (wedging and heaving); thermal weathering- spheroidal weathering (exfoliation); action of gravity- scree, talus, Chemical weathering: Water as a chemical agent. Oxidation, hydration and carbonation. Biological weathering: Action of plants, animals and man. Products of weathering-formation and types of soil.

Wind – Geological action of wind- erosion, transportation and deposition

Erosion and Erosional features - deflation- winnowing action, oasis, playas. Abrasion- ventifact, pedestal rocks, yardang, pinnacles/ inselberg. Attrition- millet seed sand.

Transportation- Suspension, saltation, traction/rolling.

Deposition and depositional features: sand dunes- longitudinal, transverse dunes, barchans and loess deposit.

UNIT-III

10 Hours

River- Origin of River. Stages of River: Initial stage, Youth stage - water fall, cascade, and river capture/piracy, V-shape valley, canyon/gorge, pot hole; Mature stage- lateral cutting, meandering, oxbow lake, natural levee, flood plain, alluvial fan; and Old stage- base level of erosion, and delta. Geological action of River- erosion: hydraulic action- abrasion, attrition, corrosion; Transportation: solution, suspension, saltation and rolling.

Glacier – Definition, snow field, snow line, neve/fern.

Movement of glaciers, types of glaciers – valley glacier, piedmont glacier, ice sheet. Surface features: Crevasses, types of crevasses – bergshrund, longitudinal, transverse and marginal. Geological action of glacier: erosion – abrasion, excavation/valley plucking, frost wedging and scraping; Erosional features- cirque/corrie, arête, horns, U-shape valley, hanging valley, rochesmoutonnee. Deposition – depositional features: moraines- lateral, medial, terminal/end, ground moraines, tillite, erratic/perched block. Glacio-fluvial deposits- Outwash plain, kettle hole, kames, drumlins, eskers.

UNIT-IV

10 Hours

Volcano: Definition – typical volcano. Classification of volcanoes: active, dormant and extinct. Types of eruptions: fissure and central eruptions. Products of volcano: liquid (lava), solid (cinder, lapilli, volcanic bombs, aa, ash) and Gases. Effects of volcano.

Earthquake: Definition – focus and epicenter. Seismic waves: body (P & S) and surface waves (Love & Rayleigh); Causes- non tectonic (volcanic, landslides, explosions) and tectonic: elastic rebound

theory; classification based on depth of epicenter; intensity: Mercali and Richter scale; seismograph and seismogram; seismic belt of India; effects of earth quake, tsunami; and prediction of earthquakes.

UNIT-V

10 Hours

Crystallography: Definition of crystal, morphological characters of crystal – face, form, edge, solid angles, Euler's law.

Interfacial angle, Contact Goniometer and its use.

Symmetry characters– Plane, axes and centre. Crystallographic axes, axial ratio and notation.

Parameters- Weiss parameter, Miller indices.

Study of crystal forms of normal classes of all six crystal systems- Isometric, Tetragonal, Hexagonal, Orthorhombic, Monoclinic and Triclinic.

Books Recommended

Principles of Physical Geology	A. Holmes
Geomorphology	V.K. Sharma
Aspects of tectonics	K.S. Valdiya
Environmental Geology	K.S. Valdiya
General Geology	Radhakrishanan. V
A text book of Geology	Mahapatra, G.B
Text book of Geology	P.K.Mukherjee
Text book of Geology	A.K.Datta
Engineering Geology	Parbin Singh
Dana's Text book of Mineralogy	W.E. Ford
Introduction to Geomorphology	V.S. Kale & Avijit Gupta

GEOLOGY PRACTICALS

B.Sc I Semester

Practical-I

Max. Marks: 40

Time: 4 hrs/week

Total 50 hrs

Interpretation of topographical maps; latitude-longitude, conventions, relief, drainage, settlement, transportation and communication.

Describe the following geomorphological models with neat sketch and labeling: Stages of river- Initial, Youth, Mature and Old stage; typical volcano; karst topography; glacial landforms.

Crystallography: Forms of a crystal: face, edge, solid angle, Euler's law, Interfacial angle with the help of Contact Goniometer. Study of elements of symmetry of crystal models of normal classes of six crystal systems: Isometric/Cubic, Tetragonal, Orthorhombic, Hexagonal, Monoclinic, Triclinic systems.

Demonstration: Taking bearings with the help of Brunton compass, Clinometer to find out dip and strike of the beds (attitude of beds). Taking bearing with Global Positioning System (GPS).

An introduction to crystallography

Phillips, P.C

Optical Crystallography

Wahlstrom E E

GEOLOGY (Optional)

B.Sc I Semester

QUESTION PAPER PATTERN FOR ALL SEMESTER

THEORY PAPERS

Question paper has to be set for total marks of 80.

Section–A: Ten questions to be answered out of twelve each carry 2 marks

$$2 \times 10 = 20$$

Note: Two questions to be set from each unit, and last two questions from any unit.

Section–B: Five questions to be answered out of six each carry 5 marks

$$4 \times 5 = 20$$

Section–C: Four questions to be answered out of six each carry 10 marks

$$10 \times 4 = 40$$

Total Marks = 80

7. HOME SCIENCE (Optional)

SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc I Semester

Course Structure

Semester	Paper	Title of paper
I	I	Fiber to Fabric
II	I	Clothing Construction & its Care

Paper-I

Teaching Hours : 60 Hours

Unit I

Textile fibers a) Introduction & classification of fibers.

b) Manufacturing process & properties of cotton, silk & polyester.

c) Physical & chemical properties of wool & nylon.

Duration: 20 hours

Unit II

A) Yarn - Yarn construction & classification-staple, filament & novelty yarns.

B) Fabric construction – Methods of fabric construction

i) Weaving – Loom & its parts, Mechanism of weaving,

- Basic weaves-Plain, twill & satin
- Decorative weaves – Pile, leno & jacquard.

ii) Knitting

iii) Felting

iv) Braiding

v) Netting

vi) Lacing

Duration: 12 hours

Unit III

Finishing - Definition, importance, types

Aesthetic finishes- Singeing, Bleaching,

Mercerization, Tenting,

Shrinking, Weighting, Calendaring, Sizing,

Embossing & Napping

Functional finishes- Fire proof, Water proof, Water repellent,

Moth proof, Crease resistance, Mildew proof

Duration: 10 hours

Unit IV

Dyeing * Classification of dyes – Acid, Basic, Develop, Mordant, Naphthol,

Sulphur Vat & Pigment dyes.

* Methods of dyeing – Stock, Yarn, Piece, Garment & Solution

pigmenting

Duration: 10 hours

Unit V

Printing * Difference between Dyeing and Printing

* Principles of printing- Direct, Discharge & Resist

* Methods of printing – Block, Roller, Screen, Stencil, tie & dye
& Batik

Duration: 08 hours

Practicals:

1. Identification of following fibers :Cotton, Silk, Wool, Rayon, Polyester & Nylon.
by visual test, burning test & microscopic test (2 practicals)
2. Weaving – Making samples of plain, basket, ribbed, twill, satin & sateen weaves.
(4 practicals)
3. Dyeing and Printing –Block, Spray, Stencil, Tie & dye, Batik.
(3 practicals)
4. Visit to spinning, weaving, dyeing & printing units.
5. Project work (1 practical)

References :

1. Potter and Corbman, “Fiber to Fabric” McGraw Hill Book Co.
2. Lorthy, K Burnhein, “A Textile Terminology”
3. Lollen and Saddler, “Textiles” Macmillan.
4. K.P.Hess, “Textile fibers and their use” Oxford & I B Publishing Co.
5. Durga Deulkar, Household Textiles & Laundry
6. Arthur Price & Allen C.C. “Fabric Science” Fair Child Publishers.
7. Premlata Mullick “Textbook of Home-science” Kalyani Publishers.
8. Wintage “Selection & Care for Textiles” Prentice Hall.

QUESTION PAPER PATTERN

Theory:

Time: 3 hours

Maximum marks: 80

I. Objective type questions each carrying one mark

A. Fill in the blanks. 5 x 1 = 5 marks

5 questions x one mark

OR

Match the following

5 questions x one mark

B. State True or False 5 x 1 = 5 marks

5 questions x one mark

OR

Choose the correct answer

II Write short answers each carrying 2 marks

Solve 5 out of 6 questions 5 x 2 = 10 marks

III Answer in brief each carrying 5 marks

Solve 8 out of 10 questions 8 x 5 = 40 marks

IV Answer in detail each carrying 10 marks

Solve 2 out of 3 questions 2 x 10 = 20 marks

Practical

Time 4 hours

Maximum marks 40

1 Record	10
2 Submission	05
3 Project	05
<u>4 Practical</u>	<u>20</u>
Total	40

Scheme of Examination:

Theory:

Semester End Examination 80 marks

<u>Internal Assessment</u>	<u>20 marks</u>
Total	100 marks

Practical:

Semester End Examination	40 marks
<u>Internal Assessment</u>	<u>10 marks</u>
Total	50 marks

Distribution of Internal Marks

Theory

1. Attendance	03 marks
<u>2. 2 Tests (10+07)</u>	<u>17 marks</u>
Total	20 marks

Practical:

1. Attendance	02 marks
<u>2. One test</u>	<u>08 marks</u>
Total	10 marks

8. MICROBIOLOGY (Optional)

SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc I Semester

COURSE STRUCTURE AND SCHEME OF EXAMINATION FOR MICROBIOLOGY (Optional)

semester	Paper Title	Instruction Hrs per week		Examination Marks		Internal Assessment Marks		Duration of Examination Hrs		Total Marks
		Theory	Practical	Theory	Practical	Theory	Practical	Theory	Practical	

I	Paper 1.1 General Microbiology	4		80		20		3		150
	Practical 1.2 General Microbiology		4		40		10		4	
II	Paper Microbiological Techniques 2.1	4		80		20		3		150
	Practical Microbiological Techniques 2.2		4		40		10		4	

GEOLOGY SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc I Semester

Paper-I

Teaching Hours : 60 Hours

Introduction:

Microbe and Origin of Life, History, Scope and relevance of microbiology as a modern science. Branches of microbiology, contributions Scientists to the field of microbiology- Antony Van Leeuwenhoek, Edward Jenner, Lazzaro Spallanzani, Louis Pasteur, Joseph lister, Robert Koch, Alexander Flemming and Iwanowsky.

12- Hours

2. Taxonomy:

Heakels three kingdom classification, Whittakar's five kingdom classification - Monera, Protista, Fungi, Mycota, Plantae (Metaphyta) and Animalia (Metazoa). Different trends in classification of microorganisms. Principles and methods of classifications.

10Hours

3. **Characteristics of Prokaryotic and Eukaryotic Cells:**
Size, shape, arrangements, cell wall, cell membrane, ultra structure of cell organelles. **8-Hours**
4. **Microbial structure and organization.**
General characteristic of major groups of micro organisms- Algae, Protozoa, Fungi, Cyanobacteria, Bacteria, Actinomycetes and Rickettsia, Mycoplasma. **12- Hours**
5. **Composition of the 3- domains of organisms:**
Structure of Archae, Bacteria and Eukarya. **08- Hours**
6. **Viruses:**
General characteristics, Classification of viruses -RNA and DNA Viruses, Viroids and Prions. **05- Hours**
7. Distribution of microorganisms in air, water and soil and their significances. **05- Hours**

Practical 1.2- GENERAL MICROBIOLOGY

1. Laboratory safety: General rules and regulations.
2. Microscopic observation of prokaryotic and Eukaryotic (Wet Preparations: Bacteria, Protozoa, Fungi and Algae) cells.
Study of Bacterial motility by hanging drop method.
3. Micrometry and Camera Lucida.
4. Counting of Yeast cells and fungal spores by Haemocytometer.
5. Observations of prepared permanent slides of Algae, Blue Green Algae, Protozoa, Moulds and yeasts etc.
7. Isolation of microorganisms from Air, Water and Soil and studying their characteristics.
8. Students have to submit 5 microorganisms' slides (Permanent) at the time of practical examination.

References:

1. Atlas. R.M. "Microbiology- Fundamental and Applications" Mac Millan Publishing company New York.
2. Cappucino. J.C. And Shermeni. N-1999 Microbiology- A laboratory manual, Adelson Wesley.
3. Colwod, D 1999, " Microbial Diversity" Academic Press.
4. Edward Aleam T.1997 " Fundamentals of Micrbiology" -5th Edn, Adilson Wesley Longaman Inc. New York.
5. Madigan M.T. and Martinoko J.M. and Parker, J- 1997 " Biology of Microorganisms " 8th edn., Mc Graw Hill Inc New York.

6. Pelechzar M.J. and Chan ECS and Kreig N R – 1982 “ Microbiology” Tata McGraw Hill Book Co. New York.
7. Powar and Doginwala- 1994 “ Microbiology” – Vol.I and II Himalaya Publication, New York.
8. Salle. A.J. “ Fundamentals Principles of Bacteriology” Tata McGraw Hill Publishing Company Ltd. New Delhi.
9. Stainer. R.Y. and Ingraham J.L. “ General Microbiology” Prentice Hall of India Pvt Ltd, New Delhi.
10. Sullia S.B. and Shantarma S. 1998” General Microbiology” Oxford and IBH Publishing Co Pvt. Ltd. New Delhi.

9. MATHEMATICS (Optional)

SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc I Semester

Paper-I DIFFERENTIAL CALCULUS Teaching Hours : 50 Hours

UNIT-I

REAL NUMBERS

10 Hours

Real numbers, Postulates and their Consequences. Inequalities and Absolute values. Archimedean property. LUB and GLB properties.

UNIT-II

LIMITS AND CONTINUITY

10 Hours

Recapitulation of limits and continuity. Algebra of limits (with proofs). Properties of continuous functions. Boundedness of continuous functions. Intermediate value theorem. Borel covering theorem (statement only). Uniform continuity.

UNIT-III

HIGHER ORDER DERIVATIVES

10 Hours

The n^{th} derivative of $(ax + b)^n$, $1/ax+b$, $\log(ax+b)$, e^{ax+b} , $\sin(ax+b)$, $\cos(ax+b)$, $e^{ax} \sin(bx+c)$, $e^{ax} \cos(bx+c)$, Leibnitz's Rule for n^{th} derivative of a product.

UNIT-IV

MEAN VALUE THEOREMS

15 Hours

Rolle's Theorem, Lagrange's Mean Value Theorem, Cauchy's Mean Value Theorem, Taylor's Theorem (with Sclomilch and Rouche's form of reminder), Maclaurin's Series.

UNIT-V

INDETERMINATE FORMS

05 Hours

L-Hospital's rule (statement only), Indeterminate forms of $0/0$, ∞/∞ , $0 \times \infty$, $\infty - \infty$, 0^0 , 1^∞ and ∞^0 .

Reference Books:

Differential Calculus – Shantinakaran and Mittal
 Mathematical Analysis-Shantinakaran
 First Course in Real Analysis-M.k.Singal and Asha Rani
 Text book of B.sc Mathematics- G.K. Raganath

Paper-II ALGEBRA AND TRIGNOMETRY

Teaching Hours : 50 Hours

UNIT-I**DETERMINANTS****05 Hours**

Determinant of fourth order, Symmetric and Skew-Symmetric determinants, Reciprocal determinants.

UNIT-II**MATRICES****15 Hours**

Recapitulation of Matrices of Symmetric matrices and Skew symmetric matrices, Elementary transformations, Rank of a Matrix, Reduction to Normal forms, Inverse of matrix, Solution system of Linear equations.

UNIT-III**SET THEORY****10 Hours**

Equivalence relations, Partition of a Set, Arbitrary unions and intersections. De Morgan's laws, Countable and Uncountable sets.

UNIT-IV**THEORY OF EQUATIONS****10 Hours**

Polynomial equation of n^{th} degree in one variable, Euclidean algorithm, Remainder Theorem, Factor Theorem, Fundamental Theorem of Algebra, Relation between the roots and coefficient of general polynomial equation in one variable, Synthetic division. If one of the root of an equation $a_0x^n+a_1x^{n-1}+-----+a^n$ has one of its rational root is $\frac{p}{q}$, then p is an exact divisor of a_n and q is an exact divisor of a_0 . Solution of cubic and Bi- quadratic equations.

UNIT-V**TRIGNOMETRY****10 Hours**

Expansions of Sine and Cosine functions, Series of Sines and Cosines. Hyperbolic functions, Logarithm of a Complex number, Summations of Trigonometric series.

Reference Books:

1. Modern Algebra- D.C. Pavate
2. Algebra -Vasistha
3. Matrices –Ayes(Schaumpubl co)
4. Matrices and determinants- M.L. Khanna
5. Trigonometry- P.N.Chatterji
6. Geometry and Trignometry-D.C. Pavate

10. STATISTICS (optional)

SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc I Semester

Paper-I UNIVARIATE DATA ANALYSIS AND PROBABILITY

Teaching Hours : 50 Hours

UNIT-I

INTRODUCTION

10 Hours

Meaning and scope of statistics Data Measurement scales: Nominal, Ordinal. Variable: Discrete and Continuous variables. Presentation of data: Classification and tabulation Frequency distribution. Diagrams-Simple, Multiple and Percentage Bar, Pie chart and Graphs-Histogram, frequency polygon, frequency curve and Ogives.s

UNIT-II

MEASURES OF LOCATION

10 Hours

Purpose of Measures of location, Definition of A.M, G.M, H.M & their Properties (with proof), Median and Mode. Partitioned values: Definition of Quartiles, Deciles and Percentiles.

UNIT-III

MEASURE OF DISPERSION

10 Hours

Purpose of measure of dispersion, Absolute and relative measures of dispersion. Definition of Range, quartile deviation, Mean deviation, Standard deviation, the effect of origin and scale on standard deviation and combined standard deviation of two groups. Definition of Moments, Definition and types of skewness, Measures of skewness: Pearsons , Bowleys and Moments based measures of skewness. Kurtosis definition and moments based measure of kurtosis.

UNIT-IV

PROBABILITY

10 Hours

Random experiment, Sample space, Outcome, Event, Simple event, Compound event, Mutually exclusive, Equally likely and Exhaustive events with Examples. Probability: Mathematical, Statistical, Axiomatic approach. Derivations of $0 \leq P(A) \leq 1$, $P(A) + P(\bar{A}) = 1$, $P(\Phi) = 0$ and $P(A) \leq P(B)$ for $A \subseteq B$. Conditional probability, Addition and Multiplication law of probability . Baye's theorem (with proof) and examples.

UNIT-V

RANDOM VARIABLE

10 Hours

Definition of Random variables - Discrete and Continuous random variable. Probability mass function (pmf) and Probability density function (pdf) and simple examples. Univariate transformation of variables and examples. Cumulative distribution function and properties (without proof). Definition of Expectation, Moments about origin and mean, Moment generating function (m.g.f) and its properties (with proof).

10 Hours

Books for study:

1. Bhat. B.R.Srivenkataramana T. And Rao. Madhav K.S. (1996): Statistics: A Beginner's Text, Vols I and II, New Age International (P) Ltd.
2. Gupta S.C and Kapoor V.K.: Fundamentals of Mathematical Statistics- Sultan Chand & Sons publications.
3. Goon AM, Gupta M.K., Das Gupta.B.(1991): Fundamentals of Statistics vol-I World Press, and Kolkatta.
4. Hogg .R.V.and Craig.A.T(1978):Introduction to Mathematical Statistics.Amerind Publishing company.
5. Medhi.J. (1992) Statistical Method: An Introductory text. New Age.

Books for Reference:

1. Anderson T.W. and Sclove S.L (1978): An Introduction to the Statistical Analysis of Data.Houghton Mifflin & Co.
2. Cooke, Cramer and Clake: Basic Statistical Computing, Chapman and Hall.
3. Mood.A.M.,Graybill.F A. and Boes D.C.(1974): Introduction to the Theory of Statistics.

[McGrawHill.](#)

4. Spiegel M.R. (1967): Theory & Problems of Statistics, Schaum's publishing Series.
5. Hogg and Craig: Introduction to Mathematical Statistics. Macmillan.
6. Mukhopadhyay.P. (1996): Mathematical Statistics. Calcutta Publishing House.

STATISTICS PRACTICALS

B.Sc I Semester

Practical-I

STPR-1: PRACTICAL PAPER

1. Construction of frequency distributions and diagrammatic representation: Simple, percentage bar, Pie chart and Stem and leaf chart.
2. Measures of Central tendency: A.M, G.M, and H.M and their interpretations.
3. Measures of Location: Mode and Median and their interpretations.
4. Measures of Dispersion: Standard deviation and Coefficient of variation.
5. Measures of Skewness and kurtosis and moments.
6. Probability of an event using addition and compound law of probability.
7. Computation of unknown constant k in p.m.f ,p.d.f and c.d.f.

Question paper pattern W.E. FROM 2014-15.

Part- A

Q1 with 12 sub questions numbered as a , b, c, d, e, f, g, h, i, j, k , l

Each carries 2 marks. Student has to answer any 10 questions

Note:

1. There should not be any multiple choice questions.
2. At least two questions should be set on each unit.
3. Total marks $2 \times 10 = 20$

Part- B

Six questions numbered as 2 , 3, 4, 5, 6, 7 each of 5 marks. Student has to answer any 4 questions.

Note:

1. Of this 3 Shall be problem oriented.
2. At least one questions should be set on each unit
3. Total marks $5 \times 4 = 20$

Part- C

Five questions numbered as 8, 9, 10 , 11 ,12 each of 10 marks. Student has to answer any 4 questions

Note:

1. At least one questions should be set on each unit
2. Total marks $10 \times 4 = 40$

11. ZOOLOGY (Optional)

SYLLABUS FOR THE ACADEMIC YEAR 2014-15 ONWARDS

B.Sc I Semester

Paper-I BIOLOGY OF NON CHORDATES

Teaching Hours : 50 Hours

UNIT-I

Taxonomy- Principles of Animal Taxonomy. Systems of Classification-Types, Artificial, Natural & Phylogenic, Concept of Species .Binomial nomenclature, its rules and Linnaean hierarchy. Definitions of Species ,Genus, Family, Order, Class &Phylum.

4hrs.

Protozoa - General characters & Classification upto classes. Type study:- Plasmodium vivax-Structure and Life history. Parasitism, pathogenic effects and control measures of a) Entamoeba histolytica and Trypanosoma gambiense.

5hrs

UNIT-II

Porifera- General characters & Classification upto classes. Type study-Sycon Structure&Lifehistory, Canal systems, Spicules, Spongin fibres and Gemmule.

5hrs.

Coelenterata-General characters & Classification up to classes. Structure & Life history of Obelia. Polymorphism.

4hrs.

UNIT-III

Platyhelminthes-General characters & Classification upto classes. Structure, Reproductive system,& Life history of Taenia solium. Parasitism and parasitic adaptations in Taenia solium & Fasciola hepatica.

4hrs.

Aschelminthes-General characters & classification upto classes. Structure. Life history of Ascaris. Parasitic adaptation of Wuchereria bancrofti. Paragonimus westermani & Schistosoma haematobium.

4hrs.

UNIT-IV

Annelida-General characters & classification up to classes .Type study - Pheritima posthuma- Externals, Excretory system, Circulatory system and Reproductive system.

5hrs.

Arthropoda-General characters & Classification up to classes. Type study- Cockroach- Externals, digestive, respiratory, nervous, reproductive systems & Life history of Cockroach & Mouth parts of Cockroach, and House fly.

7hrs.

UNIT-V

Mollusca - General characters & Classification upto class .Type study – Pila globosa - Externals, digestive system. respiratory system excretory system, nervous system & Reproductive system.

6hrs.

Echinodermata-General characters & Classification up to classes. Type study- Star fish- digestive system. Water vascular system, and reproductive system.

6hrs.

Reference Books

Modern Text Book of Zoology ‘ Invertebrate ‘ –R.L.Kotpal.

Invertebrate Zoology –Dhami & Dhami

Non - Chordata (Invertebrata)- Majapuria

Functional Organization of Non-Chordata- H Nigam & Shoban Lal Nagin Chand & Co.

A manual of Zoology Invertebrate- m.Ekambarnath Ayyar & Swaminathan Ayyar

S. Vishwanath Publisher.

The Invertebrates Vol-1 Protozoa through Ctenophora, Hyman L.H. Mc Graw Hill

The Invertebrates Vol 2 – Hyman et al.

Text Book of Zoology – Parker T.J.& Haswell W.A. Macmillan Co.London

ZOOLOGY PRACTICALS

B.Sc I Semester

Practical-I

Total number of hours per week: 04

Internal Assessment=10 Marks

Total No. of hours per Semester: 52

Practicals: 40 Marks

- | | |
|--|---|
| 1) Study of Protozoan culture and preparation of slides. | 1 |
| 2) Classification of Protozoa, Porifera, Coelentrata. Platyhelminthes. Aschelminthes, Annelida – up to classes with at least two examples from each class. Classification of Arthropoda, Mollusca, Echinodermata up to classes with at least two examples. | 5 |
| 3) Mouth parts of Cockroach and House fly.
*[With the help of Permanent slides/Charts/Printouts/any type of Bioaids] | 1 |
| 4) Parasitic adaptations of Fasciola hepatica. Taenia solium. and Wuchereria bancrofti.
* [With the help of Permanent slides/Charts/Printouts/any type of Bioaids] | 1 |

Note:- As per the guidelines of U.G.C. for UG

“Only one species” to be adopted for “demonstration only” by the faculty and “students should not do any dissection”.

Note:- Demonstration of following systems of Type study by Faculty & “students should not do any Dissection”

DISSECTION :- Type animal- Earth worm.

- | | |
|---|---|
| a] Explanation of Externals & Demonstration of Digestive system and Mounting of Blood glands and Setae. | 1 |
| b] Demonstration of Reproductive system & Mounting of Nephridia and Ovary. | 1 |
| c] Demonstration of Nervous system. | 1 |
| d] Practical internal Test | 1 |

Note:- Students are supposed to draw neat labelled diagrams and write the explanation in their journal.

ZOOLOGY (Optional)

QUESTION PAPER PATTERN FOR ALL SEMESTER

THEORY PAPERS

Question paper has to be set for total marks of 80.

Section–A: Ten questions to be answered out of twelve each carry 2 marks $2 \times 10 = 20$

Note: Two questions to be set from each unit, and last two questions from any unit.

Section–B: Five questions to be answered out of six each carry 5 marks

$$4 \times 5 = 20$$

Section–C: Four questions to be answered out of six each carry 10 marks

$$10 \times 4 = 40$$

Total Marks = 80

Group – III

B.Sc I Semester

General Studies

Mandatory Subject (Common for All Courses)

DETAILED SYLLABUS OF

Indian Constitution

PAPER – I - INDIAN CONSTITUTION

Compulsory paper for all degree courses

Teaching Hours: 4 Hours per Week

Objectives

To provide constitutional literacy for every students at the graduate level.

- a) To make the student conversant with his citizenship role as prescribed under the constitution.
- b) To make a students understand appreciate and internalize the glorious struggles for freedom that culminated in the formulation of the Constitution and to emulate the constitutional values enshrined in the preamble of the constitution.

MODULE: I

Significance of the Constitution ; Making of the constitution – role of the constituent Assembly, salient features, the Preamble, Citizenship, Procedure for Amendment of the constitution.

(10 Hours)

MODULE: II

Fundamental Rights, the Right to Equality, the Right to Freedom, the Right against Exploitation, the Right to Freedom of Religion, Cultural and Educational Rights, the Right to constitutional Remedies.

(10 Hours)

MODULE: III

Nature of the Directive Principles of State Policy, difference between of fundamental rights and directive Principles of State Policy – Implementation of Directive Principles of State Policy, Fundamental Duties.

(8 Hours)

MODULE: IV

Union Government – Powers and Functions of the President, the Prime Minister, Council of Ministers.

Composition, powers and functions of the Parliament, Organization of Judiciary, Jurisdiction of the Supreme Court, Independence of Judiciary.

(12 Hours)

MODULE: V

State Government – Powers and Functions of Governor, Chief Minister, Council of Ministers.

Composition, Powers and Functions of State Legislature, Local Government and the Constitution, Relation between the Union and the states.

(10 Hours)

Books of Reference :

1. M.V.Pylee, An Introduction to the Constitution of India, New Delhi, Vikas, 2005.
2. Subhash C. Kashyap, Our Constitution : An Introduction to India's Constitution and constitutional Law, New Delhi, National Book Trust, 2000.
3. Durga Das Basu, Introduction to the Constitution of India, New Delhi, Prentice Hall of India, 2001.
4. D.C.Gupta, Indian Government and Politics, VIII Edition, New Delhi, Vikas, 1994.
5. J.C.Johari, Indian Government and Politics, Delhi, Sterling Publishers, 2004.
6. V.D.Mahajan, Constitutional Development and National Movement in India, New Delhi, S. Chand and Co., latest edition.
7. Constituent Assembly Debates, New Delhi, Lok Sabha Secretariat, 1989.
8. Granville Austin, Working of a Democratic Constitution : The Indian Experience, New Delhi, Oxford University Press, 1999.
9. A.P.Avasthi, Indian Government and Politics, Agra, Naveen Agarwal, 2004.
10. S.A.Palekar, Indian Constitution, New Delhi, Serials Publications, 2003.
11. Brij Kishore Sharma, Introduction to the Constitution of India (Second Edition), New Delhi, Prentice-Hall of India, 2004.
12. H.M.Rajashekhar, Understanding the Indian Constitution, Mysore, Prabodha, 2005.
13. J.N.Pandey, Constitutional Law of India, Allahabad. Central Law Agency, 2004.
14. ಎಚ್.ಎಂ. ರಾಜಶೇಖರ ಭಾರತದ ಸರ್ಕಾರ ಮತ್ತು ಮೈಸೂರು, ಕಿರಣ ಪ್ರಕಾಶನ, 2004
15. ಭಾರತದ ಸಂವಿಧಾನ 9 1975ರ ಅಗಸ್ಟ್ 10ರವರೆಗೆ ಮಾರ್ಪಾಟಾದಂತೆ), ಭಾರತ ಸರ್ಕಾರದ ಪರವಾಗಿ, ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ಮುದ್ರಣ, ಲೇಖಕ ಸಾಮಗ್ರಿ ಮತ್ತು ಪ್ರಕಟಣೆಗಳ ನಿರ್ದೇಶಕರಿಂದ ಮುದ್ರಿತವಾಗಿ ಪ್ರಕಟವಾಗಿದೆ, 1976.
