Maharshi Dayanand University
Rohtak

Ordinances, Syllabus and Courses of Reading for

B.A./ B.Sc. Part-III Examination

Session 2008-2009

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SCHEME OF EXAMINATION

for B.A. / B.Sc. Part-I,II and III

Compulsory Subjects		Elective Subjects				
1	2	Group-I	Group-2	Group-3	Group-4	Group-5
English	Hindi	Def. Studies	Maths	Pol. Sc.	Geography	Psychology
	Sanskrit	Hindi	Pub. Admn.	Dance	Home Sc.	Operation-System & Data
					Business	
	Punjabi	Punjabi	Music(v)	Art	Philosophy	
	Urdu	Sanskrit				Tourism - Product
	Addl.Eng	Urdu	T.W. (Th)	Phy. Edu.	Music(Ins)	Insurance
		Economics	Sociology	Statistics	Marketing	History
		Applied Art	Tourism Business	Shorthand (Theory)	Comm. Eng.	Functional Hindi
		Comp. Appli.	Anthropology	Zoology	Chemistry	Botany
		Commerce Electronics		Advertising		Ind.Chem.
		Computer Sc.			Marketing Comm.	Physics
		Information - Technology				
		Geology				

Compulsory Qualifying Paper

Environmental Studies

1. Every candidate must offer Hindi either as a Compulsory subject or as an Elective subject.
2. Language offered as compulsory subject shall not be offered as an Elective subject.
3. A candidate coming from a Non-Hindi speaking area shall if he/she did not offer Hindi/Punjabi/Sanskrit/Urdu in the examination qualifying for admission, offer in lieu of compulsory Hindi/Punjabi/Sanskrit/Urdu, the subject of additional English, which shall carry the same marks for Hindi/Punjabi/Sanskrit/Urdu.
4. In addition to compulsory subjects as prescribed in the relevant course, for humanities group a student has to opt one elective subject from each of the two groups selected out of the above five groups as per the combinations allowed by the concerned college, while for Science Group one has to elect 3 elective subjects i.e. one out of three different

groups as per the combination allowed by the concerned college.

5. A student can offer only one vocational subject.
6. Candidates appearing for additional subject(s) will also choose not more than one subject from each group.
7. a) A candidate shall :-
   i) Offer Defence Studies if he is regular student.
   ii) Computer Applications only if he offers it alongwith Mathematics /Statistics.

   A candidate shall offer the elective subjects mentioned above, subject to the following :-

   b) A candidate may offer Psychology, Home Science and / or Geography, if he/she produces a certificate from the Head of Institution recognised to teach this/these subjects or an Institution approved for this purpose by the Board of Studies concerned, to the effect that he/she has completed the course prescribed for practical work in these subjects.

Exception : A candidate who has obtained :-

i) Two year Home-Science Diploma or One Year Teachers Training Diploma from the Institute of Home Economics New Delhi. OR

ii) Home-Science Diploma (2 Year Course) from Lady Irvin College New Delhi.

May be taken as having completed the prescribed course in Home-Science.

Note : The Syllabus of Applied Art is the same as that of Commercial Art, Painting & Designing under the Scheme of Restructured Course.

SCHEME OF EXAMINATION
for B.Sc. Part-I,II and III

Compulsory Subjects

B.Sc. Part-I

1. English — One Paper of 50 marks

B.Sc. Part-II

Hindi/Punjabi/Sanskrit/Urdu — One Paper of 50 marks

Compulsory Qualifying Paper :-

1. Environmental Studies :

Note : The students will be required to qualify this paper otherwise the final result will not be declared and degree will not be awarded.

Note : 1. A candidate coming from a Non-Hindi speaking area shall if he/she did not offer Hindi/Punjabi/Sanskrit/Urdu in the Examination qualifying for admission, offer in lieu of compulsory Hindi/Punjabi/Sanskrit/Urdu the Subject of Additional English which shall carry the same marks as for Hindi/Punjabi/Sanskrit/Urdu.

A candidate for B.Sc. Part-I examination shall not offer any subject (except Geology, Geography, Home Science, and Statistics or a subject which is not included in the Scheme of Examination for the +2 stage of the Sr. Secondary Certificate Examination) unless he offered the corresponding subject in the lower examination.

Provided that :-

i) A candidate who did not take up Physiology in the XII class of Sr. Secondary Certificate examination may if he took up Biology, offer Physiology for B.Sc. examination.

ii) A candidate who took up Agriculture as one of his Elective group subjects for XII class of Sr. Secondary Certificate Examination may offer Botany or Zoology or both for the B.Sc. Examination.

iii) A candidate who took up Biology or Physiology as one of his Elective Group subjects for XII class of Sr. Secondary Examination may offer Zoology/Botany/Physiology for B.Sc. Examination.

The following combination of subjects at B. Sc. Part-I,II & III be allowed :-

The Candidate shall offer Botany a Zoolgy together

The Candidate shall offer

Electronics alongwith Physics and any one of the following subjects :-

i) Computer Science/ Computer Application

ii) Mathematics

iii) Chemistry

iv) Statistics

Subject to the condition that the students opting for above combination must have studied Mathematics at 10+2 level.

Students offering Industrial Cemistry as an elelctive subject in B. Sc. Pass Course should be required to offer Chemistry and Mathmatics as other two subjects, besides offereing English (Compulsory) in B.Sc. Part-I and Hindi/Punjabi/ sanskrit / Urdu(Compulsory) in B. Sc. Part-II.

Student can offer Computer Science as an optional subject alongwith Chemistry subjects to the availability of the facilities in the concerned Institutes.

SCHEME OF EXAMINATION 2009-10
for B.Sc. Semester - I
English

Semester-I **Max. Marks : 50**
Compulsory Subjects **Time : 3 hours**

Paper-A Text

The Following text is prescribed for intensive study :-

1. Following poems fom The Chronicles of Time edited by Asha Kayan (Oxford University Press)

   a) William Shakespeare
   Let Me Not to the Marriage of True Minds

   b) John Donne
   Death Be Not Proud

   c) John Milton
   On His Blindness

   d) Henry Vaughan
   The Retreat

   e) John Dryden
   Shadwell

   f) Alexander Pope
   Know Then Thyself

   g) William Blake
   The Little Black Boy

   h) William Wordsworth
   Three Years She Grew in Sun and Shower

   i) Percy Bysshe Shelley
   England in 1819

   j) Alfred, Lord Tennyson
   Crossing the Bar

Part - B General English 22

1. Translation from Hindi to English 5
2. Paragraph Writing 7
3. Common Phrasal Verbs, Prepositions & Common Errors in English 10

Scheme of Question Paper

The paper will have seven questions as per details given below

Q1. The candidate will be asked to answer comprehension questions based on an extract from the text book. There will be internal choice. 1x5=5

Q2. The candidate will be asked to explain with reference to the context an extract from the text book. There will be internal choice. 5

Q3. There will be five short answer type questions based on the text book. The candidate will be asked to give answers in about 30 words each. There will be internal choice. 2x5=10

Q4. There will be one essy type question based on the text book with internal choice. 8

Q5. Translation of a passage of about 10 sentences from Hindi to English 5

Q6. Paragraph (The candidate will be required to write about 250 words on any one of the five given topics). 7

Q7. There will be question with parts on the following items : common phrasal verbs, prepositions, common errors in English. 10

B.Sc. SEMESTER-II

ENGLISH

SCHEME OF EXAM

SEMESTER-II Max. Marks : 50

Time : 3hours

Paper-A : Text 30 Marks

The following text is prescribed for intensive study :

Following essays from Ideas Aglow edited by Dinesh Kumar and V.B Abrol (Publication Bureau, Kurukshetra University, Kurukshetra)

a) C.E.M. Joad
Our Civilization

b) Jayant V. Narlikar
It's Question Time

c) N. Ram
An Interview with Christian Barnard

d) B.R. Ambedkar
Untouchability and the Caste System

e) Huck Gutman
Inhumanisation of War

f) Amartya Sen
Seven Types of Gender Inequality

Part-B : General English 20

1. Translation from English to Hindi 5
2. Precis 7
3. Official Correspondence : Letter Writing 8

Scheme of Question Paper

1. The paper will have seven questions as per details given below :

Q1. The candidate will be asked to answer comprehension questions based on a passage from the text book. There will be internal choice. 1x6=6

Q2. The candidate will be asked to explain with reference to the context a passage from the text book. There will be internal choice. 6

Q3. There will be five short answer type questions based on the text book. The candidates will be asked to give answers in about 30 words each. There will be internal choice. 2x5=10

Q4. There will be two essay type questions based on the text book with internal choice. 8

Q5. Translation of a passage of about 10 sentences from English to Hindi. 5

Q6. Precis : The candidates will be required to summarize a given passage in contemporary English of about 250 words to one-third of its length and also give it a suitable heading. 7

Q7. The candidate will be asked to write an official letter. There will be internal choice. 8

SCHEME OF EXAMINATION FOR B.Sc. PARTS-I,II,III OF RESTRUCTURING COURSE

(UNDER THE U.G.C. SCHEME)

For Students in Colleges

A candidate shall be required to offer English compulsory in B.Sc. Part-I, Hindi compulsory in B.Sc. Part-II and any one of the following subjects alongwith two subjects mentioned in the Scheme of Examinations or traditional subjects (subject to restrictions given in the Ordinance) in each Part-I, II and III.

1. Electronics
2. Computer Science
3. Micro-Biology
4. Plant and Crop Genetics
5. Fish and Fisheries
6. Pest control
7. Horticulture and Vegetable Cultivation
8. Pharmacy
9. Industrial Chemistry
10. Analytical Methods
11. Agricultural Chemicals and Fertilizers
12. Soils and Soils Conservation
13. Animal Husbandry and Poultry
14. Textile Chemistry
15. Farm Management

Note : A candidate coming from a Non-Hindi speaking area shall, if he/she did not offer Hindi in the Examination qualifying for admission, offer in lieu of compulsory Hindi, the subject of Additional English which shall carry the same marks as for Hindi.

Scheme of Examination of B. Sc. Semester- I (Mathematics)

(w.e.f. 2009-2010 and onwards)

Paper Code	Title of the Paper	Time Allowed	Allocation of Periods	Maximum Marks
BM 111	Algebra	3 Hours	6 Periods per week	Theory : 45 Internal Assessment : 05 Total : 50
BM 112	Differential and Integral Calculus	3 Hours	6 Periods per week	Theory : 45 Internal Assessment : 05 Total : 50
BM 113	Vector Calculus	3 Hours	6 Periods per week	Theory : 45 Internal Assessment : 05 Total : 50

Algebra
Code - BM 111

Maximum Marks : 45
Time : 3 hours

Section - I (3 Questions)

Symmetric and Skew symmetric matrices, Hermitian and skew-Hermitian matrices. Orthogonal and Unitary Matrices. Elementrary operations on matrices. Inverse of a matrix. Linear independence of row and column matrices. Row rank, column rank and rank of a matrix. Equivalence of column and row ranks.

Section - II (2 Questions)

Eigen values, eigenvectors and the characteristics equation of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix. Applications of matrics to a system of linear(both homogenous and non-homogeneous) equations. Theorems on

consistency of a system of linear equations.

Section - III (3 Questions)

Relations between the roots and coefficients of general polynomial equation in one variable. Solutions of polynomial equations having conditions on roots. Common roots and multiple roots.Transformation of equations. Descarte's rule of signs. Solutions of cubic equations (Cardon method) and Biquardartic equations (Descarte's and Ferari Methods)

Note : *The examiner is requested to set eight questions in all selecting questions sectionwise as indicated in the syllabus. The candidate is required to attempt five questions selecting atleast one question from each section.*

Books Recommended

1. K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd. New Delhi, 2002.
2. Shanti Narayan, A text Books of Matrics, S. Chand & Co., New Delhi.
3. H.S. Hall and S.R. Knight, Higher Algebra, H.M. Publications 1994.
4. Chandrika Prasad, Text Book on Algebra and Theory of Equations, Pothishala Private Ltd. , Allahabad.

Differential and Integral Calculus
Code - BM 112

Maximum Marks : 45
Time : 3 hours

Section - I (3 Questions)

ε–δ definition of the limit of a function. Basic properties of limits. Continuous functions and classifications of discontinuities. Differentiability. Successive differentiation Leibnitz theorem. Maclaurin and Taylor series expansions. Asymptotes in Cartesian and polar coordinates. Curvature, Radius of curvature for Cartesian curves. Parametric curves. Polar curves and pedal curves. Newton's method. Tangential polar equations. Centre of curvature Chord of curvature. Evolutes.

Section - II (2 Questions)

Tests for concavity and convexity. Points of inflexion. Multiple points. Nodes, Cusps & conjugate points. Type of cusps. tracing of curves in Cartesian, parametric and polar coordinates. reduction formulae.

Section - III (3 Questions)

Rectification of curves represented in Cartesian, parametric and polar form. Intrinsic equation. Quadrature. Volumes and sufaces of soils of revolution.

Note : *The examiner is requested to set eight questions in all selecting questions sectionwise as indicated in the syllabus. The candidate is required to attempt five questions selecting atleast one question from each section.*

Books Recommended

1. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum Outline Series, Tata Mc Graw Hill.
2. Khalil Ahmed, Text Book of Differetial Calculus, Anamaya Publishers, New Delhi.
3. Differential and Integral Calculus, Shanti Narayan.
4. Gorakh Prasad, Differential Calculus, Pothishala Pvt. Ltd. Allahabad.
5. Gorakh Prasad, Integral Calculus, Pothishala Pvt. Ltd. Allahabad.

Vector Calculus
Code - BM 113

Maximum Marks : 45
Time : 3 hours

Section I (2 Questions)

Scalar and vector product of three vectors. Product of four vectors. Reciprocal Vecotrs. Vector Differentiation. Scalar valued point fucntions. Vector valued point functions. Derivative along a curve. Directional derivative.

Section II (3 Questions)

Gradient of a scalar point function. Geometrical interpretation of grad Φ. Divergence and Curl of a vector point function. Gradient, divergence and curl of sums and products and their related vector identities. Laplace operator. Orthogonal

curvilinear coordinates. Conditions for orthogonally, fundamental triad of mutually orthogonal unit vectors. Gradient, Divergence, Curl and Laplacian operators in terms of orthogonal curvilinear, cylindrical and spherical coordinates.

Section III (3 Questions)

Vector integration. Line integral. surface integral. Volume Integral.

Therorem of Gauss, Green, Stokes and problems based on these.

Note : *The examiner is requested to set eight questions in all selecting questions sectionwise as indicated in the syllabus. The candidate is required to attempt five questions selecting atleast one question from each section.*

Books Recommended

1. Murray R. Spiegel, Theory and Problems of Vector Analysis Calculus, Schaum Publishing Company, New York.
2. Weatherburn. C.E. Advanced Vector Analysis, G. Bell & Sons Ltd.
3. Shanti Narayana, A Textbook of Vector Calculus, S. Chand & Co., New Delhi.
4. Hwei P. HSU, Vector Analysis, Simon and Schuster, New York.
5. N.Saran and S.N. Nigam, Introduction to Vector Analysis, Pothishala Pvt. Ltd. Allahabad.

Scheme of Examination of B.Sc. Semester-II (Mathematics)

(w.e.f. 2009-2010 and onwards)

Paper Code	Title of the Paper	Time Allowed	Allocation of Periods	Maximum Marks
BM 121	Elementary Number Theory and Trigonometry	3 Hours	6 Periods per week	Theory : 45 Internal Assessment : 05 Total : 50
BM 122	Ordinary Differential Equations	3 Hours	6 Periods per week	Theory : 45 Internal Assessment : 05 Total : 50
BM 123	Solid Geometry	3 Hours	6 Periods per week	Theory : 45 Internal Assessment : 05 Total : 50

Elementary Number Theory and Trigonometry
Code - BM 121

Max Marks : 45

Time : 3 Hours

Section - I (3 Questions)

Divisors and the Division Algorithem. Different bases. G.C.D. (greatest common divisor), L.C.M. (least common multiple). The equation ax+ by = n. G.C.D. of more than two intergers. Primes. The Fundamental theorem of Arithmetic and its applications. The Bracket function and Binomial coefficients. The Euler's Φ - function. Multiplicity of Φ - function. Formula for Φ (n) Congruences : Definition and simple properties. (The course content as contained in Chapter 1 & 2 of book at Sr. No. 1)

Section - II (3 Questions)

De Moivre's theorem and its applications. Expansion of trigonometrical functions. Direct circular and hyperbolic fucntions and their properties.

Section - III (2 Questions)

Inverse circular and hyperbolic functions and their properties. Logarithm of a complex quanlity. Gregory's series. Summation of Trigonometric series.

Note : *The examiner is requested to set eight questions in all selecting questions sectionwise as indicated in the syllabus. The candidate is required to attempt five questions selecting atleast one question from each section.*

Books Recommended

1. Neal H. Mc Coy, The Theory of Numbers, Mc Millan Co. Ltd. London.
2. Ivan Niven and H.S. Zuckerman, An Introduction to the Theory of Numbers.
3. S.L. Loney, Plane Trigonometry Part II, Macmillan and Company, London.
4. Moyer, Trigonmetry, Schaum Outline Series, Tata McGraw Hill.

Ordinary Differential Equations

Code - BM 122

Maximum Marks : 45
Time : 3 hours

Section I (3 Questions)

Geometrical meaning of a differential equation. Exact First order differential equations. First order higher degree equations solvable for x, y, p. Clairaut's Equation and singualr solutions. Orthogonal trajections in Cartesian coordinates and polar Coordinates.

Section II (2 Questions)

Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations. Equations reducible to homogenous linear ordinary differential equations.

Section II (3 Questions)

Linear differential equations of second order, Transformation of the equation by changing - the dependent variable/ the independent variable. Methods of variation of parameters and unknown coefficients. Ordinary simultaneous differential equations. Total differential equations. Condition for Pdx+Qdy + Rdz=0 to be exact. General methods of solving Pdx = Qdy + Rdz = 0 by taking one variable constant.

Note : *The examiner is requested to set eight questions in all selecting questions sectionwise as indicated in the syllabus. The candidate is required to attempt five questions selecting atleast one question from each section.*

Books Recommended

1. S.L. Ross, Differential Equations, John Wiley and Sons (Student Edition).
2. H.T. H. Piaggio, Elementary Treatise on Differential Equations and their Applications, C.B.S. Publisher and Distributors, Delhi, 1985.
3. Khalil Ahmed, Text Book of Integral Calculus and Differential Equations, Anamaya Publishers, New Delhi.
4. G.F. Simmons, Differential Equations, Tata McGraw, Hill,1972.

Solid Geometry

Code - BM 123

Maximum Marks : 45
Time : 3 hours

Section I (3 Questions)

General equation of second degree. Tracing of conics. Tangent at any point to the conic. Chord of Contact. Pole of line to the conic. Director circle of conic. System of conics. Confocal conics. Polar equation of a conic. Tangent and normal to the conic.

Section II (3 Questions)

Sphere Plane section of a sphere. Sphere through a goiven circle. Intersection of two spheres.

Radical plane of two spheres. Co-axal system of spheres.

Cones. Right circular cone. Enveloping cone and reciprocal cone.

Cylinder. Right circular cylinder and enveloping cylinder.

Section III (2 Questions)

Central conicoids. Equation of tangent plane. Director sphere. Normal to the conicoids.Polar plane of a point Paraboloids. Plane sections of conicoids. Generating lines. Confocal conicoid. Reduction of second degree equations.

Note : *The examiner is requested to set eight questions in all selecting questions sectionwise as indicated in the syllabus. The candidate is required to attempt five questions selecting atleast one question from each section.*

Books Recommended

1. R.J.T. Bill, Elementary Treaise on Coordinary Geometry of Three Dimensions, MacMillan India Ltd. 1994.
2. P.K. Jain and Khalil Ahmad : A Text Book of Analytical Geometry of Three Dimensions, Wiley Eastern Ltd. 1999.
3. Rich, Geometry, Schaum Outline Series, Tata McGraw Hill.

SCHEME OF EXAMINATIONS FOR B. Sc. (PASS COURSE) PHYSICS - 2009-2010

Semester - I					
			Max. Marks	**I.A.**	**Time**
Paper I	PHY-101	Mechanics	50	5	3 Hrs.
Paper II	PHY-102	Electricity and Magnetism	50	5	3 Hrs.
Paper III	PHY-103	Practical	40		3 Hrs.
Semester - II			**Max. Marks**	**I.A.**	**Time**
Paper I	PHY-201	Properties of Matters Kinetic Theory and Relativity	50	5	3 Hrs.
Paper II	PHY-202	Electro-magnetic Induction and Electronic Devices	50	5	3 Hrs.
Paper III	PHY-203	Practical	40		3 Hrs.
Semester -III- 2010-2011			**Max. Marks**	**I.A.**	**Time**
Paper I	PHY-301	Computer Programming and Thermody-namics	50	5	3 Hrs.
Paper II	PHY-302	Optics-I	50	5	3 Hrs.

Paper III	PHY-303	Practical	40		3 Hrs.

Semester -IV

			Max. Marks	I.A.	Time
Paper I	PHY-401	Statistical Mechanism	50	5	3 Hrs.
Paper II	PHY-402	Optics-II	50	5	3 Hrs.
Paper III	PHY-403	Practical	40		3 Hrs.

Semester -V- 2011-2012

			Max. Marks	I.A.	Time
Paper I	PHY-501	Solid State Physics	50	5	3 Hrs.
Paper II	PHY-502	Quantum Mechanics	50	5	3 Hrs.
Paper III	PHY-503	Practical	40		3 Hrs.

Semester -VI- 2011-2012

			Max. Marks	I.A.	Time
Paper I	PHY-601	Atomic, Molecular and Laser Physics	50	5	3 Hrs.
Paper II	PHY-602	Nuclear Physics	50	5	3 Hrs.
Paper III	PHY-603	Practical	40		3 Hrs.

Note :1. Practical examination will be held at the end of 2nd Semester (for PHY-103 & PHY- 203), 4th Semester (for PHY-303 & PHY 403) and 6th Semester (for PHY-503 & PHY 603)

2. One Practical from each paper is to chosen for the practical examination

3. Distribution of Marks for each practical paper

Experiments : 24 Marks

Lab. Record : 6 Marks

Viva-Voce : 10 Marks

Total 40 Marks

B. Sc. PHYSICS
SCHEME OF EXAMINATION
Semester- I - 2009 - 2010

Maximum Marks : 50
Internal Assessment : 05
Time : 3 hours

Paper I - Phy 101 : MECHANICS

NOTE :

1. The syllabus is divided into 3 units. Eight questions will be set . At least two questions will be set from each unit and the student will have to attempt at least one question from each unit. A student has to attempt five question in all.
2. 20% numerical problems are to be set.
3. Use of Scientific (non-programmable) calculator is allowed.

Unit I

Mechanics of single and system of particles, conservation of laws of linear momentum, angular momentum and mechanical energy, Centre of mass and equation of motion, constrained motion, degrees of freedom.

Unit II

Generalised coordinates, displacement, velocity, accerleration, momentum, force and potential. Hamilton's variational principle, Lagrange's equation of motion from hamilton's principle. Linear Harmonic oscillator, simple pendulum, Atwood's machine.

Unit - III

Rotation of Right body, moment of inertia, torque, angular momentum, kinetic energy of rotation. Theorems of perpendicular and parallel axes with proof.Moment of inertia of solid sphere, hollow sphere, spherical shell, solid cylinder, hollow cylinder and solid bar of rectangular cross- section. Accerlation of a body rolling down on an inclined plane.

References

1. Classical Mechanics by V.K. Jain (Ane 2009)
2. Classical Mechanics by H. Goldstein (2nd Edition)
3. Berkeley Physics Course, Vol. I, Mechanics by E.M. Purchell

Paper II - Phy 102 : ELECTRICITY AND MAGNETISM

Max. Marks : 50
Internal Assessment : 5
Time : 3 Hrs.

NOTE :

1. The syllabus is divided into 3 units. Eight questions will be set . At least two questions will be set from each unit and the student will have to attempt at least one question from each unit. A student has to attempt five question in all.
2. 20% numerical problems are to be set.
3. Use of Scientific (non-programmable) calculator is allowed.

Unit I

Mathematical Background : Scalars and Vectors, dot and cross product, Triple vector product, Scalar and Vector fields, Differentiation of a vector, Gradient of a scalar and its physical significance, Integration of a vector (line, surface and volume integral and their physical significance), Gauss's divergence theorem and Stocks theorem.

Electrostatic Field : Derivation of field E from potential as gradient, derivation of Laplace and Poisson equations. Electric flux, Guass's Law and its application to spherical shell, uniformly charged infinite plane and uniformly charged straight wire, mechanical force of charged surface, Energy per unit volume.

Unit II

Magnetostatistics : Magnetic Induction, magetic flux, solenoidal nature of Vector field of induction. Properties of B (i) $\nabla.B = 0$ (ii) $\nabla \times B = \mu_o J$. Electronic theory of dia and para magnetism

(Langevin's theory). Domain theory of ferromagnetism. Cycle of Magnetisation - Hysteresis (Energy dissipation, Hysteresis loss and importance of Hysteresis curve).

Unit III

Electromagnetic Theory : Maxwell equation and their derivations, Displacement Current. Vector and scalar potentials, boundary conditions at interface between two different media, Propagation of electromagnetic wave (Basic idea, no derivation). Poynting vector and Poynting theorem.

References :

1. Electricity and Magnetism by Reitz and Milford (Prentice Hall of India)
2. Electricity and Magnetism by A.S. Mahajan and A.A. Rangwala (Tata McGraw Hill).

Paper III Phy - 103

PRACTICALS

Max. Marks : 40
Time : 3 Hrs.

SPECIAL NOTES

1. Do any eight experiments.
2. The students are required to calculate the error involved in a particular experiment (percentage error).

NOTE

1. Distribution of Marks :

Experiment :	= 24 marks
Viva Voce :	= 10 marks
Lab Record :	= 6 marks
Total	= 40 marks

For giving marks under Lab. Record each college will maintain practical assessment record by using the follwoing procedure :-

1. Each student has to perform a minimum number of experiments prescribed in the syllabus.
2. After the completion of a practical the teacher concerned will check the note-book and conduct the viva-voce of each student to find out how much concepts related to the theortical and experimental part of the experiment he/she has understood. According to his/her performance marks will be recorded in their practical note book. These marks will constitute the lab record.
3. To complete the final marks for lab. record a separate register for each class of B.Sc will be maintained. The Student will be assigned a separate page on the register. On this page the marks obtained by the student in different practicals will be recorded. While taking the final average the total marks obtained will be divided by the total no. of required practicals, instead of the number of practicals performed by the student. This record will be signed by the concerned teacher.
4. The lab. record register will be presented to the external practical examiners for lab. record marks. The external examiners will verify the record randomly.

Paper III Phy - 103
PRACTICALS

Max. Marks : 40

Time : 3 Hrs.

1. Moment of Inertia of a fly-wheel
2. M.I. of an irregular body using a torsion pendulum.
3. Surface Tension by Jeager's method.
4. Young's modulus by bending of beam.
5. Modulus of rigidity by Maxwell's needle.
6. Elastic constants by Searle's method.
7. Viscosity of water by its flow through a uniform capillary tube.

8. Thermal conductivity of a good conductor by Searle's method.
9. Mechanical equivalent of Heat by Callendao and Barne's method.
10. 'g' by Bar pendulum.

SCHEME OF EXAMINATION

Semester- II

Paper I - Phy 201 : PROPERTIES OF MATTER, KINETIC THEORY AND RELATIVITY

Maximum Marks : 50

Internal Assessment : 05

Time : 3 hours

NOTE :

1. The syllabus is divided into 3 units. Eight questions will be set . At least two questions will be set from each unit and the student will have to attempt at least one question from each unit. A student has to attempt five question in all.
2. 20% numerical problems are to be set.
3. Use of Scientific (non-programmable) calculator is allowed.

Unit I

Properties of Matter (Elasticity) : Elasticity, Hooke's law, Elastic constants and their relations, Poisson's ratio, torsion of cylinder and twisting couple. Bending of beam (bending moment and its magnitude) cantilevers, Centrally loaded beam.

Unit - II

Kinetic Theory of Gases : Assumptions of Kinetic Theory of gases, Law of equipartition of energy and its applications for specific heats of gases. Maxwell distribution of speeds and velocities (derivation required), Experidmental verification of Maxwell's Law of speed distribution : most probable speed, average and r.m.s. speed, mean free path. Transport of energy and momentum, diffusion of gases. Brownian motion (qualitative),

Real gases, Van der Waal's equation.

Unit - III

Theory of Relativity : Reference systems, inertial frames, Gallilean invariance and Conservation laws, Newtonian relativity principle, Michelson - Morley experiment : Search for ether. Lorentz transformations length contraction, time dilation, velocity addition theorem, variation of mass with velocity and mass energy equivalence.

References

1. Properties of Matter by D.S. Mathur.
2. Heat and Thermodynamics (Vth Edition) by Mark W. Zemansky.
3. Berkeley Physics Course, Vol. I, Mechanics by E.M. Purchell

Paper II Phy 202 : ELECTRO MAGNETISM INDUCTION AND ELECTRONIC DEVICES.

Max. Marks : 50

Internal Assessment : 5

Time : 3 Hrs.

NOTE :

1. The syllabus is divided into 3 units. Eight questions will be set . At least two questions will be set from each unit and the student will have to attempt at least one question from each unit. A student has to attempt five question in all.
2. 20% numerical problems are to be set.
3. Use of Scientific (non-programmable) calculator is allowed.

Unit I

Electromagnetic Induction : Growth and decay of current in a circuit with (a) Capacitance and resistance (b) resistance and inductance (c) Capacitance and inductance (d) Capacitance resistance and inductance.

AC circuit analysis using complex variables with (a) capacitance

and resistance, (b) resistance and inductance (c) capacitance and inductance (d) capacitance, inductance and resistance Series and parallel resonant circuit. Quality factor (Sharpness of resonance).

Unit II

Semiconductor Diodes : Energy bands in solids. Intrinsic and extrinsic semiconductor, Hall effect, P-N junction diode and their V-I characteristics. Zener and avalanche breakdown. Resistance of a diode, Light Emitting diodes (LED). Photo conduction in semiconductors, photodiode, Solar Cell.

Diode Rectifiers : P-N junction half wave and full wave rectifier. Types of filter circuits (L and Π with theory). Zener diode as voltage regulator, simple regulated power supply.

Transistors : Junction Transistors, Bipolar transistors, working of NPN and PNP transistors, Transistor connections (C-B, C-E, C-C mode), constants of transistor. Transistor characteristic curves (excluding h parameter analysis), advantage of C-B configuration. C.R. O. (Principle, construction and working in detail).

Unit III

Transistor Amplifers : Transistor biasing, Methods of Transistor biasing and stabilization. D.C. load line. Common-base and common-emitter transistor biasing. Common-base, common-emitteer amplifers. Classification of amplifers. Resistance-capacitance (R-C) coupled amplifer (two stage; concept of band width, no derivation). Feed-back in amplifers, advantage of negative feedback Emitter follower.

Oscillators : Oscillators, Principle of Oscillation, Classification of Oscillator. Condition for self sustained oscillation : Barkhousen Criterion for oscillations. Tuned collector common emitter oscillator. Hartley oscillator. Colpitt's oscillator.

References :

1. Electricity and Magnetism by Reitz and Milford (Prentice Hall of India)
2. Electricity and Magnetism by A.S. Mahajan and A.A.

Rangwala (Tata McGraw Hill).

3. Basic Electronics and Linear circuits by N.N. Bhargava, D.C. Kulshreshtha and S.C. Gupta (TITI, CHD).
4. Soild State Electronics by J.P. Agarwal, Amit Agarwal (Pragati Prakashan, Meerut).
5. Electronic Fundamentals and Applications by J.D. Ryder (Prentice Hall India).

Paper III Phy - 203
PRACTICALS

Max. Marks : 40

Time : 3 Hrs.

SPECIAL NOTES

1. Do any eight experiments.
2. The students are required to calculate the error involved in a particular experiment (percentage error).

NOTE

1. Distribution of Marks :

Experiment :	= 24 marks
Viva Voce :	= 10 marks
Lab Record :	= 6 marks
Total	= 40 marks

For giving marks under Lab. Record each college will maintain practical assessment record by using the follwoing procedure :-

1. Each student has to peform a minimum number of experiments prescribed in the syllabus.
2. After the completion of a practical the teacher concerned will check the note-book and conduct the viva-voce of each student to find out how much concepts related to the theoertical and experimental part of the experiment he/she has understood. According to his/her performance

marks will be recorded in their practical note book. These marks will constitue the lab record.

3. To complete the final marks for lab. record a separate register for each class of B.Sc will be maintained. The student will be assigned a separate page on the register. On this page the marks obtained by the student in different practicals will be recorded. While taking the final average the total marks obtained will be divided by the total no. of required practicals, instead of the number of practicals performed by the student. This record will be signed by the concerned teacher.
4. The lab. record register will be presented to the external practical examiners for lab. record marks. The external examiners will verify the record randomly.

Paper III Phy - 203
PRACTICALS

Max. Marks : 40

Time : 3 Hrs.

1. E.C.E. of hydrogen using an Ammeter.
2. Calibration of thermocouple by potentiometer.
3. Low resistance by Carey Foster's Bridge with calibration.
4. Determination of impendance of an A.C. circuit and its verification.
5. Frequency of A.C. mains and capacity by elctrical vibrator.
6. Frequency of A.C. mains by sonometer using an electromagnet.
7. Measurement of angle dip by earth inductor.
8. High resistance by substitution method.
9. Inductance (L) by Anderson Bridge (A.C. method)
10. To draw forward and reverse bias characteristics of a semiconductor diode.

11. Zener Doide volage regulation characteristics.
12. Verification of Inverse square law by photo-cell.
13. To study the characteristics of a solar cell.

B.Sc. Ist Year (GEOLOGY) 2009 - 2010

Scheme of Examination, Maximum marks assigned to the paper and Internal assessment

Ist SEMESTER				
		Max. Marks	**Theory**	**I.A.**
Paper-101	General Geology	50	45	05
Paper-102	Crystallography	50	45	05
Paper-103	Practical and Field Work	50	--	--
IInd SEMESTER				
		Max. Marks	**Theory**	**I.A.**
Paper-201	Physical Geology	50	45	05
Paper-202	Mineralogy	50	45	05
Paper-203	Practical and Field Work	50	45	05

B.Sc. Ist Year (GEOLOGY)

Theory

Paper - 101 General Geology

Periods per week : 3
Max. Marks : 45
Time : 3 Hrs.

Note : In all eight questions will be set by the examiner. the student will answer five questions. All questions shall carry equal marks.

Geology and its perspectives. Earth in relation to solar system, origin, size, shape, mass density and its development.

Internal constitution of the Earth. Promotion of hydrosphere, atmosphere and biosphere.

Elementary ideas of continental drift and plate tectenics.

Rock weathering and its type, factors influencing weathering atmospheric circulation and its impact on weathering.

Elementary ideas about out-crop, dip, strike, fold, fault and unconformities.

Paper - 201 Physical Geology

Periods per week : 3
Max. Marks : 45
Time : 3 Hrs.

Note : In all eight questions will be set by the examiner. the student will answer five questions. All questions shall carry equal marks.

Soil formation, soil profile and soil types. Action of geological agents - River, winds glacier, lake and oceanic currents.

Volcano- origin, types and distribution.

Mountains - Types and origin.

Paper - 102 Crystallography

Periods per week : 3
Max. Marks : 45
Time : 3 Hrs.

Note : In all eight questions will be set by the examiner. The student will answer five questions. All questions shall carry equal marks.

Crystallography - Elementary ideas about crystal structures, crystal faces, edges solid angles and zone. Crystallographic axes and axial angles. Parameters and indices, crystal symmetry and normal Classes of all the systems. Twinning and its types.

Paper - 202 Mineralogy

Periods per week : 3
Max. Marks : 45
Time : 3 Hrs.

Note : In all eight questions will be set by the examiner. The student will answer five questions. All questions shall carry equal marks.

Mineralogy - Minerals:- Definition and classifcation, physical propreties and chemical composition. Slicates structures.

Study of physical properties, Chemical composition systematic classification and mode of occurance of imports

Role forming groups of minerals and ores. Elementary ideas about stomic minerals.

PRACTICAL AND FIELD WORK

Practical Paper - 103

Periods per week : 3
Max. Marks : 50
Time : 3 Hrs.

Study of important geomorthological models and their interpretation.

Use of Clinometer and Bruntun Compass.

Drawing of clinographic projection of important crystal models from various classes.

Geological field work .

Note : Practical examinations will be conducted annually.

Practical Paper - 203

Periods per week : 3
Max. Marks : 50
Time : 3 Hrs.

Study of Elements of symmetry of at least one representation crystal from Normal classes of all crystal systems.

Study of physical properties of important rock forming minerals in hand specimen,

Geological field work.

Note : Practical examinations will be conducted annually.

SCHEME OF EXAMINATION

(Semester System)- 2009-2010

B. Sc. Part I/II/III with Computer Science as a subject

Year	Semester	Paper	Name of the Paper	Max. Marks	Internal Marks	Exam. Hours.
First	1st	1.1	Computer Fundamentals and Programming in C-I	40	5	3
		1.2	Computer Architecture & Networking - I	40	5	3
		1.3	Practicals & Viva-voce (Based on Paper- 1.1)	60	-	4
	2nd	2.1	Computer Fundamentals and Programming in C-II	40	5	3
		2.2	Computer Architecture & Networking - II	40	5	3
		2.3	Practicals & Viva-voce (Based on Paper- 2.1)	60	-	4
Second	3rd	3.1	Data and File Structures-I	40	5	3
		3.2	Object Oriented Design and C++-1	40	5	3
		3.3	Practicals & Viva-voce (Based on Paper- 3.1and 3.2)	60	-	4
	4th	4.1	Data and File structures-II	40	5	3
		4.2	Object Oriented Design and C++II	40	5	3
		4.3	Practicals & Viva-voce (Based on Paper- 4.1 and 4.2)	60	-	4
Third	5th	5.1	Data base Management System, Oracle and Visual Basic-I	40	5	3
		5.2	Software Engg. -I	40	5	3
		5.3	Practicals & Viva-voce (Based on Paper- 5.1)	60	-	4

B.Sc. Ist Year 2009- 2010 First Semester

Paper-1.1 Computer Fundamentals and Programming in C-I

Max. Marks : 40
Time Allowed : 3 Hours.

Note : Eight questions in all will set by the paper setter with minimum two questions from each Unit and the candidates shall be required to attempt five questions in all by selecting at least one question from each unit. All questions shall carry equal marks.

Unit-I

Introduction : Historical evolution of computers, Classification of computers, Model of a digital computer, Functioning of a digital computer, Usefulness of computers, Human being V/s Computer, Computer as a tool, Applications of computers (desktop publishing, sports, design and manufacturing, research and design, military, robotics, planning & management, marketing, medicine & Health care, arts, communications).

Number systems : What is Number system, necessity of binary number system, binary, octal and hexadecimal number system, inter-conversion of numbers, binary arithmetic, character codes.

Unit-II

Input/Output Devices : Punched cards, card-readers, key-punching machines, keyboards, mouse, joysticks, trackballs, digitizer, voice-recognition, optical-recognition, scanners, terminals, point-of-sale terminals, machine-vision systems.

Hard-copy devices : Print quality, Impact printers - DMPs, Daisy-wheel printers, Line-printers, Drum printers, Chain printers, Non-impact printers - Inkjet, Laser, Thermal, LED; Plotters, Soft-copy devices : monitors, video-standards (VGA and SVGA).

Memory & Mass Storage Devices : Characteristics of memory systems, types of memory, RAM, ROM, magnetic disks - floppy disks, hard- disks; optical disks - CD, CD-I, CD- ROM; Magnetic tapes; Concepts of Virtual and Cache memory.

Unit-III

Software Concepts : Introduction, types of software - System & Application software; Language translators - Compiler, Interpreter, Assembler, Operating system - Characteristics, bootstrapping, Types of Operating, system operating system as a resource manager, BIOS; System utilities - Editor, Loader, Linker, File Manager, Concept of GUI, GUI standards.

References :

1. Gill, Nasib S. : Essentials of Computer and Network Technology, Khanna Book Publishing Co. New Delhi.
2. Singh, Rajender : Aplication of IT in Business, Ramesh Publishers, Jaipur.
3. Donald Sanders : Computers Today, McGraw-Hill Publishers.
4. Davis : Introduction to Computers, McGraw-Hill Publishers.
5. V.Rajaraman : Fundamental of Computers, Prentice-Hall India Ltd., New Delhi.
6. Gottfried : C Programming (Schaum's Outline Series), Tata McGraw-Hill Publishers.
7. Kanetkar : Let Us C, BPB Publications, New Delhi.
8. E. Balagurusamy : C Programming (Tata Mc Graw-Hill Publishers)

Note : Latest and good books may be added from time to time.

Paper-1.2 Computer Architecture and Networking - I

Max. Marks : 40
Time : 3 Hours.

Note : Eight questions in all will set by the paper setter with minimum two questions from each Unit and the candidates shall be required to attempt five questions in all by selecting at least one question from each unit. All questions shall carry equal marks.

Unit-I

Basic Building Blocks and Circuit Design : OR, AND, NOT, XOR Gates; De Morgan's theorem, Universal building blocks, laws and theorem of boolean algebra, Simplifying logic circuits — sum of product and product of sum form, algebraic simplication, Karnaugh simplification; arithmetic circuits.

Unit-II

Combinational and Sequential Circuits, Flip-flops, Counters, shift registers, Decoders and Encoder, Multiplexer and De-multiplexer circuits.

Unit-III

Register transfer and Micro-operations : Register transfer Language, Bus and Memory, Transfer, Arithmetic Logic Micro-operations, Shift Micro-operations.

Basic computer Organization and Design : Instruction and Instruction Codes, Computer Instructions, timing and Control, Instruction Cycle, Memory Reference instructions, Input-Output and Interrupts;

Suggested References :

1. M.Mano : Computer System Architecture, Prentice Hall of Inia Ltd., New Delhi.
2. Gill N.S. and Dixit J.B.: Digital Design and Computer Organisation, University Science Press (An Imprint of Luxmi Publications), N. Delhi).
3. William Stallings : Computer Organisation and Architecture and Organisation Maxell Publication.
4. Mano, M.M. : Digital Design, 2nd ed., Prentice Hall of India.
5. Salivahanan and Arivazhagan : Digital Circuits and Design, Vikas Publ. House Pvt. Ltd.
6 Nasib S. Gill : Essentials of Computer and Network technology, Khanna Book Publishing Co. New Delhi.
7 J.P. Hayes : Computer Architecture and organisation by J.P. Hayes. Tata McGraw Hill, New Delhi.
8. Gear C. W. : Computer Organisation and Architecture, Prentice Hall of India, New Delhi.

Note : Latest and good books may be added from time to time.

Paper-1.3 Practical based on Papar-1.1

Max. Marks : 60

Time Allowed : 4 Hrs.

Note :

i) Practical (OS and MS-Office) : 45 Marks

ii) Viva-voce : 15 Marks

Paper-2.1 Computer Fundamental and programming in C-II

Max. Marks : 40

Time : 3 Hours.

Note : Eight questions in all will set by the paper setter with minimum two questions from each Unit and the candidates shall be required to attempt five questions in all by selecting at least one question from each unit. All questions shall carry equal marks.

Unit-I

Basic concepts of programming, problem solving, algorithm designing and flowcharting, concept structured programming.

Elements of C : C. character set, identifiers and keywords, data types : declaration and definition

Unit-II

Operators : Arithmetic, relational, logical, bitwise, unary, assignment and conditional operators and their hierarchy & associativity.

Data input, output. Control statements : Sequencing , Selection : if and switch statements; alternation, Repetition : for, while, and do-while loop; break, continue, goto.

Unit-III

Functions : Definition, prototype, passing parameters, recursion.

Data Structures : Arrays, struct, union, string, data files.

Pointers : Declaration, operations on pointers, array of pointers, pointers to arrays.

Program development in C.

Suggested References :

1. Gottfried :C Programming (Schaum's Outline Series), Tata McGraw Hill Publishers.
2. Kanetkar ; Let Us C, BPB Publications, New Delhi.
3. E.Balaguruswamy : C Programing (Tata McGraw Hill Publishers
4. Donald Sanders : Computers Today, McGraw Hill Publishers.

5. Davis : Introduction to Computers, McGraw Hill Publishers
6. V. Rajaraman : Fundamantal of Computers, Prentice Hall India Ltd. New Delhi.

Note : Latest and good books may be added from time to time.

Paper-2.2 Computer Architecture and Networking-II

Max. Marks : 40
Time : 3 Hours.

Note : Eight questions in all will set by the paper setter with minimum two questions from each Unit and the candidates shall be required to attempt five questions in all by selecting at least one question from each unit. All questions shall carry equal marks.

Unit-I

Central processing Unit : General register organization, Stack Organization, Instruction fomats, Addressing Modes, Data and Transfer Manipulation, Program Control, Reduced Instruction Set Computer.

Input-Output Organization : Peripheral devices, Input-Output interface, Asynchronous Data transfer, Modes of transfer, Priority interrupt, Direct Memory Access (DMA), input-output processors (IOP).

Unit-II

Computer Networking : Introduction to Computer Network, Why computer Network ? Types of computer network, Network topology, Internet and its hardware & software requiremnts, applications of Internet (E-mail, Mailing lists, WWW, FTP, Telnet, Gopher, WAIS, UIRC, Usenet), overview of Intranet and its applications.

Hardware requirements for LAN, Transmission channel for LAN, Network Interface Unit, Servers & Workstations, LAN software, Introduction to Ethernet, token ring; hub, Switches, Bridges, routers.

Unit-III

Private Networks : ISDN, PSTN, PSDN Value Added Network,

OSI Model, TCP/IP Model, Network of protocols, Applications of Computer Network.

Suggested References :

1. M. Mano : Computer System Architecture, PHI Ltd., New Delhi.
2. Gill N. S. and Dixit J.B.: Digital Design and Computer Organisation, University Science Press (An Important of Luxmi Publications), N. Delhi).
3. William Stallings : Computer Organisation and Architecture and Organisation Maxell Publications.
4. Mano, M.M. : Digital Design, 2nd ed., Prentice Hall of India.
5. Salivahanan and Arivazhagan : Digital Circuits and Desgn, Vikas Publ. House Pvt. Ltd.
6 Nasib S. Gill : Essentials of Computer and Network technology, Khanna Book Publishing Co. New Delhi.
7. A.S. Tanenbaum : Computer Netwoks (4th Ed.), Prentice Hall of India.
8. W. Tomasi : Introduction to Data Communications and Networking, Pearson Education.
9. P.C. Gupta : Data Communications and Computer Networks , Prentice Hall of India.
10. Behrouz Forouzan and S.C. Fegan : Data Communications and Networking, Mc Graw Hill.
11. L.L. Peterson and B.S. Davie : Computer Networks ; A Systems Approach, Morgan Kaufmann.
12. William Stallings : Data and Computer Communications, Pearson Education.
13. J.P. Hayes : Computer Architecture and organisation by J.P. Hayes. Tata Mc Graw Hill, New Delhi.
14. Gear C. W. : Computer Organisation and Architecture, Prentice Hall of India, New Delhi.

Note : Latest and good books may be added from time to time.

Paper-2.3 Practical based on Papar-2.1

Max. Marks : 60

Time Allowed : 4 Hrs.

Note :

i) Practical (Programming in C) : 45 Marks

ii) Viva-voce : 15 Marks

SCHEME OF EXAMINATION

(Semester System)- 2009-2010

B. Sc. Part I/II/III with Information Technology as a subject

Year	Semester	Paper	Name of the Paper	Max. Marks	Internal Marks	Exam. Hours.
First	1st	1.1	Fundamentals of Information technolgy - I	40	5	3
		1.2	C- Programming Language -I	40	5	3
		1.3	Practical (Based on Paper- 1.1 & 1.2)	60	-	4
	2nd	2.1	Fundamentals of Information Technology-II	40	5	3
		2.2	C- Programming Language -II	40	5	3
		2.3	Practical (Based on Paper- 2.1 & 2.2)	60	-	4
Second	3rd	3.1	Programming Using C++ -1	40	5	3
		3.2	Computer Networks and Internet programming-I	40	5	3
		3.3	Practicals (Based on Paper- 3.1and 3.2)	60	-	4
	4th	4.1	Programming Using C++-II	40	5	3
		4.2	Computer Networks and internet Programming-II	40	5	3
		4.3	Practicals (Based on Paper- 4.1 and 4.2)	60	-	4
Third	5th	5.1	Programming in Visual basic and Oracle-I	40	5	3
		5.2	Linux Operating System-I	40	5	3
		5.3	Practicals (Based on Paper- 5.1 and 5.2)	60	-	4

6th	6.1	Programming in Visual basic and Oracle-II	40	5	3
	6.2	Linux Operating System-II	40	5	3
	6.3	Practicals (Based on Paper- 6.1 and 6.2)	60	-	4

FIRST YEAR

First Year

Paper-1.1 Fundamentals of Information Technology-I

Max. Marks : 40
Time : 3 Hours.

***Note** : Eight questions in all will set by the paper setter with minimum two questions from each Unit and the candidates shall be required to attempt five questions in all by selecting at least one question from each unit. All questions shall carry equal marks.*

UNIT- I

Basic of Computers and Number Systems :

Block diagram of computer, booting process, introduction to the concepts-bit, byte, word hardware, operating system and application software, machine, assemblers, loaders and linkers.

UNIT- II

Operting System-DOS, windows and Unix

Features of DOS, Windows and Unix operating systems and their comparison. Internal and External commands of DOS, file and directory management commands such as DIR, COPY, TYPE, DEL, DELTREE, UNDELETE, CHKDSK, FORMAT, XCOPY, SCANDISK, Creating BATCH files using REM, ECHO, PAUSE, IF, GOTO, AUTOEXEC.BAT and CONFIG,SYS files. Conceps of Windows : menu, icon, opening, closing and resizing windows, creating folder, Using Start, control panel, recycle bin and online help, using windows Explorer to files and directories manage.

UNIT- III

Over view of UNIX Structure, general purpose UNIX commands such as date, echo, cal, bc, pwd, passwd; file and directory commands such as Is, mkdir, cp, mv, rm process management commands such as po, kill, nohup, communication commands such as news, mesg, wall;

working with editor Introduction to shell programming.

References

1. Essentials of Computers and Network Technology by Nasib Singh Gill, Khanna Book Pub. Co., New Delhi.
2. Singh Rajender : Application of IT in Business, Ramesh Publishers, Jaipur.
3. Computers Today by S.K. Basandra, Galgotia Publications.
4. Computers Today by Sanders
5. Computer Fundamentals by P.K. Sinha.
6. Fundamentals of Computers by V. Rajaraman
7. PC Software made simple by R. K. Texali-Tata McGraw Hills
8. Understanding PC Tools by Peter Dysen.
9. Understanding Norton Utilities by Peter Dysen.
10. MS Office by Ron Manafield BPB Publications.
11. Information Technology by Curtin.
12. Computer Science Theory and Applications by E. Balaguruswammy and B. Sushil
13. Compact Guide to Windows, Word and Excel by Ron Mansfield, BPB Publications.

Paper-1.2 C. Programming Language - I

Max. Marks : 40
Time : 3 Hours.

Note *: Eight questions in all will set by the paper setter with minimum two questions from each Unit and the candidates shall be required to attempt five questions in all by selecting at least one question from each unit. All questions shall carry equal marks.*

UNIT- I

Overview of Programming : Introduction to computer based problem solving : requirements of problem solving by the computer, problem identification, Problem definition, Example for problem solving, Problem solving strategies: Problem Design and implementation issues: Problems and Algorithms, Top-Design and stepwise refinement (breaking a problem into sub tasks.

UNIT- II

Data organization or data structures, constructions of loops basis programming establishing initial conditions, terminating conditions, implementation (use of procedures for Modular Design, Choice of variable names, documentation of program, program testing) ; programming environment, Programming language classification.

UNIT- III

C Language, History, Structure of C Program : Data Types (int, float, char, double, void) Data structure, Constants and variables, variable declaration (integer, float, character, logical variable string variable), Constraints, operators and Expression; Arithmetic Operators, Relational Operators, Logical Operators, Expressions, Control Construct : if then, for, while; Arrays : Array declaration (one and two dimensional arrays) : Functions-Fundamentals: General form function arguments, Return value Basic Formatted Input /Output, Unformated input/Output. Program Design examples. Advance features; Typed modifiers and storage class specifier for data type, Bit Operators? Operator, & Operator, * Operators. Type casting. Type casting conversion.

References :

1. Yashwant, Kanetkar : Let us C, BPB Publications.
2. Gottfriend, B : Theory and problem of Programming in C, Schaum Series.
3. Kernighan & Ritchie : The C Programming Language PHI C Problem solving and programing PHI.

Paper-1.3 : Practical (Based on Papar-1.1 & 1.2)

Second Semester

Paper-2.1 Fundamentals of Information Technology - II

Max. Marks : 40
Time : 3 Hours.

Note *: Eight questions in all will set by the paper setter with minimum two questions from each Unit and the*

candidates shall be required to attempt five questions in all by selecting at least one question from each unit. All questions shall carry equal marks.

UNIT- I

Input & Output devices

Various input devices such as keyboard, mouse, joysticks; output devices such as monitor (CGA, VGA, EGA and SVGA), different types of printers and plotters.

Primary and secondary memory, Cache memory, extended and expanded memory.

Removable and non-removable secondary memory : tapes, disks, CDROM,DVD, comparison of these devices based on technology and speed.

Organization of data on disk : Tracks, sectors, cylinders, heads, access time, seek time and latency time.

Typical configuration of a Pentium Computer, functional description of various modules, cards and uses in a P.C.

UNIT- II

Computers and Communication

Single-user, multi-user, and client-server system; Distributed and Parallel systems; Hardware & Software components of computer networks, Network topologies for LAN & WAN Various services and their uses.

UNIT- III

Installation and using Application Software and Data Management Tools

Installing and understanding the features and applications of the following software : MS-WORD, MS-EXCEL, MS-POWER POINT, Virus detection, prevention and anti-virus packages

References

1. Essentials of Computers and Network Technology by Nasib Singh Gill, Khanna Book Pub. Co., New Delhi.
2. Computers Today by S.K. Basandra, Galgotia Publications.
3. Computers Today by Sanders
4. Computer Fundamentals by P.K. Sinha.

5. Fundamentals of Computers by V. Rajaraman
6. PC Software made simple by R, K. Texali-Tata McGraw Hills
7. Understanding PC Tools by Peter Dysen.
8. Understanding Norton Utilities by Peter Dysen.
9. MS Office by Ron Manafield BPB Publications.
10. Information Technology by Curtin.
11. Computer Science Theory and Applications by E. Balaguruswammy and B. Sushil
12. Compact Guide to Windows, word and excel by Ron Mansfield, BPB Publications.

Paper-2.2 C. Programming Language - II

Max. Marks : 40
Time : 3 Hours.

Note *: Eight questions in all will set by the paper setter with minimum two questions from each Unit and the candidates shall be required to attempt five questions in all by selecting at least one question from each unit. All questions shall carry equal marks.*

UNIT- I

Advanced Programming Techniques : Control constructs ; do-while, switch statements, break and continue, exit () function, goto and label; Functions; Parameter passing-call by value and call by reference, calling functions with Arrays, argu and argv; Recursion.

UNIT- II

Basic concepts. Design examples (Tower of Hanoi Recursive quick sort); Dynamic Data structures in C; Pointers, the & and * operators, Pointer expression, pointer assignment, Pointer arithemetic, Pointer comparison. The dynamic allocation functions-malloc and calloc Pointer Vs Arrays, Arrays of pointer, Pointer to Pointer, Intialising Pointers, Pointers of functions, function returning Pointer Functions with

variable number of arguments Structures : Basic of Structures, Declaring a structure, Referencing structure elements, Array of structures, Passing structures of functions, Declaring a Structure pointer, structure Pointers.

UNIT- III

Arrays and structures with in structures Unions : Declaration, Uses Enumerated Data types, typedef, Example algorithm: linked list: insertion, deletion and search; file Handling : The file Pointers, file accessing functions (fopen, fclose, putc, getc, fprint); C preprocessor: defing # include, # undef, # conditional compilation directives (#if, #else, #elif, #endif and #fndef): C standard Library and Header files, Headr files (stdlib.h), type.h, string.h, math.h, stlib.h, time,) etc. Standard library functions : string functions, Mathematical functions, Data and time functions, Variable argument list functions, Utility functions, Character class test function.

References :

1. Yashwant, Kanetkar : Let us C, BPB Publications.
2. Gottfriend, B : Theory and problem of Programming in c, Schaum Series.
3. Kernighan & Ritchie : The C Programming Language PHI C Problem solving and programing PHI.

Paper-2.3 : Practical (Based on Papar - 2.1 & 2.2)

SCHEME OF EXAMINATIONS FOR B. Sc. Statistics (Semester System) Three Years Degree Course w.e.f. 2009-10

Semester	Paper Code	Nomenclature	Marks		Time in
			In the Exam.	Internal assessment	
I	ST-111	Descriptive Statistics	45	5	3
	ST-112	Probability Theory	45	5	3
	ST-113	Practicals	50	-	3
II	ST-121	Correlation and Regression Analysis	45	5	3
	ST-122	Probability Distributions	45	5	3
	ST-123	Practicals	50	-	3
III	ST-231	Elementary Inference	45	5	3
	ST-232	Sample surveys	45	5	3
	ST-233	Practicals	50	-	3
IV	ST-241	Parametric and Non Parametric Tests	45	5	3
	ST-242	Design of Experiments	45	5	3
	ST-243	Practicals	50	-	3
V	ST-351	Applied Statistics	45	5	3
	ST-352	Numericals methods of Fundamentals of Computers	45	5	3
	ST-353	Practicals	50	-	3
VI	ST-361	Statistical Quality Control	45	5	3
	ST-362	Operations Research	45	5	3
	ST-363	Practicals	50	-	3

STATISTICS

Max. Marks : 45
Time : 3 Hours.

ST : 111 DESCRIPTIVE STATISTICS

Section - I (Two questions)

Introduction of Statistics : Origin, development, definition, scope, uses and limitations.

Types of Data : Qualitative and quantitative data; nominal and ordinal data, cross sectional and time series data discrete and continuous data; frequency and non-frequency data. Different types of scales - nominal, ordinal, ration and interval.

Collection and Scrutiny of Data: Collection, Classification and tabulation of primary and secondary data.

Section - II (Three questions)

Presentation of Data: Diagrammatic and graphical presentation of groupted data; Graphing the data constructing histograms, ogives, stem and leaf displays and box plots.

Measures of central Tendency and Location : mean, Median. mode, geometric mean. Harmonic mean; quantiles - quartiles, deciles, percentiles.

Measures of Dispersion : Absolute and relative measures of range, quartile deviation, mean deviation standard deviation and Coefficient of variation.

Section - III (Three questions)

Moments, Skewness and Kurtosis : Moments about mean, about any point and derivation of their relationships; Sheppard's correction for moments (without derivation), Chalier's checks; Concepts of Skewness, Kutosis and their meausres/ coefficients.

Theory of Attributes : Symbolic notation, dichotomy of data, class frequencies, order of class frequencies, consistency of data, independence and association of attributes, Yule's

coefficients of association and colligation.

Note : *The examiner is requested to set 8 questions in all, as mentioned above fo each section. The candidate will be required to attempt five questions selecting at least one question from each unit.*

STATISTICS

Max. Marks : 45
Time : 3 Hours.

ST : 112 PROBABILITY THEORY

Section - I (Three questions)

Concepts in Probability : Random experiment, trial, sample point and sample space, operation of events, exhaustive, mutually exclusive, equally likely and independent events. Definitions of probability - classical, relative frequency, statistical and axiomatic approach, Addition and multification Law of Probability, Boole's ineqality; Bayes theorem and its applications.

Section - II (Three questions)

Random Variables and Probability Functions : Definition and properties of a random variable; discrete and continuous random variable; probablity mass and density functions, distribution function.

Mathematical Expectation : Definition and its properties - moments, measures of location, dispersion, skewness and kurtosis.

Section - III (Two questions)

Generating Functions : Moment generating function, cumulant generating function, Probability generating function (alongwith, their properties and uses).

Note : *The examiner is requested to set 8 questions in all, as mentioned above fo each section. The candidate will be required to attempt five questions selecting at least*

one question from each unit.

STATISTICS

Max. Marks : 50 (Record of Practical Work :10, oral test : 10, written test :30)
Time : 3 Hours.

ST-113 : PRACTICALS

At least the following practicals are required to be done by the students during the first Semester :

1. To collect, classify and tabulate some primary data using questionnaire and charts.
2. To construct frequently distributions using exclusive and inclusive methods
3. Representation data using bars, rectangles, circles and pie diagrams.
4. Representation of data using Histogram, Frequency Polygon, Frequency Curve and Ogives.
5. Representation of data using Stem and leaf displays.
6. Representation of data using Box plot.
7. To toss a coin at least 100 times and plot a graph of heads with respect of number of tosses.
8. To compute various measures of central tendency and dispersion.
9. To obtain first four central moments for the given grouped frequency distribution.
10. To apply Charlier's checks while computing the moments for a given frequency distribution.
11. To obtain moments applying Sheppard's correction.
12. To obtain various coefficients of skewness and kurtosis.
13. To discuss the association of attributes for 2 x 2 contingency table using Yule's coefficient of association and colligation.

Note :*The examiner is requested to set 5 experiments from*

amongest the above mentioned experiments. The candidate is required to attempt any 3 of the allotted experiments.

STATISTICS

Max. Marks : 45
Time : 3 Hours.

ST : 121 Correlation and Regression Analysis

Section - I (Three questions)

Correlation for Bivariate Data : Concept and types of Correlation, Scatter Diagram; Karl Pearson's Coefficent (r) of Correlation for non-frequency and frequency distributions, assumptions for and properties of r, derivation of limits of r, rank correlation coefficient with derivation of its fomula, its merit and demerits; Coefficient of concurrent deviations; Lag and lead in correlation;Coefficient of determination.

Section - II (Three questions)

Linear Regression : Concept of regression; principles of least squares and fitting of staight line, derivation of two lines of regression, properties of regression coefficients and regression lines, stadard error of estimate obtained from regression line, correlation coefficient between observed and estimated values, distinction between correlation and regression.

Curvilinear Regression : Fitting of second degree parabola, power curve of the type $Y=aX^b$, exponential curves of the types $Y=ab^x$ and $Y=ae^{bx}$.

Section - III (Three questions)

Correlation and regression for Trivariate Data : Concept of multiple and partial correlation and regression, derivation of plane of regression, properties of residuals, derivation of the formula for variance of the residual, coefficient of multiple correlation and

its properties, coefficient of partial correlation and its properties, multiple correlation in terms of total and partial correlations.

Note : *The examiner is requested to set 8 questions in all, as mentioned above fo each section. The candidate will be required to attempt five questions selecting at least one question from each unit.*

STATISTICS

Max. Marks : 45
Time : 3 Hours.

ST : 122 Probability Distributions

Section - I (Three questions)

Bernoulli, binomial, Poisson and normal distributions with their properties.

Section - II (Two questions)

Discrete, uniform, negative binomial, geometric and hyper-geometric distributions with their properties.

Section - III (Three questions)

Uniform, gamma, beta (first and second kind), exponential and Cauchy distributions with their properties.

Note : *The examiner is requested to set 8 questions in all, as mentioned above fo each section. The candidate will be required to attempt five questions selecting at least one question from each unit.*

STATISTICS

Max. Marks : 50 (Record of Practical Work :10, oral test : 10, written test :30)
Time : 3 Hours.

ST-123 : PRACTICALS

At least the following practicals are required to be done by the students during the first Semester :

1. To compute Karl Pearson's coefficient of Correlation for a bivariate frequency distribution.
2. To find Spearman's rank correlation coefficient for the given

data on the opinion of three members.

3. To fit straight line to the given data on pairs of observations.
4. To fit the second degree curve to the given data on pairs of observations.
5. To fit the curve to the type $Y=aX^b$ to the given data on pairs of observations.
6. To fit the curve to the type $Y=ab^X$ to the given data on pairs of observations.
7. To fit the curve to the type $Y=ae^{bx}$ to the given data on pairs of observations.
8. To obtain the regresion lines for a given bivariate frequency distribution.
9. To compute partial and multiple correlation coefficients for the given trivariate data.
10. To obtain variance of residuals for the given trivariate data.
11. To obtain plane of regression for the given trivaraite data.
12. To fit binomial distribution to the given data.
13. To fit Poisson distribution to the given data.
14. To fit normal distribution to the given distribution using area under the normal curve.
15. To fit normal distribution to the given distribution using method of ordinates.

B.Sc. Session 2009 - 2010

Scheme of Examination for B. Sc. Electronics

SEMESTER-I

		Max. Marks	I.A.	Time
Paper-I	EL-101 Basic Electronics	45	5	3 h.
Paper-II	EL-102 Network Theory	45	5	3 h.
Paper-III	EL-103 Practical I	50		3 h.

SEMESTER-II

		Max. Marks	I.A.	Time
Paper-I	EL-201 Electronics Device and Circuits-I	45	5	3 h.
Paper-II	EL-202 Digital Principles and Applications	45	5	3 h.
Paper-III	EL-203 Practical II	50		3 h.

SEMESTER-III 2010-11

		Max. Marks	I.A.	Time
Paper-I	EL-301 Electronics Device and Circuits-II	45	5	3 h.
Paper-II	EL-302 Combinational and Sequential Circuits	45	5	3 h.
Paper-III	EL-303 Practical III	50		3 h.

SEMESTER-IV

		Max. Marks	I.A.	Time
Paper-I	EL-401 Amplifier and Oscillator Circuits	45	5	3 h.
Paper-II	EL-402 Electronics Devices and Circuits-III	45	5	3 h.
Paper-III	EL-403 Practical IV	50		3 h.

Note : 1. Practical examination will be held at the end of 2nd Semester for EL-103 & EL-203) 4th Semester for EL-303 & EL 403.

2.One Practical from each paper is tobe chosen for the practical examination.

B. SC ELECTRONICS

Semester - I

Paper- I EL 10I

Max. Marks : 45

Internal Assessemnt -:05

Time : 3 Hours.

NOTE :

1. The syllabus is divided into 3 units. Eight questions will be set At least two questions will be set from each unit and the student will have to attempt at least one question from each unit. A student has to attempt five question in all.
2. 20% numerical problems are to be set.
3. Use of Scientific (non-programmable) calculator is allowed.

Unit I

Classifcation of solids on the basis of energy band diagram, conductors, Insulators, Semi-conductors, Types of semi-conductors, current in semi-conductors, ideal diode, V-I Characteristics of ideal diode, PN junction diode, Biasing of PN junction diode, junction capicitance, Current in PN junction diode. Application of PN junction diode as a switch, as rectifiers-Half wave rectifier, Full wave rectifier and bridge rectifier, Clamping and clipping circuits. Filter circuits L,C, L-C, PIE section filters, Zener diode, Multiplier circuits.

Unit II

Bipolar Junction Transistor (BJT), Four regions of operation of BJT, Transistor current component, Transistor as an amplifier BJT in CE, CB, CC configurations, I/P and O/P characteristics, I/P resistance, O/P/ resistance, Current gain, Voltage gain, Power gain.

Unit - III

Transistor at low frequencies, Graphical analysisi of CE configuration, Transistor hybrid model, conversion formulate for the parameters of the three transistor configuration.

References

1. Electronics for Scientist and Engineers by Vishwanathan, Mehta and Rajaraman (Prentice Hall, India)

2. Electronics Fundamentals and Applications (5th addition) by John, D. Ryder (Prentice Hall, India)
3. Introduction to Electronics by L.K. Brauson (Prentice Hall, India)
4. Digital Principles and Application by Malvine and Leach (Tata McGraw Hill)
5. Electronic Devices and Circuits by Motershed.
6. Electronic Devices and Circuit - Discrete and Integrated by Y.N. Bapat

Paper II EL 102

Max. Marks : 45

Internal Assessment : 05

Time : 3 Hrs.

NOTE :

1. The syllabus is divided into 3 units. Eight questions will be set At least two questions will be set from each unit and the student will have to attempt at least one question from each unit. A student has to attempt five question in all.
2. 20% numerical problems are to be set.
3. Use of Scientific (non-programmable) calculator is allowed.

Unit I

Ideal voltage source,Open circuit voltage, Short circuit current, Thevenin's theorem, Norton's Theorems, Super Position Theorem, reciprocity Theorem, Millman's Theorem, Equivalent network analysis using Kirchoff's laws by Node methods and Loop method, Maximum Power Transfer Theorem.

Unit II

Sinusoidal Voltage applied across a combination of circuit elements, Low pass filter, High pass filter, Band pass and Band Rejection filters, step impulse and ramp functions, Differentiating and integrating circuits.

Unit III

Characterization of two ports, Impedence, Admittance and Hybrid paramaters Transformation of parametres, Dependent sources. Voltage and current amplifier, ideal transformer reciprocity, Impendence Convertor.

References :

1. Electronics for Scientist and Engineer by Vishwanathan, Mehta and Rajaraman (Prentice Hall, India)
2. Electronics Fundamentals and Aplications (5th Edition) by John, D. Ryder (Prentice Hall, India)
3. Introduction to Electronics by L.K. Brauson (Prentice Hall, India)
4. Digital Principles and Application by Malvine and Leach (Tata MC Graw Hill)
5. Electronics Devices and Circuits by Motershed
6. Electronics Devices and Circuit - Discrete and Integrated by Y.N. Bapat.

Paper III EL- 103
PRACTICALS

Max. Marks : 50
Time : 3 Hrs.

Note for Practical papers :-

The practical examination will be 3 Hours.

Distribution of Marks :

Experiment : = 30 marks
Lab Record : = 8 marks
Viva-Voce = 12 marks

The lab. record register will be assessed both the external examiners. Distributions of marks of each experiment,Lab record and Viva-voce,oral examination, concerning the experiments in the syllabus are indicated above.

Use of simple (non-programmable) calculator is permissible.

1. Familiarization with CRO, Multi-meter, Bread board etc.
2. Measurement of time period, Voltage and phase shift using CRO.
3. Electronic Volt-ohm meter, measurement of peak average and r.m.s. values of given signal, effect of wave form and signal frequency.
4. Junction transistor characteristics for Common Base configuration V_e I_e and V_E I_E and to calculate transistor parameters from graph.
5. Junction transistor parameter to measure common Emitter, h-parameter using various circuit arrangements.
6. Transistor amplifier configuration comparison of a Common Base Common Emitter and Common Collector configuration of a given transistor.
7. Transistor bias stabilization, familiarization method for stabilization of transistor.
8. Study of half wave and full wave recitifier, Measurement of ripple factor.
9. Measurement of resistance, Using a multi-meter, Fabrication of potential divider circuit.

References :

1. Experiments in electronics, by W.H. Events (Prentice Hall, India)
2. Method of Experimental Physics Vol. 2, Electronic Method (Academic Press).

SEMESTER - II

Paper I EL 201

Max. Marks : 45
Internal Assessment : 05
Time : 3 Hrs.

NOTE :

1. The syllabus is divided into 3 units. Eight questions will be set At least two questions will be set from each unit and the student will have to attempt at least one question from each unit. A student has to attempt five question in all.
2. 20% numerical problems are to be set.
3. Use of Scientific (non-programmable) calculator is allowed.

Unit I

Emitter follower, comparison of transistor amplifier configuration, Linear analysis of CE transistor amplifier configuration, Liner analysis of CE transistor circuit, Miller's Theorem, cascading transistor amplifier.

Unit II

Transistor biasing and thermal stabilization, the operating point stability, Self bias of emitter bias, stabilization against variations of ICE, VEB & Beta,Bias compensation, thermal runway, Thermal stability.

Unit III

Junction Field Effect Transistor (JFET), Pinch off voltage, JFET V-I characteristics and transfer characteristics, FET small signal model, Low frequency common source and common drain amplifier, Biasing of EFT, FET as voltage variable resister, MOSFET depletion and Enhancement mode.

SEMESTER - II

Paper II **EL 202**

Max. Marks : 45
Internal Assessment : 05
Time : 3 Hrs.

NOTE :

1. The syllabus is divided into 3 units. Eight questions will be set At least two questions will be set from each unit and the student will have to attempt at least one question from each unit. A student has to attempt five question in all.
2. 20% numerical problems are to be set.
3. Use of Scientific (non-programmable) calculator is allowed.

Unit I

Binary numbers, Decimal to binary conversion, Binary to Decimal conversion, Binary addition, Subtraction, Multiplication, Division, I's 2's, 9's, 10's compliments. 2's compliment addition and subtraction, Octal numbers octal to binary conversion, Vice Versa. Hexa-Decimal number and conversion.

Unit II

BCD Code, 8-4-2-1,5-2-1, excess three codes, Cyclic codes, Gray codes . Digital logic, +ve and -ve logic, Basic Logic gates - AND, OR, NOT gates, Boolean fucntions Dualaity Principle.

Unit III

Demorgans laws, Laws and theorems of Boolean Algebra, Precedence of Operators, Venn diagram, Truth table, Simplification of Boolean's function by Boolean algebra, K-map and its application (Four variables).

References :

1. Electronics for Scientist and Engineer by Vishwanathan, Mehta and Rajaraman (Prentice Hall, India)
2. Electronics Fundamentals and Aplications (5th Edition) by John, D. Ryder (Prentice Hall, India)
3. Introduction to Electronics by L.K. Brauson (Prentice Hall, India)
4. Digital Principles and Application by Malvine and Leach (Tata MCGraw Hill)
5. Electronic Devices and Circuits by Motershed
6. Electronic Devices and Circuit - Discrete and Integrated by Y.N. Bapat.

SEMESTER - II

Paper III **EL 203**

PRACTICALS

Max. Marks : 50
Time : 3 Hrs.

Note for Practical papers :-

The practical examination will be 3 Hours.

Distribution of Marks :

Experiment : = 30 marks
Lab Record : = 8 marks
Viva-Voce = 12 marks

The lab. record register will be assessed both the external examiners. Distributions of marks of each experiment,Lab record and Viva-voce, oral examination, concerning the experiments in the syllabus are indicated above.

Use of simple (non-programmable) calculator is permissible.

1. Draw the characteristics of a PN Junction diode for various voltages.
2. Junction field effect transistor Characteristic. To plot V and I characteristics of JFET.
3. To study the effect of R.C. Time contant when various driving voltages (Square, Tringular and rectified sine wage) are applied across a series of RC Circuits.
4. To Study the performance of a diode as clipper and sketch the output wave form using a calibrated oscilloscope.
5. To study the performance of a diode as clamper and sketch the output wave form using a calibrated oscilloscope.
6. To design a basic logic gate and verify its truth table.
7. To design a battery eliminator having the given specifications.
8. To design a low pass RC and high pass RC filter of given specifications.
9. Study of RC circuit as differentiator and trace the o/p at different values of (i) frequencies (ii) R and C.
10. Study of RC circuit as Integrator and trace the o/p at different values of (i) frequencies (ii) R and C.

References :

1. Experiments in electronics, By W.H. Events (Prentice Hall, India)
2. Method of Experimental Physics Vol. 2, Electronic Method (Academic Press).

SCHEME OF EXAMINATION

B.Sc. 1st Year (Subject Botany)

B.Sc. (Botany) Semester - 1 & 2 (Theory and Practical)

Semester	Paper Code	Title of the paper	Max. Marks	Internal assessment	Practical	Total Marks
I st	Bot-1.1	Cell Biology	50	5		55
I st	Bot-1.2	Microbiology and Mycology	50	5		55
I st	P-101	Practical			40	40
2nd	Bot-2.1	Genetics, Plant Breeding and Biostatistics	50	5		55
2nd	Bot-2.2	Cryptogamic Botany	50	5		55
2nd	P-201	Practical			40	40
Total			**200**	**20**	**80**	**300**

Max Marks : 50+5 (Internal assessment) **Time allotted : 3 Hours**

Note : Nine questions are to be set all and the candidates are required to attempt five questions including complusory question.

1. Question number 1 is compulsory consisting of 10 parts (one mark each) covering the entire syllabus.Answer to each part should not exceed 20 words.
2. Out of remaining eight questions, two questions are to be set from each (I to IV), possibly splitting them in parts. Candidate is required to attempt four questions, selecting one from each unit.

B.Sc. 1st Year Botany (First Semester)

Paper : Cell Biology (Code : Bot 1.1.)

Max Marks : 50+5 (Internal assessment)
Time allotted : 3 Hours

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including complusory question.

1. Question number 1 is compulsory consisting of 10 parts (one mark each) covering the entire syllabus.Answer to each part should not exceed 20 words.
2. Out of remaining eight questions, two questions are to be set from each (I to IV), possibly splitting them in parts. Candidate is required to attempt four questions, selecting one from each unit.

Unit-I

Membrane structure and function : Structure of model membrane, lipid bilayer and membrane protein diffusion, osmosis, ion channels, active transportion pumps, mechanism of sorting and regulation of intracellular transport, electrical properties of memebranes; structure and functions of cell wall.

Unit-II

Structural organization and function of intracellular organelles : Nucleaus, nucleolus, nulclear pore complex, nucleosome, mitochondira, Golgi bodies, lyososomes, ribosomes, endoplasmic reticulum, peroxisomes, plastids, vacuoles, chloroplast, structure & function of cytoskeleton and its role in motility.

Unit-III

Organization of chromosomes : Morphology; structure of chromatin and chromosomes, centromere and telomere; structure, behaviour and significance of polytene, lampbrush and B-chromosomes; unique and repetitive DNA, heterochromatin, euchromatin, transposons.

Unit-IV

Chromosome alterations : Numerical and structural variations in chromosomes and their significance; deletions, duplications,

translocations, inversions; variation in chromosome numbers, aneuploidy, polyploidy; sex chromosome,

Cell division and cell cycle : Mitosis, meiosis and regulation of cell cycle.

B.Sc. 1st Year Botany (First Semester)

Paper : Microbiology and Mycology (Code : Bot 1.2)

Max Marks : 50+5 (Internal assessment)
Time allotted : 3 Hours

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including complusory question.

1. Question number 1 is compulsory consisting of 10 parts (one mark each) covering the entire syllabus.Answer to each part should not exceed 20 words.
2. Out of remaining eight questions, two questions are to be set from each (I to IV), possibly splitting them in parts. Candidate is required to attempt four questions, selecting one from each unit.

Unit - I

Viruses : Nature, General account of structure, reproduction of TMV and Bacteriophage, Phytoplasma : General Characteristics and role in causing plant diseases.

Unit - II

Bacteraia : Structure, nutrition, reproduction and economic importance; Cyanobacteria : General account and biological importance; Fungi : General characters, classification and economic importance, fungal toxins.

Unit - III

Important features and life history of Mastigomycotina - *Phytophtora;* Zygomycotina - *Mucor*; Acomycotina - *Saccharomyces*; Basidiomycotina - *Puccinia, Agaricus;* Deuteromycotina - *Cercospora*, Colletotrichum; Lichen : Structure, reproduction and economic importance and their role as pollution indicator.

Unit - IV

Plant Pathology : Important plant disease caused by viruses, bacteria, mycoplasma, fungi and nematodes. Mode of infection and dissemination. Molecular basis of infection and disease resistance/ defence. Physiology of parasitism and control measures.

B.Sc. 1st Year (First Semester)

Cell Biology, Microbiology and Mycology

(Code : P-101)

Max Marks : 40
Time : 3 Hours

1. Identify, Classify and write short morphological notes giving well labeled relevant diagrams on the given two specimens. (8)
2. Prepare smears/ squash and find out differnt stages of mitosis/ metosis. (6)

   Identify and show it to the examiners and also give characters of identification.
3. One other exercise from the list of practicals (4)
4. Identify giving two important characters of identification of the given spots 1,2,3 (one side/ material from virus, bacteria, fungi, lichen and plant pathology) (6)
5. Note Book and collection records (7)
6. Field visit and submission of report (5)
7. Viva-voce (4)

List of practicals

Cell Biology

1. To Study the plant cell structure through temporary mounts.
2. To Study prokaryotic cells (bacteria), viruses, eukaryotic cells and cell organelles with the help of charts/ permanent slides.
3. To prepare a temporary stained smears from root tips of Allium cepa (onion) to study various stages of mitosis.
4. To prepare a temporary stained squash from flower buds to study various stages of meiosis.
5. To Study karyotypes in somatic cells with the help of charts.
6. To study Polytene and Lampbrush chromosomes from permanent slides.
7. Demonstration to the techniques of microscopy, staining, spectrophotometry and centrifugation.

Microbiology and Mycology

1. To perform gram staining of bacteria
2. To study bacteria infested plant specimen (Citrus canker/ root nodules).
3. To study the specimens of *Phytophthora, Mucor, Sccharomyces, Puccinia, Agaricus, cercospora* and *Colletorichum* using temporary preparations and permanent slides.
4. To study the various types of lichens.
5. To study the disease symptoms on plants as caused by viruses and bacteria.
6. To study the fungal disease viz. Late blight of potato, Tikka disease of groundnut, Black stem rust of wheat and Red rot of sugarcane.
7. Survey, collection and submission of plant disease samples.
8. Visit to mushroom cultivation industry, pathology related research laboratories etc.

B.Sc. 1st Botany (Second Semester)

Paper : Genetics, Plant Breeding and Biostatistics

(Code : Bot 2.1)

Max Marks : 50+5 (Internal assessment)
Time allotted : 3 Hours

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including complusory question.

1. Question number 1 is compulsory consisting of 10 parts (one mark each) covering the entire syllabus.Answer to each part should not exceed 20 words.
2. Out of remaining eight questions, two questions are to be set from each (I to IV), possibly splitting them in parts. Candidate is required to attempt four questions, selecting one from each unit.

Unit - I

Concepts of Mendelian genetics ; Laws of segregation and

independent assortment; allelic and non- allelic interactions; linkage and crossing over, sex linked inheritance, extra chromosmal inheritance, Genetic variations: Mutations spontaneous and induced; mutagens, transposable genetic elements; DNA damage and repair.

Unit - II

DNA the genetic material ; its structure, replication, DNA protein interaction, nucleosomes model, genetic code; Gene expression; structure of gene, gene mapping, genetic code, transfer of genetic information, RNA, Ribosome, transcription, translation, regulation of gene expression in prokaryotes and eukaryotes.

Unit - III

Methods of plant breeding - introduction, selection and hybridization (pedigree), backross, mass selection, bulk method); male sterility and heterosis breeding; use of apomixis in plant breeding.

Unit - IV

Graphical representation of data; mean, median, mode; average deviation; standard error; standard deviation; coefficient of variation tests of significance (t-test and chi-square tests)

B.Sc. 1st Botany (Second Semester)

Paper : Cryptogamic Botany

(Code : Bot 2.2)

Max Marks : 50+5 (Internal assessment)
Time allotted : 3 Hours

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including complusory question.

1. Question number 1 is compulsory consisting of 10 parts (one mark each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight questions, two questions are to be set from each (I to IV), possibly splitting them in parts. Candidate is required to attempt four questions, selecting one from each unit.

Unit - I

Algae : General characters, range of thallus structure :

classification; important features and life history (Excluding developmental details) of Chlorophyceae - Volvox; Oedogoium; Xanthophyceae - Vaucheria; Phaeophyceae - Ectocarpus, Sargassum; Rhodophyceae - Polysiphonia; Batrachospermum. Economic importance of algae as food, feed, medicine and industry; algal blooms, algal fertilizers.

Unit - II

Bryphytes : General characters, structure, reproduction, classification and life history of Hepaticopsida -Marchantia; Anthocerotopsida - Antoceros; Bryopsida - Funaria (Excluding developmental detail); Evolution of gametophytes and sporophytes; Economic and ecological importance.

Unit - III

Pteridophytes: General account of fossil Pteridophtes (*Rhynia*) : alteriation of generation: Evolution of stele: Heterospory and origin of seed habit : Economic importance.

Unit - IV

Pteridophytes: Importance characteristics of various divisions : Psilopsida, Lycopsida, Sphenopsida and Pteropsida; Structure, reproduction and life history (Excluding developmental detail) of *Selaginella, Equisetum, Pteris and Marsilea*

B.Sc. 1st Year (Second Semester)

Gentics and Cryptogamic Botany

(Code : P - 201)

Max Marks : 40
Time : 3 Hours

1. Identify, Classify and write short morphological notes giving well labelled relevant diagrams on the given two specimens from Algae, Bryophytes and Pteridophytes (8)
2. One numerical regarding genetics (Mendelian inheritance or gene interaction) as per syllabus. (4)
3. One numerical from biostatistics as per syllabus (5)
4. Comment on the given plant breeding technique mentioned as per syllabus (5)
5. Identify giving two important characters of identification of the given spots 1,2,3 (one side/ material from algae,

bryophyte and pteridophytes) (6)

6. Note Book and collection records (8)
7. Viva-voce (4)

List of practicals

Genetics, plant breeding and biostatistics

1. To Study the monohybrid and dihybrid ratios.
2. To Study gene interaction and modified dihybrid ratios.
3. To Study problems of gene mapping, interference and coefficient of coincidence.
4. Demonstration of Emasculation from Wheat/ Rice/ Pea
5. To Study methods of plant breeding through charts.
6. Demonstration of application of following : mean, median, mode, standard error, standard deviation and chi-square analysis.
7. To isolate DNA from the given plant material

Cryptogamic Botany

1. To Study the specimens of Algae : Volvox, Oedogonium, Vaucheria, Ectocarpus, Sargassum and Polysiphonia using temporary preparations and permanent slides.
2. To study the specimens of Bryophytes : Marchantia, Anthceros and Funaria using temporary preparations and permanent slides.
3. To study the specimens of Pteridophytes : Selaginella, Equisetum, Pteris and Marsilea using temporary preparations and permanent slides.
4. Demonstration of fossil pteridophytes from charts.
5. Visit to natural habitats of crypotogamic plants.
6. Collection and submission of cryptogamic plant samples.

SCHEME OF EXAMINATION

B. Sc. Semester - I & II Zoology (Theory & Practical)

B.Sc(Theory) Semester	Paper Code	Title of the Paper	Max. Marks	Internal assessment	Practical (Annual) P 101 & 201	Total Marks
1st	Paper 1.1	Life and Diversity from protozoa to Porifera & Cell Biology - I	50	5		55
1st	Paper 1.2	Life and Diversity from Coelentrata to Helminths & Cell Biology - II	50	5		55
1st	P-101	Practical			40	40
2nd	Paper 2.1	Life and Diversity of Annelida to Arthropoda & Genetics - I	50	5		55
2nd	Paper 2.2	Life and Diversity of Mollusca to Hemichordata & Genetics -II	50	5		55
2nd	P-201	Practical			40	40
Total			200	20	80	300

SYLLABUS

B.Sc. Semester - I (Theory)

Paper : 1.1

Life and Diversity from Protozoa to Porifera & Cell Biology - I

Max Marks : 50+5 (Internal assessment) **Time allotted : 3 Hours**

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including complusory question.

1. Question number 1 is compulsory consisting of 10 parts (one mark each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight questions, two questions are to be set from each unit (I to IV), possibly splitting them in parts. Candidate is required to attempt four questions, selecting one from each unit.

Unit - I

Phylum - Protozoa

i) General characters and classification up to order level

ii) Biodiversity and economic importance

iii) Type study of Plasmodium;

iv) Parasitic protozoans : Life history, mode of infection and pathogenicity of *Entamoeba, Trypanosoma, Leishmania* and *Giardia.*

Unit - II

Phylum - Porifera

i) General characters and classification up to order level

ii) Biodiversity and economic importance

iii) Type study - *Sycon.*

iv) Canal system in sponges

v) Spicules in sponges.

Unit - III

1. Ultrastructure of different cell organelles of animal cell.

2. Plasma Membrane : Fluid mosaic model, various modes

of transport across the membrane, mechanism of active and pasive transport, endocytosis and exocytosis.

3. **Endoplasmic reticulum (ER) :** types, role of ER in protein synthesis and transportation in animal cell.
4. **Golgi Complex** : Structure, Associated enzymes and role of golgi- complex in animal cell.

Unit - IV

1. **Ribsomes** : Types , biogenesis and role in protein synthesis
2. **Lysosomes** : Structure, enzymes and their role : polymorphism
3. **Mitochondria :** Mitochondrial DNA : as semiautonomous body, biogenesis, mitochondrial enzymes (only names), role of mitochondria.
4. **Cytoskeleton** : Microtubules, microfilaments, centriole and basal body.
5. Cilia and Flagella.

B.Sc. Semester - II (Theory)

Paper : 1.2

Life and Diversity from Coelentrata to Helminths & Cell Biology - II

Max Marks : 50+5 (Internal assessment) **Time allotted : 3 Hours**

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including complusory question.

1. Question number 1 is compulsory consisting of 10 parts (one mark each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight questions, two questions are to be set from each unit (Ito IV), possibly splitting them in parts. Candidate is required to attempt four questions, selecting one from each unit.

Unit - I

Phylum - Coelentrata :

i) General characters and classification up to order level

ii) Biodiversity and economic importance

iii) Type study -Obelia

iv) Corals and coral reefs

v) Polymorphism in Siphonophores

Unit - II

Phylum - Helminths :

i) General characters and classification up to order level

ii) Biodiversity and economic importance

iii) Type study - *Fasciola hepatica.*

iv) Helminths parasites : Brief account of life history, mode of infection and pathogenesity of *Schistosoma, Ancylostoma*, *Trichinella, Wuchereria* and *Oxyuris.*

Unit - III

1. Ultrastructure and fucntions of Nucleus ; Nuclear membrane, nuclear lamina, nucleous, fine structure of chromososmes, nucleosome concept and role of histones.

2. Euchromatin and heterochromatin, lampbrush chromosomes and polytene chromosomes.

Unit - IV

1. Mitosis and Meiosis (Cell reproduction).
2. Brief account of causes of cancer
3. An elementary idea of cellular basis of Immunity.

B.Sc. Semester - II (Theory)

Paper : 2.1

Life and Diversity of Annelida to Arthropoda & Genetics - I

Max Marks : 50+5 (Internal assessment) Time allotted : 3 Hours

Note : Nine questions are to be set all and the candidates are required to attempt five questions including complusory question.

1. Question number 1 is compulsory consisting of 10 parts (one mark each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight questions, two questions are to be set from each unit (Ito IV), possibly splitting them in parts. Candidate is required to attempt four questions, selecting one from each unit.

Unit - I

Phylum - Annelida :

i) General characters and classification up to order level

ii) Biodiversity and economic importance of Annelida

iii) Type study - Pheretima (Earthworm)

iv) Metamerism in Annelida

v) Trochophore Larva : Affinities, Evolutionary significance

Unit - II

Phylum - Arthropoda :

i) General characters and classification up to order level

ii) Biodiversity and economic importance of insects

iii) Type study - Periplaneta

Unit - III

1. Elements of Heredity and variations
2. The varieties of gene interactions
3. **Linkage and recombination** : Coupling and repulsion hypothesis, crossing-over and chiasma formation; gene mapping

Unit - IV

4. **Sex determination and its mechanism** : male and female heterozygous systems, genetic balance system; role of Y-chromosome , male haploidy, cytoplasmic and environmental factors, role of hormones in sex determination.
5. **Sex Linked inheritance** :Haemophilia and colour blindness man,eye colour in Drosophila, Non disjunction of sex-chromosome in Drosophila ; sex linked and sex influenced inheritance.
6. **Extra chromosmal and cytoplasmic inheritance :**

i) Kappa particles in Paramecium

ii) Shell coiling in snails

iii) Milk factor in mice.

B.Sc. Semester - II (Theory)

Paper : 2.2

Life and Diversity of Mollusca to Hemichordata & Genetics - II

Max Marks : 50+5 (Internal assessment) Time allotted : 3 Hours

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including complusory question.

1. Question number 1 is compulsory consisting of 10 parts (one mark each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight questions, two questions are to be set from each unit (Ito IV), possibly splitting them in parts. Candidate is required to attempt four questions, selecting one from each unit.

Unit - I

Phylum - Mollusca :

i) General characters and classification up to order level
ii) Biodiversity and economic importance.
iii) Type study - Pila
iv) Torsion and detorsion in gastropoda
v) Respiration and foot

Unit - II

Phylum - Echinodermata :

i) General characters and classification up to order level
ii) Biodiversity and economic importance
iii) Type study - Asteries (Sea Star)
iv) Echinoderm, larvae
v) Aristotle's Lantern

Phylum - Hemichordata

Type study : *Balanoglossus*

Unit - III

1. **Multiple allelism** : Eye colour in Drosophila ; A,B, O Blood group in man.

2. Human genetics ; Human Karyotype, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins.
3. Inborn errors of metabolism (Alcaptonuria, Phenylketonuria, Albinism, sickle-cell anaemia.

Unit - IV

1. **Nature and function of genetic material** : Structure and type of nucleic acids; Protein synthesis, spontaneous and induced (chemical and radiations) mutations; gene mutations; chemical basis of mutations; transition, transversion, structural chromosomal aberrations (deletion, duplication, inversion and translocation); Numerical aberrations (autoploidy, euploidy and polyploidy in animals)
2. **Applied genetics**:Eugenics, eutheniics and euphenics; genetics counselling, pre-natal diagnostics, DNA -finger printing, transgenic animals.

B.Sc. Semester - I PRACTICAL PAPER (P-101)

(A) Classification up to orders with ecological note and economic importance of the following animal :

1.Protozoa	Lamination of cultures of Amoeba, Euglena and Paramecium; permanent prepared slides : Amoeba, Euglena Trypanosoma, Noctiluca, Elimeria, Paramecium (binary fission and conjugation), Opalina, Verticella, Balantidium, Nyctotherus, radiolarian and formaniferan ooze.
2. Parazoa (Porifera)	Specimens : Sycon , Grantia, Euplectella, Hyalonema, Spongilla Euspongia.
3.Coelenterata	Specimens : Porpita, Valella, Physalia, Aurelia, Rhyzostoma, Metridium, Millipora, Alcyonium, Tubipora, Zoanthus, Madrepora, Favia, Fungia and Astrea.
	Permanent prepared slides : Hydra (W.M.) Hydra with buds Obelia (colony and medusa), Sertularia, Plumularia, Tubularia, Bougainvillea, Aurelia (sense organs and stages of life history).
4. Platyhel-minthes	Specimens : Dugesia, Fasciola, Taenia, Echinococus

Permanent prepared slides : Miracidiidium, sporocyst, redia, cercaria, scloex and proglottids; Taenia (mature and gravid).

5.Aschelminths Ascaris (male & Female), Trichinella, Ancylostoma, Meloidogyne.

(B) Study of the following permanent stained preparations :

1. L.S. and T.S. Sycon : gemmules, spicules and sponging fibres of Sycon, canal system of sponges
2. T.S. Hydra (testis and ovary region)
3. T.S. Fasciola (different region)
4. T.S. Ascaris (male and female)

(C) Preparation of the following slides :

1. Temporary preparation of Volvox, Paramecium, Gemmules and spicules of Sycon
2. Preparation of permanent stained whole mounts of Hydra, Obelia, Sertularia.
   Plumularia and *Bougainvillea.*

(D) Dissections and / or its demonstration through models/ video/ CD etc and preparation of working models of the different systems of the follwoing animals :

1. Pathogenic protozoans : Plasmodium, Giardia or as a available
2. Pathogenic Helminthes : Ancylostma; Wuchereria or as available

(E) Cell biology and Genetics :

1. Cell division : Prepared slides of stages of mitosis and meiosis.
2. Temporary squash preparations of onion root tip / grasshopper testis for the study of mitosis using acetocarmine stain.

(F) Project :

1. Parasitic adaptations
2. DNA : Types structure and its model preparations
3. Survey - Diversity of particular family/ taxa in your sorrounding area
4. Microscopy : principles and its significance
5. Staining techniques and their significance

B.Sc. Semester - II PRACTICAL PAPER (P-201)

(A) Classification up to orders with ecological note and importance of the following group of animals :

1.Annelida Specimens : Pheretima, Heteroneries, Polynoe, Aphrodite, Chaetopterus, Arenicola, Tubifex and Pontobdella.

2.Arthropoda Specimens : Peripatus, Palaemon (Prawn), Lobster, Cancer(crab), Sacculina, Eupagurus (hermit crab), Lepas, Balanus, Cyclops, Daphnia, Lepisma, Periplaneta (cockroach), Schistocerca (locust), Poecilocerus (ak-hopper), Gryllus (cricket), Mantis (praying mantis), Cicada Forticula (earwig), Dragon fly, termite queen, bug,moth, beetle, Polistes (wasp), Apis (honey bee), Bombyx (silk moth), Cimex (beg bug), Pediculuc (body louse). Millipedes, Scolopendra (centipedes), Palamnaeus(scorpion), Aranea (spider), Limulus (king crab).

3.Mollusca Specimens : Mytilus, Ostrea, Cardium, Pholas, Solen (razor fish), Pecten, Holiotis, Patella, Aplysia, Doris, Limax, Loligo, Sepia, Octopus, Nautilus (complete and T.S.), Chiton and Dentalium.

4.Echinoder-mata Specimens : Asterias, Echinus, Cucumara, Ophiothrix, Antedon and Asterophyton.

5.Hemichordata Balanoglossus

(B) Study of the following permanent stained preparations :

1. T.S. Pheretima (pharyngeal and typhlosolar regions), Setae, septal nephridia and spermathecae of Pheretima.
2. Trachea and mouthpmts to cockroach.
3. Statocyst of Palaemon.
4. Glochidium larva of Anodonta ; radula and osphradium of Pila.
5. T.S. Star fish (arm)
6. T.S. Balanoglossus (through various regions)

(C) Preparation of the following slides :

1. Mouth parts and trachea of Periplanata (cockroach),

radula of pila; pedicillarae of Asterias

2. Preparation of setae of earthworm, and mouth parts of Honey bee, House fly, House fly and cockroach.

(D) Dissections and / or its demonstartion through models/ video/ CD etc and preparation of working models of the different systems of the follwoing animals :

1. Earthworm : Digestive, reproductive and nervous systems.
2. Grasshopper/ cockroach : Digestive, reproductive and nervous systems.
3. Pila : Pallial complex, digestive and nervous systems.

(E) Cell biology and Genetics :

1. Salivery gland and polytene chromosomes of Drosophila/ Chironomus.
2. Numerical based on three point test cross.

(F) Project :

1. Survey - Diversity of particular family/ taxa in your surrounding area.
2. Vermicomposting : Earthworm rearing and economics of the project
3. Pearl culture
4. Apiculture : Rearing of bees and honey production
5. Evolutionary significance of larvae belonging to different group of invertebrates.

B.Sc. Part - I (Practical)

Guidelines / Instruction for Practical (Paper-101 & 201)

Max Marks : 80 (40+40) **Time allotted : 6 Hours**

Note : Following exercises will be set in the examination as per marks assigned for each.

Sr. No.	Execercise	Marks allotted
1.	Dissection Demonstration / Models Exposition, labeled diagram	10
2.	Temporary mounting - One (Staining, identification, sketch)	5
3.	Museum specimens - 5 (identification and classification)	10
4.	Ecological note - One specimen	2
5.	Permanent slides - (Identification with reasons)	8 (2x4)
6.	Preparation of chromosome slide (root tip/ grasshopper testis)	5
7.	Invertebrate collection and report	10 (5+5)
8.	Practical record and slides	5
9.	Viva-voce	5
10.	Project report	20

Scheme of Computer Courses to be introduced of Under Graduate level from the session 2009-10

Sr. No.	Paper Name	Theory marks	Practical marks
	Level -I (Certificate Course in Computer Education)		
L-1.1	Fundamental of Computers	40	60
L-1.2	Presentation Software and Computer Communication	40	60
	Level -II (Diploma Courses in Computer Education)		
L-2.I	Spread Sheet and DBMS	40	60
L-2.2	Desktop Publishing	40	60
	Level -III (Advanced Diploma Course in Computer Education)		
L-3.I	Programming in C Language	40	60
L-3.2	Web Desigining	40	60

1. Duration of theory exam. : 3 (three hrs.)
2. Duration of Practical exam. : 3 (three hrs.)
3. Question paper shall be arranged by the University
4. Instruction to the paper setter/ students in the theory paper.:

" The examiner will set total 10 (ten) questions covering the entire syllabus. Student will attempt any five questions. All questions will carry equal marks".

Level-1(Certificate Course Computer Education)

Paper L1.1 : Fundamentals of Computers

Computer : Definition, Classification of Computers, Characteristics of Computers, Basic Applications of Computers, Generations of Computers.

Components of Computer System : Central Processing unit (CPU), Input/ Output Devices, Computer : Memory ; Primary and Secondary Memory,Magnetic and Optical Storage Devices, Concepts of Hardware and Software.

Data Processing : Concepts of Data Processing,Definition of Data and Information Basic data types, storage of Data/ Information as Files, Representation of Data/ Information.

Operating System : MS -Windows

Operating System - Definition & Functions, Basics of Windows, Basic Components of Windows, Icons, Types of Icons, Taskbar, Activating Windows, Using Desktop, Title Bar, Running Application, Exploring Computer,Managing Files and folders, Copying and Moving files and folders.

Control Panel - Display Properties, Adding and Removing Software and Hardware, Setting Date and Time, Screensaver and Appearance.

Using Windows Accessories.

Word Processing : MS Word

Word Processing Basic : An Introduction to Word Processing and MS-Word, Working with Documents, Using tables, pictures and charts Using mail merge and sending a letter to a group of people, Creating forms, letters and labels, Collaborating with Workgroups, Modifying a report, Macros.

Software Lab

MS-Windows

1. Create a new folder and do the following :
    1. Make a Word document in it.
    2. Make an Excel document in it.
    3. Make a new folder in it.
    4. Rename the initial folder
    5. Move the initial folder.

6. Copy the initial folder.
7. Delete the initial folder.

2. Implement the various well known features of Windows operating system such as Notepad, Wordpad, Paint, System Tools, Entertainment etc. enclosed in Start → Programes → Accessories.
3. Implement various display properties by right clicking on the Windows Desktop.
4. Explore the taskbar of Windows.
5. Set the wall paper and screen saver.
6. Set the data / time.

MS-Word

1. Create a document and
   a. Put Bullets and Numbers
   b. Apply various Font parameters
   c. Apply Left, Right and Centre alignments.
   d. Apply hyperlinks
   e.Insert pictures
   f. Insert Clip Art
   g. Show the use of Word Art
   h. Add Borders and Shading
   i. Show the use of Find and Replace.
   j. Apply header/ footers
2. Create any document and show the use of File→versions.
3. Create any document and show the difference between paste and paste special.
4. Create a document to show the use of Washout/ watermark.
5. Implement the concept of mail merge.
6. Implement the concept of macros.
7. Implement the concept of importing a file/ document.
8. Implement the concept of merging the documents.
9. Create a student table and do the following.
   a. Insert new row and fill a data.

   b. Delete any existing row.
   c. Resize rows and colums.
   d. Apply border and shading.
   e. Apply merging/ splitting of cells.
   f. Apply sort
   g.Apply various arithmetic and logical formulas.
10. Create your resume using General Templates.

Paper-L1-II :Presentation Software and Computer Communication

Presentation Software - MS Power Point.

Creating and enhancing a presentation, creating and publishing a web presentation modifying a presentation, working with visual elements, delivering a presentation and designing a template.

Computer Communication

Basic of Computer Networks : LAN, WAN, MAN.

Internet : Introduction to Internet and its Applications/ Services.

Service on Internet :WWW and Websites, Electronics Mails, Communication on Internet.

Web Browsers : Internet Explorer, Netscape Communicator.

Surfing the Internet : Giving the URL Address, search, Moving Around in a website. Saving of Webpage, Printing of Webpage, downloading the data.

Chatting on Internet

E-Mail : Basic of Electronics Mail Creating , E-Mail Id, Mail box : Inbox and Outbox.

Using E-Mails : Viewing an E-mail, Sending an E- Mail, Saving E-Mail, Sending same mail to various users, Document Handling : Sending soft copy as attachment, Enclosures to E-Mail, Sending a Portion of Document as E-Mail.

MS-Outlook : Read mail and news Composing message, Sending and Replaying E-Mails, Maintaining address book, Finding people , Attaching files.

Software Lab

Presentation Software- MS Power Point

1. Make a presentation of College Education System using.
   a. Blank Presentation
   b. From Design Template
   c. From Auto Content Wizard
2. Make a presentation on "Wild Life" and apply the following :-
   a. Add Audio and Video effects
   b. Apply various Color Schemes
   c. Apply various Animation Schemes.
   d. Apply Slide Show

Computer Communication Related Practical

1. Connect the Internet; open any website of your choice and save the Webpages.
2. Search any topic related to your syllabi using any search engine and download the relevant material.
3. Send any greeting card to your friend.
4. Create your E-Mail ID on any free E-Mail Server.
5. Login through your E-Mail ID and do the followings:-
   a. Read your mail
   b. Compose a new Mail
   c. Send the Mail to one person.
   d. Send the same Mail to various persons.
   e. Forward the Mail
   f. Delete the Mail
   g. Send files as attachment.
6. Surf Internet using Google to find information about your State.

7. Surf Internet using Google to find Tourism Information about your State.
8. Surf Internet using Yahoo to find Hotels around your State.
9. Surf Internet using Google to find Information about Educational Institutes for teaching MS in Computer Science in India.
10. Surf Internet using Google to find information about Indian Cricket Team.

Level -2 : (Diploma Course in Computer Education)

Paper- L 2-I : Spread Sheet and DBMS

Spread Sheet .

Elements of Electronics Spread Sheet and MS-Excel : Application/ usage of Electronic spread sheet, opening of spread sheet, Menu bar, Creation of cells and addressing of Cells, Cell inputting.

Manipulation of Cells : Enter texts numbers and dates Creation of tables, cells height and widths, copyng of cells.

Functions : Using mathe matical, statistical and financial functions.

Spread Sheets for Small Accountings : Maintaining Invoices/ Budgets, Totaling of Various Transactions, Maintaining daily and monthly sales reports.

Charts : drawing different types of charts.

Database Management System (DBMS)

Introduction to Database : Definition, Components, Advantages.

MS-Access : Introduction, Starting MS-Access, Creating a database file, saving a database files, opening a database file, Closing a database file,using the help menu.

Working with Databases :Using the database wizard, working with datasheets, Moving between records and files, Using goto, Updating records, Selecting rows and columns, Changing

column width, saving and existing a datasheet.

Working with tables " Creating a new database, Adding tables to database, Adding fields to tables, Inserting a field Setting a primary key, Adding and sorting records, Setting relationships.

Creating reports, Forms and Queries, Using wizard and design view.

Software Lab

Spread Sheet : MS-Excel

1. Compute the division of each and every student of a class.
2. Generation of Electricity Bill.
3. Generation of Telephone Bill.
4. Generation of salary statement of an employee.
5. Generation of Mark Sheet of a student.
6. To compute Mean / Median/ Mode.
7. Generate graph to show the production of goods in a company during the last five years.
8. Compare the cost, overheads and sales figures of a company for last three years through appropriate chart.
9. Create any worksheet and apply various mathematical statistical and financial functions.
10. Generate the following worksheet.

Roll No.	Marks
2050	67
2051	49
2052	40
2053	74
2054	61
2055	57
2056	45

and do the following :-

a. Create chart of the marks

b. Compute sum of marks using autosum autocalculate and sum function.

c. Compute average of marks.

d. Show pass or fail if marks are above 50 or less than 50

e. Put header and footer in the spread sheet.

MS-Access

1. Create a Student Database in Design View by using Wizard and by entering data.
2. Create Query on Student Database in Design View and by using Wizard.
3. Create Forms of Student Database in Design View and by using Wizard.
4. Create Reports of Student Database in Design View and by using Wizard.
5. Create Data Access pages of student database in Design View and by using Wizard.
6. Implement the concept of Macros in MS Access.

Paper-L2-II : (Desktop Publishing)

Adobe Photoshop

Using standard toolbox option bars, palettes, document window view area use of plug ins, brushes, defining and customizing images, canvas, rotation of images creating new images, mixing changing attributes, colours, distorting images, applying filters to images and web based picture designing.

Adobe Pagemaker

Toolbox, control palette, colors palette,paragraph view, styles, layers master layers scripts, command reference, opening and creation of publications, tool box, viewing pages, deleting pages, default preferences, templates, master pages guides, grids , text objects, columns balancing jump lines, story and layout view, composition and tracking, grouping and ungrouping, cropping and copying of images, text, indexes and table of contents using table in Pagemaker importing and exporting links image setter and film preparation, font substitution and priting of publications.

Software Lab

Adobe Photoshop

1. Editing of a photograph
2. Finishing of a photograph
3. Borders around photograph.
4. Changing Back Ground of a photograph.
5. Changing colors of photograph.
6. Editing colors combination of imgae.
7. removing side effects from figure
8. Printing a photograph
9. Creating 3-D photographs.
10. Removing red eye effects and others using Photoshop

Adobe PageMaker

1. Prepare any visiting card.
2. Make a Marriage card.
3. Prepare various types of greeting cards such as 'B' Day Cards, New Year Cards Diwali Cards etc.
4. Make Advertisements for Newspapers.
5. Prepare Banners.
6. Making of Posters.

Level -3 (Advanced Diploma Course in Computer Education)

Paper-L3-I : (Programming in C Language)

Programming Fundamentals

Planning the Computer Program : Writing of algorithm, Characteristics of algorithem, Making flowchart. Advantages/ Disadvantages of flowchart, decision table structured programming.

C Language ;

Data Types Operators and Expressions : Character Set, Identifiers and Keywords variables and constants; basic data types; arithmetics relational. logical and bit-wise operators, Increment, decrement and ternary operators, type def, struct , enumerated data types; type conversion.

Control Flows :if statements; switch statement; goto statement; while , do while and for statements, break and continue statement.

Arrays : Declaration, initialization and operations on arrays.

Software Lab.

1. Program to compute the average.
2. Write a program to check whether a number is even or odd.
3. Write a program to check whether a number is prime number or not.
4. Write a program to check whether a year is leap or not.
5. Write a program to find largest of three numbers.
6. Write a program to check whether a character is vowel or consonant using switch statement.
7. Write a program to find sum of'n' natural numbers.
8. Program to compute the factorial of a given number.
9. Program to generate fibonacci series.
10. Program to compute Least Common Multiple (LCM)
11. Program to compute Highest Common Factor (HCF)
12. Write a program to insert an element in an array.
13. Write a program to delete an element from array.
14. Write a program for linear searching.
15. Write a program to implement bubble sorting.
16. Program to find the largest and smallest element among 'n' numbers.
17. Program to add and subtract two matrices.
18. Program to compute the transpose of a matrix.

Paper-L3-II : (Web Designing)

Scripting Language

HTML : Basics of HTML, Basic tags, document tags, Empty tags Using lists in websites: nested and unoredred list,menu list, Absolute links Relation links in website, image and images maps, Creation of tables. forms frames and their division Use of Colours, Headings and Animation.

Web Authoring Tools

Frontpage : Front page express explorer, front page editor application of themes formatting of text on web page, creation of web pages, web sites, Hyperlinks images, images boarders, fomatting, multimedia, sound and Video effects enhancing tables Rows and Columns, cells, frames and frame properties. Tasks views web wizards. Radio buttons and Command buttons.

Macromedia Flash :

View Movie Movie properties grid, oval tool creating symbol Gradients, rectangle tool, pencil tool grouping , layers renaming layer Ading new layer, rotate and scale changing the order of layers, key frames, Adding sound, Importing sound, stopping the action, adding button text tool.

Software Lab

HTML

1. Create any webpage using following HTML tags.
   a. Background colour
   b. Font (color, size, face)
   c. Bold,Italic,Underline.
   d. Big/ Small
   e. H1, H2 etc.
   f. Marquee
   g. Ordered/ Unordered list
   h. Data list
2. Create Employee table and apply various operations on it using HTML also put border around the table.
3. Create Internal and External Hyperlinks in a webpage.
4. Implement the concept of frames in a webpage.
5. Insert an image in a webpage.
6. Design Home page of your Institute.
7. Design web page for tourism spots in your area.
8. Prepare your CV and link on the webpage.
9. Use animation of image in a webpage
10. Insert table and perform table handling in webpage.

Front Page

1. Use front page to create a new page using different text style.
2. Use front page to create a new page showing text and table box.
3. Use front page to create a new page using clip art gallery.
4. Use front page to create a new page using image from a scanner.
5. Use front page to create a web page of your institute
6. Use front page to create a web page showing tourism spots of your area
7. Use front page to use table handling in web page.

Flash

1. Create a blank flash document
2. Create a flash movie and customize the movie setting.
3. Set frame rate back ground color dimensions to define size tof movie.
4. Use of zoom tool from tool box.
5. Creating a shape with oval tool.
6. Add text to a button.
7. Make button symbol interactive (use of edit symbol button)
8. Add key frames to a button symbol time line.
9. Add sound to a button.
10. Verify changes with test movie.
11. Add layers to a movie
12. Animate text with twining.
13. Add a text field containing a string of text that will change every time a user presses button.
14. Add action script to the button enabling script to change the contents of the text field every time a user clicks the button.
15. Test the movie with flash player, return to main window and save the file.
16. Embed a flash movie in a web page.

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ORDINANCE :

B.Sc./B.Com./B.Sc. (Home Science) Pass & Vocational (Semester System) Examinations

1. The duration of the course of instruction for B.Sc./B.Com./ B.Sc. (Home Science)/B.Sc. (Sports Science)/ B.Com.(Vocational) shall be three years spread in six semesters. The examination shall be held in in six parts Semester I, III and V, VI will be held in month of May/June each year.

   The Supplementary examination for re-appear candidates for semester I,III,V and Semester II, IV and VI will be held with regular batch in the month of Novemmber/ December and May/ June respectively on such dates as may be fixed by the Vice- Chancellor. However, supplementary examination for semester VI will be held in November/ December also with odd semester exams.

   Provided that a candidate shall have to complete the three year course within six years.

2. The schedule of commencement of the examination and the dates for the receipt of examination form and fee as fixed by the Vice-Chancellor shall be notified by the Controller of examinations to all the colleges admitted to the privileges of the University.

3. No one shall be eligible to join the first Semester of B. Sc./ B.Com./B.Sc.(Home Science)/ B.Sc.(Sports Science)*/ B.Com. (Vocational) unless :-

   i) he/she has passed one of the following examinations with

   35% for admission to B.Sc. (Home Science)Sem.-I,

   40% for admission to B.Com. Sem.-I,

   45% for admission to B.Sc. Sem.-I,

   a) Senior Secondary Certificate Examination of Haryana Education Board, Bhiwani.

   OR

   b) Diploma in Pharmacy Course for admission to B.Sc.-Sem.-I

   OR

   c) 3- Year professional diploma programmes conducted by the State Board of Technical Education (Haryana) without-passing English and Hindi subjects at 10+2 level for admission to B. Com./ B. Sc. courses.

   d) Any other examination recognized by the Academic Council as equivalent to (a) or (b) above.

   . Sports weightage for B.Sc. (Sports Science) will be as per Annexure- A.

Note :

(i) The candidate seeking admission to B.Sc. (Non-Medical Group) Sem.-I should have passed the above examination with English, Physics, Chemistry and Mathematics and those seeking admission to B.Sc. (Medical Group) Sem.-I should have passed the above examination with English, Physics, Chemistry and Biology.

(ii) The admission to B.Sc. (Home Science) course shall be open to women candidates only.

(iii) If a candidate belonging to a Board, other than Haryana Education Board has not passed English subject at 10-2 level, he/she may be allowed provisionally to join the B.Sc./B.Com./ B.Sc. (Home Science)/B.Sc.(Sports Science)B. Com. Vocational Sem.-I class as the case may subject to his/her qualifying in the subject of English of 10-2 examination at the Supplementary examination of the same year or in the next annual examination held in March from the Board concerned. Such a candidate shall have to furnish to the University proof of his/her having clearned the subject of English before the declaration of result of Sem.-II examination failing which his/ her result of semester II examination shall stand automatically cancelled.

(iv) A candidate who is placed under compartment in one subject only 10-2 examination of the Board of School Education Haryana, Bhiwani or of any other Board/University recognised

by this University may be allowed provisionally to read for I-Sem examination provided that he she must have obtained the required percentage of marks in the aggregate by adding minimum qualifying marks in the compartment subject.

Such a candidate must clear the compartment subject in two consecutive chances. If he/she fail to produce/submit the proof of having passed the compartment subject even at the second chance to be held simultaneously with TDC-2nd Sems. his/ her result for the TDC-Ist & 2nd Semester examination shall stand automatically cancelled.

4. a) The exam. shall be open to a student who has his/her name submitted to the Controller of Examination by the Principal of the College he/she has most recently attended and produces the following certificates signed by the Principal of that college.

i) of having remained one the rolles of a recognized college for the academic year preceding the exam;

ii) of having satisfactorily performed the work of his/her class;

iii) of having attended not less than :

1. 75% of the full course of lectures delivered to his/her class in each of the subjects offered, (the course to be counted from the date of admission upto the last date when the classes break up for preparatory holidays, and;

2. 75% of the periods assigned to Practical Work

b) A Candidate whose result is decalred late without any fault on his her part may attend classes for the next higher semester provisonally at his/ her own risk and responsibility subject to his/ her passing the concerned semester examination. In case a candidate fails to pass the concerned semester examination, his/ her attendance internal assessment in the next higher semester in which he/ she was allowed to attended classes provisionally will stand cancelled.

5. A cadidate shall be promoted to 2nd, 4th and 6th semester automatically without any condition of passing minimum number of papers. For promotion from 2nd to 3rd semester the

candidate shall have to clear at least 50% papers of 1st and 2nd semesters taken together. For promotion from 4th to 5th semester the candidate shall have to clear atleast 50% papers of 3rd and 4th semesters taken together. However, the candidate must have fulfilled the requirements of clause- 4 also to be eligible for promotion.

6. The amount of examination fee to be paid by a candidate for each part shall be as prescribed by the University from time to time.

7. i) The medium of instruction shall be Hindi/English.

ii) The question papers will be set in :

a) Hindi in case of Sanskrit.

b) The language concerned in case of other languages.

c) In both Hindi and English in case of other subjects.

iii) The candidates shall write their answers in :

a) The language concerned in case of English and Modern Indian and Oriental Language except Sanskrit in which case the answers may be written in Hindi ; and

b) Hindi, English, Punjabi or Urdu in case of other subjects.

8. The examination shall be held according to the syllabus prescribed by the Academic Council. The fail/re-appear candidates will also appear in the exam. as per syllabus applicable to regular students of that exams.

9. The candidates shall be required to offer the subjects according to the scheme of examination.

10. The minimum percentage of marks to pass the examination in each semester will be :-

i) 35% in each written paper and internal assessment separately :

ii) 35% in external and internal evaluation in case of Training Report :

iii) 40% in Viva-Voce Examination;

iv) 40% in aggregate in each semester examination.

11. The Head of the Deptt./ Principal will preserve the records on the basis of which the internal assessment awards have been prepared for inspection., if needed by the University atleast till the end of one month from the date of declaration of the semester examination results.

12. Project : Every student of B.Com.(Vocational) (excepting B.Com. computer application) 1st, 2nd,4th,6th semesters shall be required to prepare a Project Report on any subject of the concerned semester. The topic and the supervisor for the project will be decided by the College.The project work shall consist of information collected from any kind/ size of business/service entity. The work for project can be done after the classes are over and on holidays of the University because it is not based on training. Two copies of the Project-Report(in not more than two thousand words) shall be sunbmitted by the student duly signed by the supervisor at least one week before the commencement of 1st, 2nd, 4th and 6th semester examinations as the case may be. The Principal of the concerned college shall place the Project-Reports for evaluation before the Board of Examiners comprising supervisor and one more examiner (as external to be appointed by the HOD Commerce, MDU Rohtak), The evaluation of Project-Report shall be done on the bsis of presentation of the Report by the candidate and performance in the viva-voce. In case of dispute on evaluation between the examiner and the supervisor the HOD Commerce, MDU Rohtak shall act as mediator. The awards of the Project Report shall be sent by the Principal of the concerned college to the Controller of Examinations.

13. The list of successful candidates after the 6th semester examination shall be arranged as under in three divisions on the basis of the aggregate marks obtained in his/her Bachelor's Degree of B.Sc., B.Com, B.Sc.(Home Science) B.Sc. (Sports Science) B.Com. (Vocational).

a) those who obtain 60% or more marks First Division

b) those who obtain 50% or more marks but less than 60% Second Division

c) those who obtain less than 50% Third Division

14. After the termination of examination of the examination.. as soon as possible the Controller Examinations shall publish the result.

15.i) A person who has qualified for the award of B.Sc./ B. Com./ B. Sc. (Home Science) B. Sc.(Sports Science)/B.Com. (Vocational) degree from M.D.University, Rohtak may be allowed to re-appear as an ex- student in theory papers only in which he/ she appeared earlier for improvement of result. The candidate shall appear in odd semesters in December and even semester exam. in May continuously witin a year of the passing the degree course. The overall result will be given only after the two chances are over.

ii) Higher score in the paper(s)/ subject(s) in which he/ she reappears for improvement will be taken into account towards the final result and the marks already obtained by the candidate in the paper/ suibject(s) in which he/ she has not opted to improve his/ her result shall be carried forward.

In case the candidate does not improve his/ her result score his/ her result shall be declared as previous result stands.

16. Notwithstanding the integrated nature of the B.Sc./B.Com./ B.Sc. (Home Science)/B.Sc. (Sports Science)/B. Com. (Vocational) course which is spread over more than one academic year, the Ordinance in force at the time a student joins course shall hold good only for the examination (s) held during or at the end of the academic year and nothing in these Ordinances shall be deemed to debar the University from amending the Ordinances subsequently and the amended Ordinance, if any, shall apply to all students whether old or new.

APPENDIX - A

SPORTS WEIGHTAGE FOR B.SC. (SPORTS SCIENCE)

For deciding the total mark of the candidate the following marks will be added to the marks obtained by the candidates in the qualifying examination.

a.) 1st, 2nd, 3rd postion at sub-Junior/ Senior World Senior Asian. 25 Marks
Youth Common Wealth games Senior international meet.

b.) Participation clause(a) games & tournament given above have won 15 Marks
1st, 2nd, 3rd places in National School Games. Junior Senior National Championship All India University tournamnets.

c.) Participation in National School Games. Junior Senior National 8 Marks
Championship/ Inter University OR have won 1st, 2nd, 3rd place in State School Tournaments University Tournaments University tournaments. (Inter College).

d.) Postion achieved at School/ Junior Senior district Championship
05 Marks