

UPDATED SCHEME OF EXAMS. & SYLLABI FOR B.SC.

**SCHEME OF EXAMINATION OF B. Sc. (MEDICAL)
BOTANY**

Semester – I

Paper –I	Diversity of Microbes	Max Marks- 40+10	Time-3 Hrs.
Paper-II	Cell Biology	Max Marks- 40+10	Time-3 Hrs.

Semester –II

Paper-I	Diversity of Archegoniates	Max Marks- 40+10	Time-3 Hrs.
Paper-II	Genetics	Max Marks- 40+10	Time-3 Hrs.
Paper-III	Practicals(Annually)Semester-I&II	Max Marks- 80+20	Time-6 Hrs. (Two Sessions)

Semester-III

Paper-I	Biology and Diversity of Seed Plants-I	Max Marks- 40+10	Time- 3 Hrs.
Paper-II	Plant Anatomy	Max Marks- 40+10	Time-3 Hrs.

Semester-IV

Paper-I	Biology and Diversity of Seed Plants-II	Max Marks- 40+10	Time- 3 Hrs
Paper-II	Plant Embryology	Max Marks- 40+10	Time- 3 Hrs.
Paper-III	Practicals (Annually) Semester-III & IV	Max Marks- 80+20	Time- 6 Hrs. (Two sessions)

Semester-V

Paper-I	Plant Physiology	Max Marks- 40+10	Time – 3 Hrs
Paper-II	Ecology	Max Marks- 40+10	Time – 3 Hrs.

Semester-VI

Paper-I	Biochemistry & Plant Biotechnology	Max Marks - 40+10	Time-3 Hrs
Paper-II	Economic Botany	Max Marks - 40+10	Time 3 Hrs.
Paper-III	Practicals (Annually) Semester-V & VI	Max Marks - 80+20	Time- 6 Hrs (Two Sessions)

Total Marks – 900

**20% marks allotted for Internal Assessment.*

SEMESTER-I

Max. Marks – 40+10
Time- 3 Hrs.

PAPER –I DIVERSITY OF MICROBES

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Bacteria : Structure, nutrition, reproduction and economic importance; general account of cyanobacteria (with reference to *Nostoc*).

Algae: General characters, classification (upto classes) and economic importance; important features and life-history (excluding development) of *Volvox*, *Oedogonium* (Chlorophyceae), *Vaucheria* (Xanthophyceae), *Ectocarpus* (Phaeophyceae) and *Polysiphonia* (Rhodophyceae).

UNIT-II

Viruses: General account of Viruses including structure of TMV and Bacteriophages.

Fungi: General characters, classification (upto classes) and economic importance; important features and life-history of *Phytophthora* (Mastigomycotina), *Mucor* (Zygomycotina), *Penicillium* (Ascomycotina), *Puccinia*, *Agaricus* (Basidiomycotina), *Colletotrichum* (Deuteromycotina); General account of Lichens.

PAPER –II CELL BIOLOGY

Max. Marks - 40+10

Time- 3 Hrs.

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

The Cell Envelopes: Structure and functions of Cell Wall and Plasma Membrane.

Ultrastructure and function of nucleus, Golgi Apparatus, Endoplasmic Reticulum, Chloroplast, Mitochondria, Lysosomes, Peroxisomes and Vacuoles.

UNIT-II

Cell Division: Mitosis and Meiosis.

Chromosome: Morphology, organization, ultrastructure of Centromere and Telomere; Chromosomal alterations- deletions, duplications, translocations, inversions; Variations in chromosome number-aneuploidy, polyploidy; sex chromosomes and sex determination.

SUGGESTED READINGS

Smith, G.M. 1971. Cryptogamic Botany. Vol.I. Algae & Fungi. Tata McGraw Hill Publishing Co., New Delhi.

Sharma, P.D. 1991. The Fungi. Rastogi & Co., Meerut.

Dube, H.C. 1990. An Introduction to Fungi, Vikas Publishing House Pvt.Ltd., Delhi.

Clifton, A. 1958. Introduction to the Bacteria: McGraw Hill & Co., New York.

Alberts, B.Bray, D.Lewis, J., Raff, M., Roberts, K. and Watson. I.D. 1999. Molecular Biology of Cell. Garland Publishing Co., Inc., New York, USA.

Atherly, A.G. Girton, J.R. and McDonald, J.F. 1999. The Science of Genetics, Saunders College Publishing , Fort Worth, USA.

Gupta, P.K. 1999. A text book of Cell and Molelcular Biology. Rastogi Publications, Meerut, India.

Kleinsmith, L. J and Kish, V.M. 1995. Principles of Cell and Molecular Biology (2nd edition) Harper Collins College Publishers, New York, USA.

Lodish, H., Berk, A., Zipursky, S.L., Matsudaria, P., Baltimoe, D. and Darnell, J. 2000. Molecular, Cell Biology, W.H. Freeman and Co., New York., USA.

Russel, P.J. 1998. Genetics, The Benjamin/Cummings Publishing Co. Inc., USA.

Snustad, D.P. and Simmons, M.J. 2000. Principles of Genetics. John Wiley and Sons, Inc. USA.

SEMESTER-II

Max. Marks - 40+10

Time- 3 Hrs.

PAPER –I DIVERSITY OF ARCHEGONIATES

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Bryophyta- General characters, classification (upto classes), alternation of generations, structure and reproduction (excluding development) of *Marchantia* (Hepaticopsida), *Anthoceros* (Anthocerotopsida), *Funaria* (Bryopsida).

UNIT-II

Pteridophyta- General characters, classification (upto classes), alternation of generations, structure and reproduction (excluding development) of *Rhynia* (Psilopsida), *Selaginella* (Lycopsida), *Equisetum* (Sphenopsida) and *Pteris* (Pteropsida).

PAPER –II GENETICS

Max. Marks - 40+10

Time- 3 Hrs.

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Genetic Material: DNA the genetic material, DNA structure and replication, DNA-Protein interaction, the Nucleosome Model, Genetic Code, Satellite and Repetitive DNA.

Genetic Inheritance: Mendelism: Laws of segregation and Independent Assortment; Linkage Analysis; Allelic and non-allelic interactions.

UNIT-II

Genetic Variations: Mutations- spontaneous and induced; transposable genetic elements; DNA damage and repair.

Gene Expression: Modern concept of gene; RNA; Ribosomes; transfer of genetic information- transcription and translation (Protein Synthesis); regulation of gene expression in prokaryotes and eukaryotes; 1-D, 2-D and 3-D structure of Proteins.

Extra Nuclear Inheritance: Presence and function of Mitochondrial and Plastid DNA; Plasmids.

SUGGESTED READINGS:

- Atherly, A.g. Girton, J.R. and McDonald, J.F. 1999. The Science of Genetics, Saunders College Publishing, Fort Worth, USA.
- Gupta, P.K. 1999. A text book of Cell and Molecular Biology. Rastogi Publications, Meerut, India
- Kleinsmith, L.J. and Kish, V.M. 1995. Principles of Cell and Molecular Biology (2nd edition). Harper Collins College Publishers, New York, USA.
- Lodish, H., Berk, A., Zipursky, S.L., Matudaria, P., Baltimore, D. and Darnell, J. 2000. Molecular, Cell Biology, W.H. Freeman and Co., New York, USA.
- Russel, P.J. 1998. Genetics, The Benjamin/Cummings Publishing Co. Inc., USA.
- Snustad, D.P. and Simmons, M.J. 2000. Principles of Genetics. John Wiley and Sons, Inc. USA.
- Smith, G.M. 1971. Cryptogamic Botany, Vol.II, Bryophytes & Pteridophytes. Tata McGraw Hill Publishing Co., New Delhi.
- Sharma, O.P. 1992. Text Book of Thallophytes, McGraw Hill Publishing Co.
- Sharma, O.P. 1990. Text Book of Pteridophyta, Mc Millan India Ltd.
- Puri, P., 1980, Bryophyta, Atma Ram & Sons, Delhi.

PAPER – III PRACTICALS

Max. Marks -80+20*
Time- 6 Hrs. (2 Sessions)

1. Identify, classify and write short morphological notes giving well labelled relevant diagrams on the given specimens **A, B, C** and **D** (one each from Algae, Fungi, Bryophytes and Pteridophytes).
26
2. Prepare the root smear and find out two different stages of Mitosis. Identify and show it to the examiners. Also give characters of identification.
10
3. Numerical regarding Genetics (Mendelian Inheritance or Gene Interaction) as per syllabus.
10
4. Identify giving two important characters of identification on spots **1, 2, 3** and **4** (one slide or material each from Algae, Fungi, Bryophytes and Pteridophytes).
20
6. Note-book, collection and collection report.
12
7. Viva-voce.
12

LIST OF PRACTICALS (Semester I & II)

1. Stages of Mitosis from Material (Onion-root tips).
2. Experiments on Monohybrid and Dihybrid ratios.
3. Gene Interactions and modified Dihybrid ratios.
4. Chi-square analysis.
5. Type study- Specimens from Algae, Fungi, Bryophytes and Pteridophytes as per theory syllabus.
6. Field tour of an area rich in diversity of Archegoniates for collection of plants, plant diseases and preparation of Herbarium.
7. Preparation of Survey/Collection Report.

B. Sc. II (Botany) Syllabus

SEMESTER-III

Max. Marks – 40+10*

Time- 3 Hrs.

PAPER –I BIOLOGY AND DIVERSITY OF SEED PLANTS-I

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT- I

General characters and diversity of Gymnosperms (seed plants without fruits).

Pilger and Melchior's (1954) system of classification.

Geological Time Table; Evolution of Seed Habit.

Palaeobotany-Fossils and Fossilization (Processes involved, types of Fossils and Importance of Fossils; Reconstruction of the following fossil plants:

Lyginopteris

Williamsonia

Cycadeoidea (=Bennettites).

UNIT- II

Morphology and anatomy of root, stem leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of the following:

Cycas

Pinus

Ephedra

General characters of Angiosperms including primitive angiosperms (Amentiferae, Ranales, Magnoliales).

PAPER –II PLANT ANATOMY

Max. Marks – 40+10*

Time- 3 Hrs.

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Diversity in plant forms-annuals, biennials and perennials.

Tissues-meristematic and permanent (simple and complex).

The Shoot system-shoot apical meristem and its histological organizations (monocot and dicot stem);

Cambium-structure and functions.

Secondary growth in dicot stem; characteristics of growth rings; sap wood and heart wood, periderm;

Anomalous secondary growth (*Dracaena*, *Boerhaavia* and *Achyranthes*)

UNIT-II

Leaf-Types of leaves (simple and compound); phyllotaxy.

Epidermis-uniseriate and multiseriate, epidermal appendages and their morphological types.

Anatomy of typical Monocot and Dicot leaf and cell inclusions in leaves; leaf abscission. Stomatal apparatus and their morphological types.

Root system- the root apical meristem; the histological organization (monocot and dicot root).

Secondary growth in dicot root.

Structural modifications in roots- storage (*Beta*), Respiratory (*Rhizophora*), Epiphytic (*Vanda*).

Suggested Readings

- Bhatnagar, S. and Moitra, A. 1996. Gynnosperms. New Age International - Limited, New Delhi.
- Davis, P.H. and Heywood, V.H. 1963. Principles of Angiosperm Taxonomy, Oliver and Boyd, London.
- Gifford, E.M. and Foster, A.S. 1988. Morphology and Evolution of Vascular Plants, W.H. Freeman & Company, New York.
- Heywood, V.H. and Moore, D.M. (Eds.) 1984. Current Concepts in Plant Taxonomy. Academic Press, London.
- Jeifrey, C. 1982. An introduction to Plant Taxonomy. Cambridge University Press, Cambridge, London.
- Jones, S.B., Jr. Luchsinger, A.E. 1986. Plant Systematics (2nd edition). McGraw Hill Book Co. New York.
- Maheshwari, J.K. 1963. Flora of Delhi. CSIR, New Delhi.
- Radford, A.E. 1986. Fundamentals of Plant Systamtics. Harper and Row, New York.
- Singh, G. 1999. Plant Systematics: Theory and Practical. Oxford and IBH Pvt. Ltd., New Delhi.
- Sporne, K.R. 1965. The Morphology of Gynnosperms. Hutchinson & Co. Ltd., London.
- Stace, C.A. 1989. Plant Taxonomy and Biosystematics (2nd edition). Edward Arnold, London.
- Stewart, W.M. Paleobotany and the Evolution of Plants. Cambridge University Press, Cambridge

SEMESTER-IV

Max. Marks – 40+10*

Time- 3 Hrs.

PAPER –I BIOLOGY AND DIVERSITY OF SEED PLANTS-II

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Taxonomy and Systematics, fundamental components of taxonomy (identification, classification, description, nomenclature and phylogeny).

Role of chemotaxonomy, cytotaxonomy and taxometrics in relation to taxonomy. Botanical

Nomenclature, principles and rules, principle of priority.

Type concept, taxonomic ranks.

Keys to identification of plants.

Flower and Types of Inflorescence.

UNIT-II

Salient features of the systems of classification of angiosperms proposed by Bentham & Hooker and Engler & Prantl.

Diversity of Flowering Plants: Diagnostic features and economic importance of the following families: Ranunculaceae, Brassicaceae, Malvaceae, Euphorbiaceae, Rutaceae, Leguminosae, Apiaceae, Asclepiadaceae, Lamiaceae, Solanaceae, Asteraceae, Liliaceae and Poaceae.

PAPER-II PLANT EMBRYOLOGY

Max. Marks – 40+10*

Time- 3 Hrs.

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Flower-a modified shoot; functions of various floral parts.

Microsporangium, its wall and dehiscence mechanism.

Microsporogenesis, pollen grains and its structure (pollen wall).

Pollen-pistil interaction; self incompatibility.

Pollination (types and agencies); pollen germination (microgametogenesis).

Male gametophyte.

UNIT-II

Structure of Megasporangium (ovule), its curvatures; Megasporogenesis and Megagametogenesis.

Female gametophyte (mono-, bi- and Tetrasporic).

Double fertilization.

Endosperm types and its biological importance.

Embryogenesis in Dicot and Monocot; polyembryony.

Structure of Dicot and Monocot seed.

Fruit types; dispersal mechanisms in fruits and seeds.

Suggested Readings

- Bhojwani, S.S. and Bhatnagar, S.P. 2000. The Embryology of Angiosperms. 4th revised and Enlarged Edition. Vikas Publishing House, Delhi.
- Cutter, E.G. 1969. Plant Anatomy Part-I, Cells and Tissues, Edward Arnold, London.
- Cutter, E.G. 1971. Plant Anatomy :Experiment and Interpretation. Part-II Organs, Edward Arnold London.
- Esau, K. 1977. Anatomy of Seed Plants, 2nd Edition. John Wiley & Sons, New York.
- Fageri, K. and Van der Pijl 1979. The Principles of Pollination Ecology. Pergamon Press, Oxford.
- Fahn, A. 1974. Plant Anatomy, 2nd Edition. Pergamon Press, Oxford.
- Hartmann, H.T. and Kestler, D.E. 1976. Plant Propagation; Principles and Practices. 3rd Edition. Prentice Hall of India Pvt. Ltd. New Delhi.
- King. J. 1997. Reaching for the Sun: How Plants Work. Cambridge University Press, Cambridge, U.K.
- Mauseth, J.D. 1988. Plant Anatomy. The Benjamin/Cummings Publishing Company Inc., Menlo Park, California, USA.
- Proctor, M. and Yeo, P. 1973. The Pollination of Flowers. William Collins Sons, London.
- Raven, P.H. Evert, R.F. and Eichhorn, S.E. 1999. Biology of Plants. 5th edition. W.R. Freeman and Co., Worth Publishers, New York.
- Thomas, P. 2000. Trees: Their Natural History. Cambridge University Press, Cambridge.

PAPER -III PRACTICALS

Max. Marks- 80+20
Time- 6 Hrs. (2 Sessions)

Biology and Diversity of Seed Plants, Plant Anatomy and Plant Embryology

1. Describe/compare the given flowers A and B in semi-technical language giving V.S. of flowers, T.S. of ovaries, Floral Diagrams and Floral Formulae. Identify and assign them to their respective families giving reasons. 20
2. Identify, classify and write morphological notes on the given specimens C and D '(from Gymnosperms) 10
3. Cut Transverse Section and prepare a double-stained permanent mount of the given material (from angiosperms/gymnosperms). Identify giving reasons and show it to the examiner. 12
4. Identify, giving the important characters of identification, the spots 1 and 2 (one material/slide each from gymnosperms and embryology of angiosperms). 10
5. Write morphological notes on the specimens E and F (from angiosperms). 10
6. Dissect out the globular/heart-shaped embryo from the given material. 4
7. Note-book, Collection and Collection Report. 12
8. Viva-voce. 12

Paper – I Plant Physiology

Internal Assessment-10

Max. Marks – 40

Time– 3 Hrs.

Note: Five questions to be attempted in all, selecting two questions from each unit. Question No. 1 will be compulsory (short answer type). Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Plant-water Relations: Importance of water to plant life; physical properties of water; Imbibition, Diffusion, Osmosis and Plasmolysis; absorption and transport of water; transpiration-types, physiology of stomata, factors affecting transpiration, importance of transpiration.

Mineral Nutrition: Essential macro and micro elements and their role; mineral uptake; deficiency symptoms.

Transport of Organic Substances: Mechanism of phloem transport; source-sink relationship; factors affecting translocation.

UNIT-II

Photosynthesis: Significance; historical aspects; photosynthetic pigments; action spectra and enhancement effects; concept of two photosystems; Z-scheme; photo-phosphorylation; Calvin cycle; C4 pathway; CAM plants; photorespiration.

Respiration: ATP–the biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (chemi-osmotic theory); redox -potential; oxidative phosphorylation; pentose phosphate pathway.

Seed dormancy; plant movements; the concept of photoperiodism; physiology of flowering; florigen concept; physiology of senescence; fruit ripening.

Suggested Readings:

1. Dennis,D.T., Turpin, D.H., Lefebvre,D.D. and Layzell (eds.). 1997: Plant Metabolism (2nd Edition), Longman, Essex, England.
2. Galston, A.W. 1989: Life Processes in Plants, Scientific American Library, Springer-Verlag, New York, USA.
3. Hopkins, W.G., 1995: Introduction to Plant Physiology, John Wiley & Sons, Inc., New York, USA.
4. Mohr, H. and Schopfer, P. 1995: Plant Physiology. Springer-Verlag, Berlin Germany.
5. Salisbury, F.B. and Ross, C.W. 1986: Plant Physiology. CBS Publishers and Distributors, New Delhi.
6. Taiz, L. and Zeiger, E. 2003: Plant Physiology. Panima Publishing Corporation, New Delhi.

SEMESTER-V**Paper - II Ecology**

Internal Assessment-10

Max. Marks – 40

Time– 3 Hrs.

Note: Five questions to be attempted in all, selecting two questions from each unit. Question No. 1 will be compulsory (short answer type). Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Introduction to Ecology: Definition; scope and importance; levels of organization.

Environment: Introduction; environmental factors- climatic (water, humidity, wind, light, temperature), edaphic (soil profile, physico-chemical properties), topographic and biotic factors (species interaction).

Adaptations of plants to water stress and salinity (morphological and anatomical features of hydrophytes, xerophytes and halophytes).

Population Ecology: Basic concept; characteristics; biotic potential, growth curves; ecotypes and ecads.

UNIT-II

Community Ecology: Concepts; characteristics (qualitative and quantitative-analytical and synthetic); methods of analysis; ecological succession.

Ecosystem: Structure (components) and functions (trophic levels, food chains, food webs, ecological pyramids and energy flow)

Biogeochemical Cycles: carbon and nitrogen; hydrological (water) cycle.

Phyto-geography: Phyto-geographical regions of India; vegetation types of India (forests).

Environmental Pollution: Sources, types and control of air and water pollution.

Global Change: Greenhouse effect and greenhouse gases; impacts of global warming; carbon trading.

Suggested Readings:

1. Odum, E.P. 1983: Basic Ecology, Saunders, Philadelphia.
2. Kormondy, E.J. 1996: Concepts of Ecology, Prantice-Hall of India Pvt. Ltd., New Delhi.
3. Mackenzie, A. et al. 1999: Instant Notes in Ecology, Viva Books Pvt. Ltd., New Delhi.

SEMESTER-VI

Paper – I Biochemistry and Plant Biotechnology

Internal Assessment-10

Max. Marks – 40

Time– 3 Hrs.

Note: Five questions to be attempted in all, selecting two questions from each unit. Question No. 1 will be compulsory (short answer type). Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Basics of Enzymology: Discovery and nomenclature; characteristics of enzymes; concept of holoenzyme, apoenzyme, coenzyme and co-factors; regulation of enzyme activity; mechanism of action.

Growth and development: Definitions; phases of growth and development; Plant hormones- auxins, gibberellins, cytokinins, abscissic acid and ethylene, history of their discovery, mechanism of action; photo-morphogenesis; phytochromes and their discovery, physiological role and mechanism of action.

Lipid metabolism: Structure and functions of lipids; fatty acid biosynthesis; B-oxidation; saturated and unsaturated fatty acids; storage and mobilization of fatty acids.

UNIT-II

Nitrogen metabolism: Biology of nitrogen fixation; importance of nitrate reductase and its regulation; ammonium assimilation.

Genetic engineering and Biotechnology: Tools and techniques of recombinant DNA technology; cloning vectors; genomic and cDNA library; transposable elements; aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis; biology of Agro-bacterium; vectors for gene delivery and marker genes.

Suggested Readings:

1. Bhojwani, S.S. 1990: Plant Tissue Culture Applications and Limitations. Elsevier Science Publishers, New York, USA.
2. Lea, P.J. and Leegood, R.C. 1999: Plant Biochemistry and Molecular Biology, John Wiley & Sons, Chichester, England.
3. Nelson, D.L. and Cox, M.M. 2005: Lehninger Principles of Biochemistry. 4th Edition. W.H. Freeman and Company, New York.
4. Old, R.W. and Primrose, S.B. 1989: Principles of Gene Manipulation, Blackwell Scientific Publications, Oxford, UK.
5. Palmer, T. and Bonner, P. 2008: Enzymes-Biochemistry, Biotechnology, Clinical Chemistry (2nd Edition). East West Press Pvt. Ltd., New Delhi.
6. Raghavan, V. 1986: Embryogenesis in Angiosperms: A Developmental and Experimental Study, Cambridge University Press, New York, USA.
7. Rawn, J.D. 2004: Biochemistry. Panima Publishing Corporation, New Delhi.

SEMESTER-VI**Paper – II Economic Botany**

Internal Assessment-10

Max. Marks – 40

Time – 3 Hrs.

Note: Five questions to be attempted in all, selecting two questions from each unit. Question No. 1 will be compulsory (short answer type). Nine questions are to be set spread over the entire syllabus. All questions carry equal marks.

UNIT-I

Origin, distribution, botanical description, brief idea of cultivation and uses of the following:

Food plants- Cereals (Rice, Wheat and Maize).

Pulses- (Gram, Arhar and Pea).

Vegetables- (Potato, Tomato and Onion).

Fibers- Cotton, Jute and Flax.

Oils- Groundnut, Mustard and Coconut.

UNIT-II

Morphology of plant part used, brief idea of cultivation and uses of the following:

Spices- Coriander, Ferula, Ginger, Turmeric, Cloves.

Medicinal Plants- *Cinchona*, *Rauwolfia*, *Atropa*, *Opium*, *Cannabis*, Neem.

Botanical description and processing of:

Beverages- Tea and Coffee.

Rubber- *Hevea*.

Sugar- Sugarcane.

General account and sources of timber; energy plantations and bio-fuels.

Suggested Readings:

1. Kocchar, S.L. 1998: Economic Botany in Tropics, 2nd edition, MacMillan India Ltd., New Delhi.
2. Sambammurthy, A.V.S.S. And Subramanyam, N.S. 1989: A Textbook of Economic Botany, Wiley Eastern Ltd., New Delhi.
3. Sharma, O.P. 1996: Hills Economic Botany (Late Dr. A.F. Hill adapted by O.P. Sharma), Tata McGraw Hill Co. Ltd., New Delhi.
4. Simpson, B.B. and Conner-Ogorzaly, M. 1986: Economic Botany- Plants in our World, McGraw Hill, New York.

**Paper-III Practicals : Plant physiology,
Biochemistry,
Biotechnology, Ecology, &
Economic Botany.**

**Int. Assessment-20
Max. Marks - 80
Time- 6 hrs. (Two Sessions)**

1. Devise an experiment to demonstrate the physiological process (as per the list).
Perform it and show it to the examiners. 15
2. Comment on the physiological/Biochemistry experiment
(Specimen/ set-up / Model / Chart). 10
3. Test for carbohydrates / Proteins / Fats / Peroxidase activity. 5
4. Ecological experiment/Ecological Specimens A & B (as per the list) 10
5. Identify and Classify spots 1, 2, 3, and 4 from the point of view of economic importance
and morphology of the plant part used. 20
6. Applied Botany experiment (as per the list). 8
7. Note Book, Collection and field report. 6 + 6 = 12
8. Viva-voce. 10

List of Practicals

A. Physiology/Biochemistry

1. Demonstration of Imbibition by plaster of Paris method.
2. Demonstration of Osmosis by potato osmoscope method.
3. Demonstration of Plasmolysis and Deplasmolysis
4. To study the Structure of stomata (Dicot & Monocot)
5. To study the Osmotic pressure of onion scale/ Rhoec leaf peel by plasmolytic method.
6. Comparison of Stomatal and Cuticular Transpiration by four leaf /Cobalt chloride method.
7. Demonstration of transpiration by Ganong's/ Farmer's potometer.
8. To separate of photosynthetic pigments by thin layer/paper chromatography.
9. Demonstration of Ascent of sap/Transpiration pull.
10. To study the rate of photosynthesis under varying CO₂ concentration using Wilmott's bubbler.
11. To study the effect of light intensity on oxygen evolution during photosynthesis using Wilmott's bubbler.
12. Demonstration of aerobic respiration.
13. Demonstration of anaerobic respiration.
14. To study the evolution of heat during respiration
15. Demonstration of Manometric determination of R. Q.
16. Demonstration of phototropism, geotropism and hydrotropism.
17. Determination of peroxidase activity.
18. Simple tests for the detection of Carbohydrates(Monosaccharides, Disaccharides and Starch); Proteins and Fats.

B. Ecology

1. Determination of pH of soil and water samples by using Universal Indicator.
2. Study of physical properties of soil-soil density, water holding capacity etc.
3. Study of community structure by quadrat / line transect method.
4. Determination of density, abundance and frequency of species by quadrat method.
5. Morphological and anatomical features of hydrophytes, xerophytes and parasites in relation to their habitats.
6. To prepare a report on local visit to an industry to identify the source and types of Pollutants.

B. Utilization of plants & Applied Botany

1. Study of plant parts / products from the point of view of economic importance (as per theory syllabus).
2. To prepare any one of the tissue culture medium.
3. To prepare the slants and Petri plates for plant tissue culture.
4. Study of techniques of sterilization, culturing and sub-culturing of cell, tissues and organs.
5. Demonstration of anther culture, protoplast isolation and culture using suitable models / charts / photographs etc.
6. Brief introduction to the components and working of the instruments (oven, autoclave, incubator, centrifuge, laminar air flow and spectrophotometer)

SCHEME OF EXAMINATION FOR B.SC. SEMESTER SYSTEM

Scheme of B.Sc. I

<i>Semester-I</i>					
Sr. No.		Paper	Marks		Exam. Duration
			Internal Assessment*	External Marks	
1.	Paper-I	Life and Diversity from Protozoa to Porifera and Cell Biology-I	10	40	3 hrs.
2.	Paper-II	Life and Diversity from Coelentrata to Helminthes and Cell Biology-II	10	40	3 hrs.
<i>Semester-II</i>					
3.	Paper-I	Life and Diversity from Annelida to Arthropoda and Genetics-I	10	40	3 hrs.
4.	Paper-II	Life and Diversity from Molluaska to Hemichordata and Genetics-II	10	40	3 hrs.
5.	Paper-III	Practical	--	100	6 hrs. (Two session) Morning & Evening
Total Semester I & II			40	260	

Scheme of B.Sc. II

<i>Semester-III</i>					
Sr. No.		Paper	Marks		Exam. Duration
			Internal Assessment*	External Marks	
1.	Paper-I	Life and Diversity of Chordates-I	10	40	3 hrs.
2.	Paper-II	Mammalian Physiology-I	10	40	3 hrs.
<i>Semester-IV</i>					
3.	Paper-I	Life and Diversity of Chordates-II	10	40	3 hrs.
4.	Paper-II	Mammalian Physiology-II	10	40	3 hrs.
5.	Paper-III	Practical	--	100	6 hrs. (Two session)

					Morning & Evening
Total Semester III & IV			40	260	

Scheme of B.Sc. III

<i>Semester-V</i>					
Sr. No.		Paper	Marks		Exam. Duration
			Internal Assessment*	External Marks	
1.	Paper-I	Environmental Biology	10	40	3 hrs.
2.	Paper-II	Evolution and Developmental Biology	10	40	3 hrs.
<i>Semester-VI</i>					
3.	Paper-I	Aquaculture and Pest Management-I	10	40	3 hrs.
4.	Paper-II	Aquaculture and Pest Management-II	10	40	3 hrs.
5.	Paper-III	Practical	--	100	6 hrs. (Two session) Morning & Evening
Total Semester V & VI	40	260			
Grand Total Semester I – VI			900		

*** 10 Percent on the basis of two hand written assignments, 5 percent on the basis of one class test and 5 percent on the basis of attendance of the student.**

Scheme of B.Sc. I

Semester-I					
Sr. No.		Paper	Marks		Exam. Duration
			Internal Assessment*	External Marks	
1.	Paper-I	Life and Diversity from Protozoa to Porifera and Cell Biology-I	10	40	3 hrs.
2.	Paper-II	Life and Diversity from Coelentrata to Helminthes and Cell Biology-II	10	40	3 hrs.
Semester-II					
3.	Paper-I	Life and Diversity from Annelida to Arthropoda and Genetics-I	10	40	3 hrs.
4.	Paper-II	Life and Diversity from Molluaska to Hemichordata and Genetics-II	10	40	3 hrs.
5.	Paper-III	Practical	--	100	6 hrs. (Two session) Morning & Evening
Total Semester I & II			40	260	

*** 10 Percent on the basis of two hand written assignments, 5 percent on the basis of one class test and 5 percent on the basis of attendance of the student.**

SYLLABUS

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

External Marks: 40

Internal Assessment : 10

Time allotted : 3 Hours

Note : *Nine questions are to be set in all and the candidate are required to attempt five questions including compulsory question.*

1. Question 1 is compulsory consisting of 10 parts (1.0 marks each) converting the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidate is required to attempt four questions, two from each section

1. **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*.

2. **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

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 passive 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.
5. **Ribosomes:** Types, biogenesis and role in protein synthesis.
6. **Lysosomes:** Structure, enzyme and their role; polymorphism
7. **Mitochondria:** Mitochondrial DNA; as semiautonomous body, biogenesis, mitochondrial enzymes (only names), role of mitochondria.
8. **Cytoskeleton:** Microtubules, microfilaments, centriole and basal body.
9. Cilia and Flagella

SYLLABUS

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

External Marks: 40

Internal Assessment : 10

Time allotted : 3 Hours

Note :

1. Nine questions are to be set in all and the candidate are required to attempt five questions including compulsory question.
2. Question 1 is compulsory consisting of 10 parts (1.0 marks each) converting the entire syllabus. Answer to each part should not exceed 20 words.
3. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidate is required to attempt four questions, two from each section

1. **Phylum – Coelentrata :**

- i) General characters and classification up to order level
- ii) Biodiversity, economic importance
- iii) Type Study - *Obelia*
- iv) Corals and coral reefs
- v) Polymorphism in Siphonophores

2. **Phylum – Helminths :**

- i) General characters and classification up to order level
- ii) Biodiversity, economic importance
- iii) Type study – *Fasciola hepatica*;
- iv) Helminths parasites : Brief account of life history, mode of infection and pathogenesis of *Schistosoma*, *Ancylostoma*, *Trichinella*, *Wuchereria* and *Oxyuris*.

1. Ultrastructure and functions of Nucleus : Nuclear membrane, nuclear lamina, nucleolus, fine structure of chromosomes, nucleosome concept and role of histones, euchromatin and heterochromatin, lampbrush chromosomes and polytene chromosomes.
2. Mitosis and Meiosis (Cell reproduction)
3. Brief account of causes of cancer.
4. An elementary idea of cellular basis of Immunity.

SYLLABUS

Life and Diversity from Annelida to Arthropoda & Genetics - I

External Marks: 40

Internal Assessment : 10

Time allotted : 3 Hours

Note : *Nine questions are to be set in all and the candidate are required to attempt five questions including compulsory question.*

1. Question 1 is compulsory consisting of 10 parts (1.0 marks each) converting the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidates is required to attempt four questions, two from each section

1. **Phylum – Annelida :**

- i) General characters and classification up to order level
- ii) Biodiversity and economic importance of Annelida
- iii) Type study – *Pheretima* (Earthworm)
- vi) Metamerism in Annelida
- v) Trochophore larva

2. **Phylum – Arthropoda :**

- i) General characters and classification up to order level
- ii) Biodiversity and economic importance of insects
- vi) Type study – *Grasshopper*

3. Elements of **Heredity and variations.**

4. The varieties of **gene interactions**

5. **Linkage and recombination :** Coupling and repulsion hypothesis, crossing-over and chiasma formation; gene mapping.

6. **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.

7. **Sex linked inheritance :** Haemophilia and colour blindness in man, eye colour in *Drosophila*, Non-disjunction of sex-chromosome in *Drosophila*; Sex-linked and sex-influenced inheritance

8. **Extra chromosomal and cytoplasmic inheritance:**

- i) Kappa particles in *Paramecium*
- ii) Shell coiling in snails.
- iii) Milk factor in mice.

SYLLABUS

Life and Diversity from Mollusca to Hemichordata & Genetics – II

External Marks: 40

Internal Assessment : 10

Time allotted : 3 Hours

Note : *Nine questions are to be set in all and the candidate are required to attempt five questions including compulsory question.*

1. Question 1 is compulsory consisting of 10 parts (1.0 marks each) converting the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidates is required to attempt four questions, two from each section

1. Phylum - Mollusca:

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

2. Phylum – Enchinodermata :

- i) General characters and classification up to order level
- ii) Biodiversity and economic importance
- vii) Type study – *Asteries* (Sea Star)
- viii) Echinoderm larvae
- ix) Aristotle's Lantern

3. Phylum Hemichordate : General Character; Type Study of Ballangolus

3. **Multiple allelism :** Eye colour in *Drosophila*; A, B, O blood group in man.
4. **Human genetics :** Human karyotype, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins.
5. **Inborn errors of metabolism** (Alcaptonuria, Phenylketonuria, Albinism, sickle-cell anaemia).
6. **Nature and function of genetic material :** Structure and type of nucleic acids; Protein synthesis.
7. Eugenics, eugenics and euphenics; 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 (autopolyploidy, euploidy and polyploidy in animals)
8. **Applied genetics :** genetic counseling, pre-natal diagnostics, DNA-finger printing, transgenic animals.

B.SC. (SEMESTER I & II) PAPER –III (PRACTICAL)

Max. Marks: 100

Time allowed: 6 Hours
(2 Sessions M&E)

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

1. Protozoa Lamination of cultures of *Amoeba*, *Euglena* and *Paramecium*; permanent prepared slides: *Amoeba*, *Euglena*, *Trypanosoma*, *Noctiluca*, *Eimeria*, *Paramecium* (binary fission and conjugation), *Opalina*, *Verticella*, *Balantidium*, *Nyctotherus*, radiolarian and foramaniferan ooze.
2. Parazoa (Porifera) Specimens: *Sycon*, *Grantia*, *Euplectela*, *Hyalonema*, *Spongilla*, *Euspongia*
3. Coelenterata Specimens: *Porpita*, *Varella*, *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. Platyhelminthes Specimens: *Dugesia*, *Fasciola*, *Taenia*, *Echinococcus*. Permanent prepared slides: *Miracidium*, *sporocyst*, *redia*, *cercaria*, *scolex* and *proglottids of Taenia* (mature and gravid).
5. Aschelminthes *Ascaris* (male and female), *Trichinella*, *Ancylostoma*, *Meloidogyne*
6. Annelida Specimens : *Pheretima*, *Heteronereis*, *Polynoe*, *Aphrodite*, *Chaetopterus*, *Arenicola*, *Tubifex* and *Pontobdella*
7. Arthropoda Specimens : *Peripatus*, *Palaemon* (Prawn), *Lobster*, *Cancer* (crab), *Sacculina*, *Eupagurus* (hermit crab), *Lepas*, *Balanus*, *Cyclops*, *Daphnia*, *Lepisma*, *Periplaneta* (cockroach), *Schistocerca* (locust), *Poeciloceris* (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* (bed bug), *Pediculus* (body louse), *Millipedes*, *Scolopendra* (centipedes), *Palamnaeus* (scorpion), *Aranea* (spider), *Limulus* (king crab)
8. 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*
9. Echinodermata Specimens: *Asterias*, *Echinus*, *Cucumara*, *Ophiothrix*, *Antedon* and *Asterophyton*
10. Hemichordata *Balanglossus*

(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 regions)
4. T.S. *Ascaris* (male and female)
5. T.S. *Pheretima* (pharyngeal and typhlosolar regions), Setae, septal nephridia and spermathecae of *Pheretima*.
6. Trachea and mouthparts of cockroach.
7. Statocyst of *Palaemon*.
8. Glochidium larva of *Anodonta*; radula and osphradium of *Pila*.
9. T.S. Star fish (arm).

10. T.S. *Balanoglossus* (through various regions).

(C) Preparation of the following slides:

1. Temporary preparation of *Volvos*, *Paramecium*, Gemmules and spicules of *Sycon*; mouth parts and trachea of *Periplanata* (cockroach).
2. Preparation of permanent stained whole mounts of *Hydra*, *Obelia*, *Sertularia*, *Plumularia* and *Bougainvillea*.
3. Preparation of mouth parts of Mosquito, House fly and cockroach.

(D) Study of Internal Anatomy

1. Computer, simulated study/ model of :
 - (i) *Earthworm* : Digestive, reproductive and nervous systems
 - (ii) *Pila* : Pallial complex, digestive and nervous system
2. Demonstration of internal anatomy of cockroach : Digestive, reproductive and nervous systems

(E) Cell biology and Genetics:

1. Cell division : Prepared slides of stages of mitosis and meiosis.
2. Salivary gland and polytene chromosomes of *Drosophila*/ *Chironomus*.
3. Temporary squash preparations of onion root tip / grasshopper testis for the study of mitosis using acetocarmine stain.

**B.SC. PART – I
GUIDELINES / INSTRUCTIONS FOR PRACTICAL (PAPER – III)**

Max. Marks : 100

Time allowed : 6 Hours
(2 Sessions M&E)

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

	Exercise	Marks allotted
1.	Internal Anatomy – One (Labeled diagram)	12
2.	Permanent Slide Preparation - one (Staining, identification, sketch)	06
3.	Museum specimens – eight (identification and classification)	24 (8x3)
4.	Ecological note – One specimen	05
5.	Permanent slides – Two (identification with reasons)	08 (2x4)
6.	Preparation of chromosome slide (root tip / gasshopper testis)	10
7.	Invertebrate survey and report	10 (5+5)
8.	Practical record and slides	10
9.	Viva-voce	15

Scheme of B.Sc. II

Semester-III					
Sr. No.		Paper	Marks	Exam. Duration	
			Internal Assessment*	External Marks	
1.	Paper-I	Life and Diversity of Chordates-I	10	40	3 hrs.
2.	Paper-II	Mammalian Physiology-I	10	40	3 hrs.
Semester-IV					
3.	Paper-I	Life and Diversity of Chordates-II	10	40	3 hrs.
4.	Paper-II	Mammalian Physiology-II	10	40	3 hrs.
5.	Paper-III	Practical	--	100	6 hrs. (Two session) Morning & Evening
Total Semester III & IV			40	260	

*** 10 Percent on the basis of two hand written assignments, 5 percent on the basis of one class test and 5 percent on the basis of attendance of the student.**

SYLLABUS

B.Sc. Part-II (Semester III & IV)

SEMESTER III

Paper-I : Life and Diversity of Chordates - I

External Marks : 40

Internal Assessment: 10

Time allowed : 3 Hours

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

1. Question 1 is compulsory consisting of 10 parts (1.5 marks each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidates are required to attempt four questions, two from each section.

SECTION-A

Functional morphology of the types included with special emphasis on the adaptations to their modes of life and environment. General characters and classification of all phyla upto orders with examples emphasizing their biodiversity, economic importance and conservation measures where required.

1. **Chordates**: Origin and Evolutionary tree.
2. **Protochordates**: Systematic position, distribution, ecology, morphology and affinities
Urochordata *Herdmania* - type study
Cephalochordata, *Amphioxus* – type study

SECTION-B

3. **Cyclostomes**: Type study of *Petromyzon*.
4. **Pisces**: Scales & Fins, Parental care in fishes, fish migration.
Types study of Labeo

SEMESTER – III

Paper-II : Mammalian Physiology-I

External Marks : 40

Internal Assessment: 10

Time allowed : 3 Hours

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

1. Question 1 is compulsory consisting of 10 parts (1.5 marks each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidates are required to attempt four questions, two from each section.

SECTION-A

1. Introduction, Classification, Structure, function and general properties of proteins, carbohydrates and lipids.
2. Nomenclature, Classification and mechanisms of enzyme action.
3. Transport through biomembranes (Active and Passive), buffers

SECTION-B

4. **Nutrition:** Nutritional components; Carbohydrates, fats, lipids, Vitamins and Minerals. Types of nutrition & feeding, Digestion of dietary constituents, viz. lipids, proteins, carbohydrates & nucleic acids; symbiotic digestion. Absorption of nutrients & assimilation; control of enzyme secretion.
5. **Muscles:** Types of muscles, ultra-structure of skeletal muscle. Bio-chemical and physical events during muscle contraction; single muscle twitch, tetanus, muscle fatigue muscle, tone, oxygen debt., Cori's cycle, single unit smooth muscles, their physical and functional properties.
6. **Bones:** Structure and types, classification, bone growth and resorption, effect of ageing on Skeletal system and bone disorders.

SEMESTER – IV

Paper-I : Life and Diversity of Chordates - II

External Marks : 40

Internal Assessment: 10

Time allowed : 3 Hours

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

1. Question 1 is compulsory consisting of 10 parts (1.5 marks each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidates are required to attempt four questions, two from each section.

SECTION-A

1. **Amphibia:** Origin, Evolutionary tree. Type study of frog (*Rana tigrina*), Parental Care in Amphibia
2. **Reptilia:** Type study of Lizard (*Hemidactylus*), Origin, Evolutionary tree. Extinct reptiles; Poisonous and non-poisonous snakes; Poison apparatus in snakes.

SECTION-B

3. **Aves:** Type study of Pigeon (*Columba livia*); Flight adaptation, Principles of aerodynamics in Bird flight, migration in birds.
4. **Mammals:** Classification, type study of Rat; Adaptive radiations of mammals dentition.

Note: Type study includes detailed study of various systems of the animal.

SEMESTER – IV

Paper-II : Mammalian Physiology-II

External Marks : 40

Internal Assessment: 10

Time allowed : 3 Hours

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

1. Question 1 is compulsory consisting of 10 parts (1.5 marks each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidates are required to attempt four questions, two from each section.

SECTION-A

1. **Circulation**: Origin, conduction and regulation of heart beat, cardiac cycle, electrocardiogram, cardiac output, fluid pressure and flow pressure in closed and open circulatory system; Composition and functions of blood & lymph; Mechanism of coagulation of blood, coagulation factors; anticoagulants, haemopoiesis.
2. **Respiration**: Exchange of respiratory gases, transport of gases, lung air volumes, oxygen dissociation curve of hemoglobin, Bohr's effect, Haburger's phenomenon (Chloride shift), control / regulation of respiration.
3. **Excretion**: Patterns of excretory products viz. Amonotelic, ureotelic uricotelic, ornithine cycle (Kreb's – Henseleit cycle) for urea formation in liver. Urine formation, counter-current mechanism of urine concentration, osmoregulation, micturition.

SECTION-B

4. **Neural Integration**: Nature, origin and propagation of nerve impulse alongwith meddullated & non-medullated nerve fibre, conduction of nerve impulse across synapse.
5. **Chemical integration of Endocrinology**: Structure and mechanism of hormone action; physiology of hypothalamus, pituitary, thyroid, parathyroid, adrenal, pancreas and gonads.
6. **Reproduction**: Spermatogenesis, Capacitation of spermatozoa, ovulation, formation of corpus luteum, oestrous-anoestrous cycle, Menstrual cycle in human; fertilization, implantation and gestation.

B.Sc. Part-II

Paper-III : PRACTICAL

Max. Marks : 100
Time allowed : 6 Hours
(2 Sessions M&E)

1. Classification upto orders, habit, habitats, external characters and economic importance (if any) of the following animals:-

Protochordata : *Molqula, Hetryllus, Pyrosoma, Doliolum, Olikopleura, and Amphioxus.*

Cyclostomata : *Myxine, Petromyzon and Ammocoetus larva.*

Chondrichthyes : *Zygaena, Pristis, Narcine (electric ray), Trygon, Rhinobatus, Raja and Chimaera.*

Osteichthyes : *Acipenser, Lepidosteus, Muraena, Mystus, Catla, Hippocampus, Syngnathus Exocoetus, Anabas, Diodon, Ostraczion, Tetradon, Echinus, Lophius, Solea and Polypterus. Any of the Lung Fishes.*

Amphibia : *Necturus, Proteus, Amphiuma, Salamandra, Amblystoma, Axolotie larva, Alytes, Bufo, Rana.*

Reptilia : *Hemidactylus, Calotes, Draco, Varanus, Phrynosoma, Chamaeleon, Typhops, Python, Eryx, Ptyas, Bungarus, Naja, Hydrus, Viper, Crocodilus, Gavialis, Chelone (Turtle) and Testudo (Tortoise).*

Aves : *Casuaris, Arden, Anas, Milvus, Pavo, Eudynamis, Tyto and Alcedo, Halcyon*

Mammalia : *Ornithorhynchus, Echidna, Didelphis, Macropus, Loris, Macaque, Hystrix, Funambulus, Telix, Panthera, Canis, Herpestes, Capra, Pteropus.*

2. Internal anatomy of the following animals:

(i) Computer simulated model/study of :

(a) *Herdmania* : General anatomy

(b) *Rat* : Digestive, arterial, venous and urinogenital systems.

(c) *Hemidactylus* : Digestive, arterial, venous and urinogenital systems

(ii) Demonstration & Study of Internal Anatomy of locally available fish (*Labeo*). Digestive and reproductive systems: cranial nerves, Ear ossicle

3. Study of the skeleton of *Scoliodon, Labeo, Rana* (Frog), *Varanus*, Pigeon or *Gallus* and *Orcyctolagus/rat*, Palates of birds, skulls of dog & rabbit.

4. Study of the following prepared slides:

Tornaria larva, T.S. *Amphioxus* (through different regions). *Oikopleura*, Histology of rat (compound tissues), different types of scales.

5. Make permanent stained preparations of the following:
Salpa, Spicules, and Pharynx of *Herdmania*, *Amphioxus*, Cycloid scales, Zoological excursion and its report is compulsory in the practical examination.

PHYSIOLOGY PRACTICALS:

1. Qualitative tests for identification of simple sugars, disaccharides and polysaccharides.
2. Study of human salivary amylase activity: Effect of temperature, pH, Concentration.
3. Estimation of abnormal constituents of urine (Albumin, sugar, ketonebodies).
4. Use of Kymograph unit & respirometer.
5. Haematein crystal preparation.
6. Estimation of Hb.
7. DLC of Man/RBC count/WBC count.

B.Sc. Part-II

Paper-III :

Guidelines/instructions for practical

Max. Marks : 100

Time allowed : 6 Hours
(2 Sessions M&E)

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

- | | | | |
|-----|--|---|----|
| 1. | Internal Anatomy – One
(exposition, labeled diagram) | : | 12 |
| 2. | Temporary Mountign – One
(staining, identification, sketch) | : | 06 |
| 3. | Museum specimens – five
(identification, classification) | : | 15 |
| 4. | Ecological note – one specimen | : | 05 |
| 5. | Permanent slides – Three
(identification with reasons) | : | 09 |
| 6. | Bone – Two pieces
(Identification & sketch) | : | 10 |
| 7. | Physiology (Two exercises) | : | 10 |
| 8. | Field excursion and report | : | 08 |
| 9. | Practical record & slides | : | 10 |
| 10. | Viva-voce | : | 15 |

Scheme of B.Sc. III (Zoology)

<i>Semester-V</i>					
Sr. No.		Paper	Marks		Exam. Duration
			Internal Assessment*	External Marks	
1.	Paper-I	Environmental Biology	10	40	3 hrs.
2.	Paper-II	Evolution and Developmental Biology	10	40	3 hrs.
<i>Semester-VI</i>					
3.	Paper-I	Aquaculture and Pest Management-I	10	40	3 hrs.
4.	Paper-II	Aquaculture and Pest Management-II	10	40	3 hrs.
5.	Paper-III	Practical	--	100	6 hrs. (Two session) Morning & Evening
Total Semester V & VI			40	260	

*** 10 Percent on the basis of two hand written assignments, 5 percent on the basis of one class test and 5 percent on the basis of attendance of the student.**

SYLLABUS
B.Sc. Part-III (Semester V & VI)
SEMESTER - V

Paper-I : Environmental Biology

External Marks : 40

Internal Assessment: 10

Time allowed : 3 Hours

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

1. Question 1 is compulsory consisting of 10 parts (1.5 marks each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidates are required to attempt four questions, two from each section.

SECTION-A

1. **Basic concepts of ecology:** Definition, signification. Concepts of habitat and ecological niche.
2. **Factors affecting environment:** Abiotic factors (light-intensity, quality and duration), temperature, humidity, topography; edaphic factors; Biotic factors.
3. Introduction to major ecosystem of the world.
4. **Ecosystem:** Concept, components, properties and functions; Ecological energetics and energy flow-food chain, food web, trophic structure; ecological pyramids concept of productivity.
5. **Biogeochemical cycles:** Concept, reservoir pool, gaseous cycles and sedimentary cycles.

SECTION-B

6. **Population:** Growth and regulation.
7. Concept of biodiversity and conservation of natural resources.
8. Migration in fishes and birds.
9. Parental care in animals.
10. **Population interactions:** Competition, predation, parasitism, commensalisms and mutualism.
11. **Environmental Pollution:** Air, water, soil and management strategies.

SEMESTER – V

Paper-II : Evolution and Developmental Biology

External Marks : 40

Internal Assessment: 10

Time allowed : 3 Hours

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

1. Question 1 is compulsory consisting of 10 parts (1.5 marks each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidates are required to attempt four questions, two from each section.

SECTION-A

1. Origin of life.
2. Concept and evidences of organic evolution.
3. Theories of organic evolution.
4. Concept of micro, macro-and mega-evolution.
5. Concept of species
6. Phylogeny of horse.
7. Evolution of man.

SECTION-B

8. Historical perspectives, aims and scope of developmental biology.
9. Generalized structure of mammalian ovum & sperm, spermatogenesis and Oogenesis, fertilization, parthenogenesis, different types of eggs and patterns of cleavage.
10. Proces of blastulation and fate-map construction in frog and chick.
11. Gastrulation in frog and chick upto the formation of three germinal layers.
12. Elementary knowledge of primary organizers.
13. Elementary knowledge of extra embryonic membranes.
14. Concepts of competence, determination and differentiation.
15. Concept of regeneration.

SEMESTER – VI

Paper-I : Aquaculture and Pest Management-I

External Marks : 40

Internal Assessment: 10

Time allowed : 3 Hours

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

1. Question 1 is compulsory consisting of 10 parts (1.5 marks each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidates are required to attempt four questions, two from each section.

SECTION-A

1. **Introduction to world fisheries:** Production, utilization and demand.
2. **Fresh Water fishes of India:** River system, reservoir, pond, tank fisheries; captive and culture fisheries, cold water fisheries.
3. Fishing crafts and gears.
4. Fin fishes, Crustaceans, Molluscs and their culture.

SECTION-B

Study of important insect pests of crops and vegetables:

5. **Sugercane:**
 - (a) Sugercane leaf-hopper (*Pyrilla perpusilla*)
 - (b) Sugercane Whitefly (*Aleurolobus barodensis*)
 - (c) Sugercane top borer (*Sciropophaga nivella*)
 - (d) Sugercane root borer (*Emmalocera depresella*)
 - (e) Gurdaspur borer (*Bissetia steniellus*)

With their systematic position, habits and nature of damage cause. Life cycle and control of *Pyrilla perpusilla* only.

6. **Cotton:**
 - (a) Pink bollworm (*Pestiphora gossypifolia*)
 - (b) Red cotton bug (*Dysdercus Cingulatus*)
 - (c) Cotton grey weevil (*Myllocerus undecimpustulatus*)
 - (d) Cotton Jassid (*Amrasca devastans*)

With their systematic position, habits and nature of damage caused. Life cycle and control of *Pectinophora gossypiella*.

7. **Wheat:**

Wheat stem borer (*Sesamia inferens*) with its systematics position, habits, nature of damage caused. Life cycle and control.

8. **Paddy:**

- (a) Gundhi bug (*Leptocorisa acuta*)
- (b) Rice grasshopper (*Hieroglyphus banian*)
- (c) Rice stem borer (*Scirpophaga incertulus*)
- (d) Rice Hispa (*Diceladisa armigera*)

With their systematic position, habits and nature of damage caused. Life cycle and control of *Loptocorisa acuta*.

9. **Vegetables:**

- (a) *Raphidopalpa faveicollis* – The Red pumpkin beetle.
- (b) *Dacus cucurbitas* – The pumpkin fruit fly.
- (c) *Tetranychus tecarius* – The vegetable mite.
- (d) *Epilachna* – The Hadda beetle

Their systematics position, habits and nature of damage caused. Life cycle and control of *Aulacophora faveicollis*.

SEMESTER – VI

Paper-II : Aquaculture and Pest Management-II

External Marks : 40

Internal Assessment: 10

Time allowed : 3 Hours

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

1. Question 1 is compulsory consisting of 10 parts (1.5 marks each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibly splitting them in parts. Candidates are required to attempt four questions, two from each section.

SECTION-A

1. **Seed production:** Natural seed resources – its assessment, collection, Hatchery production
2. **Nutrition:** Sources of food (Natural, Artificial) and feed composition (Calorie and Chemical ingredients).
3. **Field Culture:** Ponds-running water, recycled water, cage, culture; poly culture.
4. **Culture technology:** Biotechnology, gene manipulation and cryopreservation of gametes.

SECTION-B

5. **Stored grains:**
 - (a) Pulse beetle (*Callosobruchus maculatus*)
 - (b) Rice weevil (*Sitophilus oryzae*)
 - (c) Wheat weevil (*Trogoderma granarium*)
 - (d) Rust Red Flour beetles (*Tribolium castaneum*)
 - (e) Lesser grain borer (*Rhizopertha dominica*)
 - (f) Grain & Flour moth (*Sitotroga cerealella*)

Their systematic position, habits and nature of damage caused. Life cycle and control of *Trogoderma granarium*.

6. **Insect control:** Biological control, its history, requirement and precautions and feasibility of biological agents for control.
7. **Chemical control:** History, Categories of pesticides. Important pesticides from each category to pests against which they can be used. Insect repellants and attractants.
8. Integrated pest management.
9. Important bird and rodent pests of agriculture & their management.

B.Sc. Part-III

Paper-III : PRACTICAL

Max. Marks : 100
Time allowed : 6 Hours
(2 Session M&E)

1. External morphology, identification marks, nature of damage and host of the following pests:-
 - (i) **Sugarcane** : Sugarcane leaf-hopper, Sugarcane whitefly, Sugarcane top borer, Sugarcane root borer, Gurdaspur borer (any two).
 - (ii) **Cotton**: Red Cotton bug
 - (iii) **Wheat** : Wheat stem borer
 - (iv) **Paddy** : Gundhi bug, Rice grasshopper, Rice stem borer, Rice hispa (any one).
 - (v) **Vegetables**: *Aulocophora faveicollis*, *Dacus cucurbitas*, *Tetranychus tecarius*, *Epilachna* (any three).
 - (vi) **Pests of stored grains**: Pulse beetle, Rice weevil, Grain & Flour moth, Rust-red flour lessergrain borer (any three).
2. Stages of life history of silk moth and honey bee.
3. Identification of *Catle*, *Labeo rohita*, *L. calbasu*, *Cirrhius*, *mrigala* *Puntius sarana*, *Channa punctatus*, *C. marulius*, *C. stariatus*, *Trichogaster fasciata*, *Mystus seenghala*, *M. cavasius*, *M. tengra*, *Callichrous pabola*, *C. bimaculatus*, *Wallago attu*, *Prawns*, *Crabs*, *Lobsters*, *Calms*, *Mussels & Oysters*.
4. Chemical analysis of pond water and soil for pH, dissolved oxygen, free CO₂ nitrates, phosphates and chlorides.
5. A study of the slides of fish parasites.
6. A study of the different types of nets, e.g., cast net, gill net, drift net and drag net.
7. A visit to lake/reservoir/fish breeding centre.
8. Adaptative modifications in feet and breaks of birds.
9. Preparation of permanent/temporary slides of developmental stages of frog/mosquito.
10. Study of permanent slides of WM of chick embryo (13-18h, 24-36h, 36-48h, 48-72h).
11. Window preparation and identification of stages of development in chick egg.
12. **Histology**: Preparation of permanent histological slides of testis, ovary, kidney, intestine, live of rat (H and E staining).

B.Sc. Part-III

Guidelines/instructions for practical (Paper-III)

Max. Marks : 100
Time allowed : 6 Hours
(2 Sessions M&E)

- | | | | |
|----|---|---|----------------|
| 1. | Chemical analysis of water/soil | : | 10 marks |
| 2. | Identification and Classification of specimens (Eight) | : | 16 marks |
| 3. | Ecological note on economically important specimen (two) : | | 10 marks |
| 4. | Identification of histological and embryological slides with Reasons of identification (Two): feet and beaks of birds | : | 8 marks |
| 5. | Identification with reason feet/beaks of birds | : | 3 marks |
| 6. | Permanent preparation of histological slides
(a) Section cutting and stretching
(b) Staining, mounting, (c) identification & sketch | : | 18 marks (6,6) |
| 7. | Field Report | : | 10 marks |
| 8. | Practical note book | : | 10 marks |
| 9. | Viva-voce | : | 15 marks |

Note: Field report to be submitted alongwith answer books.

KURUKSHETRA UNIVERSITY, KURUKSHETRA

SYLLABUS FOR

**B. Sc
BIOTECHNOLOGY**

(Semester System)

Effective from Academic Session 2011-12

SCHEME OF EXAMINATION W.E.F. 2011-12
B.Sc. (Biotechnology)

Paper No.	Title of Paper	Internal Assessment	Marks	Total Marks	Time
Ist Year					
SEMESTER I					
I	Introduction to Biotechnology	10	40	50	3 hrs.
II	Biochemistry I	10	40	50	3 hrs.
SEMESTER II					
III	General Microbiology	10	40	50	3 hrs.
IV	Biochemistry II	10	40	50	3 hrs.
V.	Practical (Semester I + Semester II)		100	100	3 hrs.
IInd Year					
SEMESTER III					
VI	Immunology	10	40	50	3 hrs.
VII	Molecular Biology	10	40	50	3 hrs.
SEMESTER IV					
VIII	Recombinant DNA Technology	10	40	50	3 hrs.
IX	Bioinformatics	10	40	50	3 hrs.
X	Practical (Semester III + Semester IV)		100	100	3 hrs.
IIIrd Year					
SEMESTER V					
XI	Animal Biotechnology	10	40	50	3 hrs.
XII	Plant Biotechnology	10	40	50	3 hrs.
SEMESTER VI					
XIII	Microbial Biotechnology	10	40	50	3 hrs.
XIV	Practical (Semester V + Semester VI)		100	100	3 hrs.
XV	*Project Work (In House)		50	50	
			Total =	900	

*Project work will be carried out during summer vacations after IInd year and project reports will be evaluated by external examiner by viva voce at the end of IIIrd year.

Note: There will be four theory periods per paper per week.

Semester I
Paper I Introduction to Biotechnology

Marks: 40
Internal Assessment: 10
Time: 3 hrs.

NOTE

1. Seven Questions will be set in all.
2. Q. No. 1 which will be objective/short answer type covering the entire syllabus, will be compulsory. The remaining questions will be set section wise with questions 3 from each section. The candidates will be required to attempt Q. No. 1 & four others selecting 2 questions from each section. All questions will carry equal marks.
3. As far as possible the question will be of short answer type.
4. Each question should be divided into parts & the distribution of marks be indicated part wise.

Unit I

Definition & scope of Biotechnology; introduction of genetic engineering; plant and animal tissue culture; fermentation technology; immobilized enzymes; monoclonal antibodies and hybridoma technology; embryo transfer technology; introduction to gene and genomes, Proteins and proteome, history of genetic manipulations; recombinant DNA technology, DNA fingerprinting and forensic analysis.

Unit II

Application of biotechnology in agriculture; animal and veterinary sciences, pharmaceutical industry, food industry and chemical industry. Bioremediation and waste treatment biotechnology. Biotechnology research in India. Biotechnology in context of developing world. Brief account of safety guidelines and risk assessment in biotechnology. Ethics in Biotechnology, Intellectual property rights.

Semester I
Paper II Biochemistry-I

Marks : 40
Internal Assessment: 10
Time 3 hrs

NOTE

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3. As far as possible the question will be of short answer type.
4. Each question should be divided into parts & the distribution of marks be indicated part wise.

Unit I

Biomolecules: Introduction, important features, covalent and non-covalent interactions.

Carbohydrates: Introduction and Biological Significance.

Definition and classification: Monosaccharides; families of monosaccharides; simple aldoses and ketoses, Configuration and Conformation, Stereoisomerism/ Asymmetric centres, Fischer and Haworth projection formula, pyranose and furanose ring forms, reducing and non-reducing sugars, sugar derivatives viz. sugar alcohols, amino sugars, deoxy sugars, acidic sugars, Glycosidic bond Disaccharides and Oligosaccharides: Definition, structure and function of important di and oligosaccharides viz. lactose, sucrose, maltose, raffinose, stachyose, verbascose etc.

Polysaccharides: Homo and Hetero polysaccharides, storage polysaccharides: Starch and Glycogen. Structural polysaccharides: Cellulose and Chitin. A brief account of structure and function of mucopolysaccharides/Glycosaminoglycans (Hyaluronic acid, Chondroitin sulphate), Glycoproteins and Proteoglycans.

Amino acids, Peptides and Proteins: Classification and structure of amino acids, essential amino acids, rare and non-protein amino acids, optical and chemical properties of amino acids; acid-base behaviour/zwitterions; pKa value and titration curve.

Peptide bond – nature and characteristics. Definition; structure and function of some biologically important peptides.

Unit II

Proteins: Classification based on structure and function. Structural organization of proteins: Primary structure; Secondary structure- α -Helix, β -pleats and β – turn
Tertiary structure – myoglobin and lysozyme etc.

Quaternary structure-hemoglobin.

Forces stabilizing different structural levels.

Amino acid analysis/N-terminal amino acid analysis- Sanger's method, Edmann's degradation, dansyl chloride and dabsyl chloride

Lipids: Introduction and Classification – simple and complex lipids, Fatty acids – structure and nomenclature, soap value, acid value, iodine number, rancidity. Essential fatty acids. A general account of structure and function of triacylglycerols, phospholipids, glycolipids, sphingolipids, steroids, bile acids, bile salts and terpenes

Nucleotides and Nucleic acids: Building blocks: bases, sugars and phosphates.

Structure and nomenclature of nucleosides and nucleotides; polynucleotides, DNA (A,B, Z-DNA) and RNA (rRNA, mRNA, tRNA).

Properties of DNA – absorption, denaturation, renaturation, hybridization, T_m/Cot values.

Biologically important nucleotides and their functions – ATP, GTP, Coenzyme A, NAD, FAD and cAMP.

Semester II
Paper III General Microbiology

Marks: 40
Internal Assessment: 10
Time: 3 hrs.

NOTE

1. Seven Questions will be set in all.
2. Q. No 1 which will be objective/short answer type covering the entire syllabus, will be compulsory. The remaining questions will be set section wise with questions 3 from each section. The candidates will be required to attempt Q. No. 1 & four others selecting 2 questions from each section. All questions will carry equal marks.
3. As far as possible the question will be of short answer type.
4. Each question should be divided into parts & the distribution of marks be indicated part wise.

Unit I

Introduction and Scope of Microbiology

Definition and history of microbiology, contributions of Antony van Leeuwenhoek, Louis Pasteur, Robert Koch, Importance and scope of Microbiology as a modern Science Branches of microbiology.

Microscope Construction and working principles of different types of microscopes – compound, dark field, Phase contrast, Fluorescence and Electron (Scanning and transmission)

Microbial techniques Sterilization: Principles and Applications of a. Physical Methods.

Autoclave, Hot air oven, Laminar airflow, Seitz filter, Sintered glass filter, and membrane filter.

b. chemical Methods: Alcohol, Aldehydes, Phenols, Halogens and Gaseous agents.

c. Radiation Methods: UV rays and Gamma rays. Stains and staining techniques: Principles of staining, types of stains – simple stains, structural stains and Differential stains.

Unit II

Microbial Taxonomy

Concept of microbial species and strains, classification of bacteria based on – morphology (shape and flagella), staining reaction, nutrition and extreme environment. General Account of Viruses and Bacteria

A. Bacteria – Ultrastructure of bacteria cell (both Gram positive and Gram negative) including endospore and capsule

B. Viruses – Structure and classification

Plant viruses – CaMV

Animal viruses – Hepatitis B

Bacterial Virus – Lambda Phage

Pathogenic Microorganisms

A. Bacterial diseases of man – tetanus, Tuberculosis, Pneumonia and Cholera

B. Viral diseases: AIDS (HIV)

Microbial Growth and Metabolism

Kinetics of microbial growth, growth curve, synchronous growth, factors affecting bacterial growth
Respiration: EMP, HMP and ED Pathways, Kreb's cycle, Oxidative Phosphorylation.
Bacterial Photosynthesis: Photosynthetic apparatus in prokaryotes, Photophosphorylation & Dark reaction.

Semester II
Paper IV Biochemistry II

Marks: 40
Internal Assessment: 10
Time: 3 hrs

NOTE

1. Seven Questions will be set in all.
2. Q. No 1 which will be objective/short answer type covering the entire syllabus, will be compulsory. The remaining questions will be set section wise with questions 3 from each section. The candidates will be required to attempt Q. No. 1 & four others selecting 2 questions from each section. All questions will carry equal marks.
3. As far as possible the question will be of short answer type.
4. Each question should be divided into parts & the distribution of marks be indicated part wise.

Unit I

Enzymes: Introduction, active site, energy of activation, transition state hypothesis, lock and key hypothesis, induced fit hypothesis. Enzyme classification (Major classes only) Enzyme Kinetics – substrate concentration, K_m , V_{max} , MM equation, Lineweaver Burk plot/Double reciprocal plot. Effect of pH, temperature on enzyme activity. Allosteric enzymes (A brief account) Enzyme Inhibition – Competitive, non-competitive and uncompetitive inhibition.

Vitamins and Hormones: Introduction. Types of vitamins – structure of water soluble vitamins and their coenzyme derivatives, Fat soluble vitamins Deficiency symptoms and dietary sources. Steroid Hormones: structure and importance, Peptide Hormones: structure and function of important peptide hormones.

Unit II

Metabolism: General introduction, catabolism and anabolism

Carbohydrates metabolism: Glycolysis, Tricarboxylic acid cycle, Gluconeogenesis Glycogenolysis, glycogen synthesis and their regulation, Lipid Metabolism: β -oxidation of fatty acids. Degradation of Triacylglycerols. Synthesis of Fatty acids. Amino acid Metabolism: Transamination, oxidative deamination, decarboxylation. Urea cycle. Different classes of oxidation and synthesis of amino acids. Glycogenic and ketogenic amino acids.

Paper V Practical (Semester I + Semester II)

Marks: 80

Internal Assessment: 20

Time: 3 hrs.

List of Practicals

1. Safety measures in microbiology laboratory
2. Cleaning and sterilization of glassware
3. Study of instruments: Compound microscope, Autoclave, Hot air oven, pH meter, Laminar airflow and centrifuge
4. Staining techniques: Simple, Negative staining, Gram staining, Endospore staining and fungal staining.
5. Media preparation: Nutrients agar, MRBA and Nutrient broth Isolation of bacteria and fungi from soil, air, and water – dilution and pourplate methods
6. Estimation of microorganisms – total Count (Haemocytometer)
7. Qualitative tests for Carbohydrates
8. Estimation of reducing and non-reducing sugars
9. Separation of sugars by Paper Chromatography
10. Qualitative tests for Proteins and Amino acids
11. Protein estimation by Lowry method
12. Separation of Lipids by TLC method\
13. Determination of saponification and iodine value of Lipids
14. Starch hydrolysis by salivary amylase
15. Polyacrylamide Gel Electrophoresis of a biological sample
16. Analysis of urine for urea, glucose, uric acid and chloride
17. estimation of Vit. C.
18. Estimation of acid/alkaline phosphatase activity
19. To study kinetics of enzyme activity
20. Gel Filtration chromatography/Ion Exchange Chromatography

Ind Year
Semester- III
Paper VI. Immunology

Marks: 40
Internal Assessment: 10
Time: 3 hrs.

NOTE

1. Seven Questions will be set in all.
2. Q. No 1 which will be objective/short answer type covering the entire syllabus, will be compulsory. The remaining questions will be set section wise with questions 3 from each section. The candidates will be required to attempt Q. No. 1 & four others selecting 2 questions from each section. All questions will carry equal marks.
3. As far as possible the question will be of short answer type.
4. Each question should be divided into parts & the distribution of marks be indicated part wise.

UNIT – 1

Immunology: Introduction, History and Scope. Terminology of immune system

Immunity: Definition, types of Immunity- Innate, Adaptive/acquired (active, passive, natural/artificial, Humoral and Cell mediated immunity). Features of Immune Response – memory, cell specificity/diversity, recognition of self and non-self.

Cells of the Immune System – B and T cells (types and receptors), Null cells, Monocytes, Polymorphs.

Organs of the Immune System: Primary and Secondary Lymphoid organs- Thymus, Spleen, Lymph nodes.

Antigens: Concept, Types of Antigens, Antigenic determinants/epitopes, Hapten. Antigen and Immunogen. Antigenicity and Immunogenicity. Factors affecting antigenicity.

Antibodies: Structure, Types/Classes, properties and functions of immunoglobulins. Production of antibodies. Antibody diversity (a brief account only).

Antigen – Antibody Interactions: Binding sites, Binding forces, Affinity, Avidity, Cross reactions. Precipitation and Agglutination reactions, RIA, ELISA etc. techniques

UNIT II

Immune Response: Introduction, Humoral Immunity – Primary and Secondary immune response – B cells in antibody formation (differentiation, maturation and activation of B cells). Role of MHC molecules, Antigen presenting cells. Factors influencing antibody formation. Cell mediated immunity- Cells involved in CMI, (T-cell subset and surface markers, T-dependent and T-independent antigens, recognition of antigens by T-cells, role of MHC and MHC restriction), cytokines and lymphokines, functions of cell mediated immunity.

Complement system: Structure, components, properties and functions.

Major Histocompatibility Complex- Class I and Class II MHC molecules, functions of MHC.

Hypersensitivity and allergic reactions. (Brief only) Autoimmunity, immunological tolerance.

Vaccines: concept, types of vaccines- Inactivated, Attenuated and Recombinant vaccines (Peptide and DNA vaccines).

Semester- III
Paper VII. Molecular Biology

Marks: 40
Internal Assessment: 10
Time: 3 hrs.

NOTE

1. Seven Questions will be set in all.
2. Q. No 1 which will be objective/short answer type covering the entire syllabus, will be compulsory. The remaining questions will be set section wise with questions 3 from each section. The candidates will be required to attempt Q. No. 1 & four others selecting 2 questions from each section. All questions will carry equal marks.
3. As far as possible the question will be of short answer type.
4. Each question should be divided into parts & the distribution of marks be indicated part wise.

UNIT - I

Molecular Biology: Introduction to molecular aspects of life.

DNA as the genetic material – experiments proving DNA and RNA as genetic material.

Nucleic acids: Structure, function and properties of DNA and RNA. Watson and Crick model of DNA. DNA forms (A, B and Z), their characteristic. Different types of RNA, their structure and function.

Organization of Genomes – bacterial, viral, human, organelles.

Eukaryotic genomes: Chromosomal organization and structure. Euchromatin, heterochromatin, centromere, telomere. Chromatin structure (nucleosome), histone and non-histone proteins.

Insertion elements and transposons; IS elements, transposable elements of Maize and P elements of Drosophila. Extra chromosomal DNA in prokaryotes – plasmids.

DNA Replication: Central dogma of molecular biology. Semi-conservative mode of DNA replication, experimental proof. Unidirectional and bidirectional mode of DNA replication, theta model and rolling circle model. DNA replication in prokaryotes and eukaryotes, different stages, proteins and enzymes involved.

DNA damage and repair: causes of DNA damage, mutations. Repair mechanisms- photo reactivation, excision repair, mismatch repair, SOS repair.

UNIT – II

Genetic Code: concept, elucidation or cracking of genetic code, features of genetic code, Wobble hypothesis. Structure of gene- introns/exons, regulatory sequences, structure of prokaryotic gene.

Transcription in prokaryotes and eukaryotes, diff. stages, mechanism, promoters, transcription factors, RNA polymerases. Post transcriptional modifications- 5' cap formation, 3'-end processing/polyadenylation and gene splicing and generation of mature mRNA. Inhibitors of transcription.

Translation/Protein synthesis: Mechanism of initiation, elongation and termination of protein synthesis in prokaryotes and eukaryotes. Inhibitors of translation. Post-translational modifications.

Regulation of Gene Expression in prokaryotes and eukaryotes, induction and repression, positive and negative regulation. Operon model- lac, ara, trp, catabolite repression, transcription attenuation.

Molecular mechanisms of DNA recombination in eukaryotes – Site Specific and Homologous recombination. Recombination in prokaryotes – Transformation, transduction and conjugation.

IIInd Year
Semester- IV
Paper VIII. Recombinant DNA Technology

Marks: 40
Internal Assessment: 10
Time : 3 hrs.

NOTE

1. Seven Questions will be set in all.
2. Q. No 1 which will be objective/short answer type covering the entire syllabus, will be compulsory. The remaining questions will be set section wise with questions 3 from each section. The candidates will be required to attempt Q. No. 1 & four others selecting 2 questions from each section. All questions will carry equal marks.
3. As far as possible the question will be of short answer type.
4. Each question should be divided into parts & the distribution of marks be indicated part wise.

UNIT – I

Recombinant DNA Technology and Genetic Engineering: Introduction, history, scope and applications.

Tools of Recombinant DNA technology: Steps in gene cloning. Gene cloning tools - Restriction enzymes- class I, II and class III restriction enzymes, their features. Ligases, polymerases, alkaline phosphatases, kinases, transferases and other DNA engineering enzymes.

Gene Cloning Vectors: Introduction, nomenclature of vectors, properties of a suitable vector. Plasmid vectors, bacteriophage, cosmids and phagemids. Properties of host. M13 vectors. Expression vectors, shuttle vectors. Vectors for cloning in eukaryotic cells, YACs and BACs.

In vitro construction of r-DNA molecules: Isolation of gene of interest and vector DNA, cohesive and blunt ends, modification of cut ends, linkers and adaptors. Integration of DNA inserts into the vectors.

Transformation: Techniques of introducing r-DNA into the desired host, competent cells, electroporation and microinjection. Screening and selection of transformants and their characterization, selection of clone having the specific DNA insert - immunological screening and colony hybridization. Marker genes- selectable and scorable markers.

Gene Libraries: Construction of Genomic and cDNA library, advantages and limitations, screening of gene libraries.

UNIT - II

DNA amplification through PCR: Basic features and applications of PCR, types and modifications. Site directed mutagenesis.

DNA sequencing techniques: Maxam – Gilbert’s method, Sanger’s dideoxy chain termination method, Automated DNA sequencing.

Genome Mapping: Concept and applications. Restriction enzyme digestion and restriction mapping. Southern and Northern analysis. DNA finger printing. PAGE, Western blotting, dot blots and slot blots. RFLP, RAPD (brief only), microarrays.

Gene expression in prokaryotes: expression cassette. Promoters- tissue specific promoters, wound inducible promoters, strong and regulated promoters. Increasing protein yield-factors affecting level of recombinant protein production. Production of recombinant proteins in E. coli, translational and transcriptional fusion- advantages and disadvantages.

Applications of Recombinant DNA technology: Production of recombinant proteins of pharmaceutical importance- insulin, human growth hormone, recombinant vaccines (hepatitis B) etc. Transgenic plants and animals.

Semester- IV

Paper IX. Bioinformatics

Marks: 40

Internal Assessment: 10

Time: 3 hrs.

NOTE

1. Seven Questions will be set in all.
2. Q. No 1 which will be objective/short answer type covering the entire syllabus, will be compulsory. The remaining questions will be set section wise with questions 3 from each section. The candidates will be required to attempt Q. No. 1 & four others selecting 2 questions from each section. All questions will carry equal marks.
3. As far as possible the question will be of short answer type.
4. Each question should be divided into parts & the distribution of marks be indicated part wise.

UNIT – I

History, scope and importance of bioinformatics.

Introduction to Genomics – information flow in Biology, DNA sequence data, experimental approach to genome sequence data, genome information resources.

Functional Proteomics – protein sequence and structural data, protein information resources and secondary data bases.

Computational Genomics - Internet basics, biological data analysis and application, sequence data bases, NCBI model, File format.

UNIT - II

Sequence alignment and data base search – protein primary sequence analysis, algorithm BLAST, multiple sequence alignment. DATA base searching using BLAST and FASTA.

Predictive methods using DNA and protein sequences

Structural data bases – Small molecules data bases, protein information resources, protein data bank.

Paper X Practical (Semester III + Semester IV)

Marks: 80

Internal Assessment: 20

Time: 3 hrs.

List of Practicals

1. ABO blood grouping and Rh typing.
2. Differential leukocyte count.
3. RBC counting using a haemocytometer.
4. Dot ELISA.
5. Radial Immunodiffusion analysis.
6. Preparation of antigen.
7. Raising polyclonal Antibodies.
8. Diagnosis of infectious disease – Widal test and VDRL
9. Isolation and quantification of genomic DNA from bacteria (E. coli), animals and plants.
10. Isolation of Plasmid DNA
11. Ligation of DNA fragment
12. Separation of DNA by Agarose Gel Electrophoresis.
13. Restriction digestion of DNA and Agarose Gel Electrophoresis
14. Amplification of DNA by PCR using random primers
15. DNA fingerprinting
16. Preparation of competent cells
17. Transformation of E coli and selection of recombinants
18. Internet Basics.
19. Introduction to NCBI websites.
20. Introduction to Data bases.
21. Isolation of chromosomal DNA from plant or bacteria or animal tissues.
22. Estimation of DNA by DPA method.
23. Estimation of RNA by orcinol method.

24. Absorption spectra of proteins and nucleic acids.
25. Analysis of DNA by Agarose Gel Electrophoresis.
26. Methods for cell lysis: rupture Osmotic/Chemical/Enzymatic lysis of cells (RBC's) followed by centrifugation.
27. Extraction and estimation of proteins from plant or animal source
28. Protein purification by Gel filtration and Ion exchange chromatography.
29. Protein separation by PAGE/SDS-PAGE

IIIrd Year
Semester- V
Paper XI. Animal Biotechnology

Marks: 40
Internal Assessment: 10
Time: 3 hrs.

NOTE

1. Seven Questions will be set in all.
2. Q. No 1 which will be objective/short answer type covering the entire syllabus, will be compulsory. The remaining questions will be set section wise with questions 3 from each section. The candidates will be required to attempt Q. No. 1 & four others selecting 2 questions from each section. All questions will carry equal marks.
3. As far as possible the question will be of short answer type.
4. Each question should be divided into parts & the distribution of marks be indicated part wise.

UNIT – I

Animal Cell & Tissue Culture: Introduction, Principles & practice. History and Development of animal cell culture. Scope and Applications.

Culture Media: Media components, Serum containing and serum free media. Natural media- Plasma clot, biological fluids, tissue extracts. Growth factors required for proliferation of animal cells. Chemically defined media, balanced salt solutions. Physical requirements for growing animal cells in culture. Washing, drying, sterilization practices, various instruments and their uses in animal cell culture practices.

Primary Cell Culture techniques: Initiation of cell culture-substrates (glass, plastic, metals) their preparation and sterilization. Isolation of tissue explants, disaggregation- enzyme disaggregation and mechanical disaggregation of the tissue. development of primary culture and cell lines. Subculture. Contamination.. Suspension culture, Growth curve of animal cells in culture.

Secondary cell culture – transformed cell and continuous cell lines. Finite and infinite cell lines. Cell lines: Insect and animal cells. Commonly used cell lines- their organization and characteristics. Cell repositories and their function. Karyotyping, biochemical and genetic characterization of cell lines.

Organ Culture: technique, advantages, applications and limitations. Artificial skin.

UNIT - II

Transfection of animal cells: transfection methods. Methods for cell fusion, Selectable markers, HAT selection and Antibiotic resistance.

Cloning and expression of foreign genes in animal cells: Expression vectors. Over production and preparation of the final product i.e. expressed proteins.

Production of vaccines in animal cells.

Hybridoma Technology: Production of monoclonal antibodies and their applications.

Embryo transfer technology- technique, its applications. Artificial insemination. Animal clones.
Transgenic Animals: transgenic sheep, cow, pig, goat etc.
Production of transgenic mice, ES cells can be used for gene targeting in mice, applications of gene targeting.
Therapeutic products through genetic engineering – blood proteins, insulin, growth hormone etc.
Gene Therapy: introduction, types of gene therapy, vectors in gene therapy, major achievements, problems and prospects.

Semester- V
Paper XII. Plant Biotechnology

Marks: 40
Internal Assessment: 10
Time: 3 hrs.

NOTE

1. Seven Questions will be set in all.
2. Q. No 1 which will be objective/short answer type covering the entire syllabus, will be compulsory. The remaining questions will be set section wise with questions 3 from each section. The candidates will be required to attempt Q. No. 1 & four others selecting 2 questions from each section. All questions will carry equal marks.
3. As far as possible the question will be of short answer type.
4. Each question should be divided into parts & the distribution of marks be indicated part wise.

UNIT – I

Plant Tissue Culture: Introduction/Concept, History, Scope and Applications along with major achievements.

Plant Tissue Culture Laboratory: Layout and organization, different work areas, infrastructure/equipments and instruments and other requirements.

Aseptic Techniques: General sanitation/cleanliness of PTC laboratory and precautions regarding maintenance of aseptic conditions, Washing, drying and sterilization of glassware, sterilization of media, surface sterilization, aseptic work station.

Culture Media: Nutritional requirements for plant tissue culture, role of different media components, plant growth regulators, different culture media viz. MS, B₅ Nitsch and White's medium, Preparation of culture media.

In-vitro methods in plant tissue culture: Explants, their cellular characteristics, dedifferentiation and redifferentiation, cellular totipotency, organogenesis and somatic embryogenesis.

Micropropagation/clonal propagation of elite species (different routes of multiplication-axillary bud proliferation, somatic embryogenesis, organogenesis), Synthetic seeds (a brief account)

Callus and suspension culture techniques: Introduction, principle, methodology, applications and limitations. Somaclonal variation.

Organ culture: Anther & Pollen culture, ovary, ovule, embryo and endosperm culture – concept, technique, applications and limitations. Embryo rescue.

Protoplast culture: Protoplast isolation, viability test, protoplast culture. Somatic hybridization – protoplast fusion techniques (chemical and electro-fusion), selection of hybrids, production of symmetric and asymmetric hybrids and cybrids. Practical applications of somatic hybridization and cybridization.

UNIT - II

Production of secondary metabolites in vitro: introduction, technique and utilities. Biotransformation (a brief account only). Plant germ plasm conservation and cryopreservation.

Genetic Engineering in plants: Introduction, Plant transformation by *Agrobacterium tumefaciens* and *A. rhizogenes*. Ti plasmid. Strategies for gene transfer to plant cells. Binary and cointegrate vectors. Gene targeting in plants. Use of plant viruses as vectors (brief account only). Direct DNA transfer/Physical methods of gene transfer in plants - micro projectile bombardment, electroporation, liposome mediated, Calcium phosphate mediated etc.

Transgenic Plants: Introduction and applications. Developing insect resistance, bacterial and fungal disease resistance, virus resistance and abiotic stress tolerance in plants. Improving food quality – nutritional enhancement of plants (carbohydrates, seed storage proteins and vitamins).

Plants as Bioreactors: antibodies, polymers, industrial enzymes. Edible vaccines.

IIIrd Year

Semester- VI

Paper XIII. Microbial Biotechnology

Marks: 40

Internal Assessment: 10

Time: 3 hrs.

NOTE

1. Seven Questions will be set in all.
2. Q. No 1 which will be objective/short answer type covering the entire syllabus, will be compulsory. The remaining questions will be set section wise with questions 3 from each section. The candidates will be required to attempt Q. No. 1 & four others selecting 2 questions from each section. All questions will carry equal marks.
3. As far as possible the question will be of short answer type.
4. Each question should be divided into parts & the distribution of marks be indicated part wise.

UNIT - I

Microbial Biotechnology: Historical landmarks, General concept.

Screening and Isolation of Micro organisms: Industrially important microbes, their screening and isolation, enrichment culture. Strain improvement- bacterial genetics, mutant selection, recombination, recombinant DNA technology. Strain preservation and maintenance.

Nutrition and cultivation of microorganisms: Basic nutrition and metabolism, Natural and Synthetic media, Sterilization techniques, Microbial growth kinetics. Fermentation types – Continuous, Batch fed culture, Solid state and Submerged. Quantification of growth, thermodynamics of growth, effect of different factors on growth. Fermentation concepts and types.

Microbial Fermenters/Bioreactors: Basic design of fermenters. Physico-chemical standards used in bioreactors (agitation, aeration, pH, temp., dissolved oxygen etc.). Types of fermenters- stirred tank, bubble column, airlift etc.

Process Development and Downstream Processing: Shake flask fermentation, scale up of the process. Downstream processing – Separation of particles, disintegration of cells, extraction, concentration, purification and drying of the products.

UNIT - II

Microbial Products: a brief discussion about production of certain industrial products such as – Alcohol, Alcoholic beverage (Beer), Organic acids (citric acid), Antibiotics (penicillin), Amino acids (glutamic acid, Vitamin (B12), enzymes (protease, alpha-amylase) and a brief account of Steroid Biotransformation. Microbial Foods: Single Cell Proteins.

Sewage waste water treatment technique and plants. Biodegradation of xenobiotic compounds.

Microbial polysaccharides and polyesters; production of xanthan gum and polyhydroxyalkanoides (PHA).

Bioconversions – Biomining and bioleaching. Biogas production.

Microbial technology in agriculture- Bioinsecticides, bioherbicides, biocontrol agents for disease control, advantages over chemical methods. Biofertilizers.

Genetically engineered microbes: concept and technique; use of GEM in Agriculture, Industry and Medicine.

Paper XIV Practical (Semester V + Semester VI)

Marks: 80

Internal Assessment: 20

Time: 3 hrs.

List of Practicals

1. Preparation and sterilization of animal cell culture media.
2. Lymphocyte culture/Animal tissue culture
3. Demonstration/operation of large scale fermentors Handling and working of Autoclave, Laminar Air Flow Hood, and Hot Air Oven.
4. Preparation and Sterilization of plant tissue culture media viz. MS (1962), Nitsch (1969) or White's medium.
5. Callus and Suspension culture.

6. Induction of organogenesis/differentiation through hormonal balance modulation.
7. Micro propagation through Shoot Tip Culture, Nodal Culture, Axillary bud culture.
8. Plant protoplast preparation through enzymatic or physical method and to perform protoplast viability test
9. Anther or Pollen culture.
10. Somatic embryogenesis and preparation of synthetic seeds.
11. Growth Curve Study – Bacteria and Yeast.
12. Biomass production (Baker's yeast, spirulina, Agaricus, Aspergillus)
13. Production of alcohol and wine.
14. Estimation of alcohol by specific gravity method.
15. Estimation of lactic acid and lactose.
16. Estimation of fermentation products by titration methods.
17. Production of Primary and Secondary metabolites (one organic acid and one antibiotic)

ANNEXURE -I

B.A. Geography (Pass Course) Outline and Scheme w.e.f. 2011-12

Paper No.	Title	Internal Assessment	External Assessment	Maximum Marks	Total Marks	Time
Semester-I						
101	Geography of India 3 Hours		20	50	70	100
102	Maps and scales (Practical) Hours			30		3
Semester-II						
103	Physical Geography I	20	50	70	100	3 Hours
104	Representation of Physical Features (Practical)			30		3 Hours
Semester-III						
201	Physical Geography II	20	50	70	100	3 Hours
202	Representation of Climate Data (Practical)			30		3 Hours
Semester – IV						
203	Human Geography	20	50	70	100	3 Hours
204	Maps projections (Practical)			30		3 Hours
Semester – V						
301	Economic Geography	20	50	70	100	3 Hours
302	Distribution Maps and Diagrams (Practical)			30		3 Hours
Semester- VI						
303	Introduction to Remote Sensing, Hours	20	50	70	100	3
304	GIS and Quantitative Methods Introduction to Remote Sensing and Field Survey Report (Practical)			30		3 Hours

Paper 101 Geography of India

Maximum Marks : 50

Time : 3 Hours

Note: Question 1 is compulsory and comprises of ten short questions to be answered in 15-20 words. There will be eight long questions, two from each section. The candidate has to answer one question from each section. All five questions carry equal marks.

SECTION- A

1. India: Location, relief structure and drainage systems.
2. Climate, soils, natural vegetation, and natural disasters in India.

SECTION – B

3. Population: distribution, density, growth and composition.
4. Migration, human settlement types and levels of urbanization.

SECTION-C

5. Land resources, irrigation, regional variations in cropping pattern, Green revolution and problems of Indian agriculture.
6. Energy and mineral resources: coal, petroleum, hydroelectricity and nuclear energy, iron ore, manganese and mica.

SECTION-D

7. Industries- iron and steel, cotton textile, sugar and petrochemical industries; and industrial regions of India.
8. Modes of transport and communication, international trade changing pattern of export and import.

Suggested Readings

1. Deshpande, C D: India – A Regional Interpretation, Northern Book Depot, New Delhi, 1992.
2. Singh, Gopal : Geography of India, Atma Ram and Sons, 2006.
3. Shafi, M : Geography of South Asia, McMillan and Company, Calcutta, 2000.
4. Singh, R L (ed) : India : A Regional Geography, National Geographical Society, India, Varanasi, 1971.
5. Spate, D H K and ATA Learmonth : Indian and Pakistan – Land, People and Economy, Methnen and Company, London, 1967.

Paper 102 Maps and Scales (Practical)

Maximum Marks: 30

Time : 3 Hours

Distribution of Marks

Exercises = 18

Record File = 6

Viva-voce = 6

Note: There will be four questions in all and candidate has to attempt three exercises.

1. Introduction to Cartography.

2. Maps and their types.

3. Map Scales.

Exercises

(i) Methods of Expressing a scale

2

(ii) Conversion of Statement of Scale into R.F. and vice-versa.

(iii) Plain Scale (Km and mile)

(iv) Comparative Scale

1

(v) Diagonal Scale

1

4 Measurement of Distances and Areas on Maps

5 Enlargement and Reduction of Maps

Suggested Readings:

1. F.J. Monkhouse and H.R. Wilkinson (1972) Maps and Diagrams, Mothuen and Co. Ltd., London
2. L.R. Singh and Raghuvander Singh (1973), Map Work and Practical Geography, Central Book Depot, Allahabad.
3. R.I. Singh and P.K. Dutt (1968), Elements of Practical Geography, Students Friends, Allahabad.
4. Singh Gopal (2004) 4th edition, Map Work and Practical Geography, Viksa Publication House.

Paper 103 Physical Geography – I

Maximum Marks : 50

Time : 3 Hours

Note: Question 1 is compulsory and comprises of ten short questions to be answered in 15-20 words. There will be eight long questions, two from each section. The candidate has to answer one question from each section. All five questions carry equal marks.

SECTION- A

1. Definition, Nature, scope and fields of Physical Geography.
2. Interior of the earth, Geological time scale and rocks.

SECTION- B

3. Earth movements; organic, eperogenic, earth quakes and volcanoes.
4. Theory of Isostasy ; Wegner's theory of continental drift and Plate tectonic theory.

SECTION- C

5. Weathering; causes and its types.
6. Mass-movements; causes, its types and impacts.

SECTION- D

7. Concept of cycle of erosion; cycle of erosion by W.M.Davis, Penck and King
8. Process of Wind, River, Underground water, Glaciers and Sea waves.

References

1. Sharma H.S. Perspective in Geomorphology, Concept, New Delhi 1980.
2. Singh Savinder, Geomorphology, Prayag Publication, Allahabad 1998.
3. Singh Savinder, Physical Geography Prayag Publication, Allahabad, 1998.
4. Sparks B.W. Geomorphology, Longman, London, 1960.
5. Thornbury W.D. 1969 Principles of Geomorphology, New York, John Wiley & Sons.

Paper 104 Representation of Physical Features (Practical)

Maximum Marks: 30

Time : 3 Hours

Distribution of Marks

Exercises = 18

Record File = 6

Viva-voce = 6

Note: There will be four questions in all and candidate has to attempt three exercises.

	Exercises
1. Introduction to Topographical Sheets India and adjacent countries	3
. Degree Sheet	
. Half Degree Sheet	
. Quarter Degree Sheet	
. Conventional Signs	
2. Methods of representing relief	1
3. Representation of Topographical features by contours. Slopes (Concave, convex, undulating and terraced) Valleys (V Shaped, U shaped, Gorge, Re-entrant) Ridges (Conical hill, Volcanic hill, Plateau, Escarpment) Complex features (waterfall, sea cliff, overhanging cliff, Fiord coast)	4
4. Drawing of Profiles	5
(a) Cross Profiles: Serial, superimposed, projected and composite profiles.	
(b) Longitudinal profiles	

Suggested Readings:

1. F.J. Monkhouse and H.R. Wilkinson (1972) Maps and Diagrams, Mothuen and Co. Ltd., London.
2. L.R. Singh and Raghuvander Singh (1973), Map Work and Practical Geography, Central Book Depot, Allahabad.
3. R.I. Singh and P.K. Dutt (1968), Elements of Practical Geography, Students Friends, Allahabad
4. Singh Gopal (2004) 4th edition, Map Work and Practical Geography, Vikas Publication House, New Delhi.

Paper 201 Physical Geography-II

Maximum Marks : 50

Time : 3 Hours

Note: Question 1 is compulsory and comprises of ten short answer type questions to be answered in 15-20 words. There will be eight long questions, two from each section. The candidate has to answer one question from each section. All five questions carry equal marks.

SECTION-A

1. Weather and Climate; Origin, composition and structure of atmosphere.
2. Insolation, Global heat budget, Horizontal and vertical distribution of temperature, inversion of temperature.

SECTION-B

3. Atmospheric pressure- measurement and distribution, pressure belts, planetary winds, Monsoon, Jet Streams EL NINO- La Nina Phenomenon and Local winds.
4. Humidity- measurement and variables, evaporation, condensation, precipitation forms and types and distribution, hydrological cycle.

SECTION-C

5. Air masses- concept and classification; Fronts- type and characteristics, Weather disturbances- tropical and extra-tropical cyclones.
6. Climate classification by Koppen; climatic change and global warming.

SECTION-D

7. Configuration of oceanic floors and surface relief of Pacific, Atlantic and Indian Oceans; temperature and salinity of oceans.
8. Tides, waves and oceanic currents; circulation in Pacific, Atlantic and Indian Oceans; Oceanic resources.

Suggested Readings:

1. Barry, RG and Chorley R.J., Atmosphere, Weather and Climate, Routledge, 1998.
2. Critchfield, H., General Climatology, Prentice-Hall of India, 2002.
3. King, C. Oceanography for Geographers, Edward Arnold, London, 1975.
4. Trewartha, GT: An Introduction to Climate, Mc-Graw Hill, New York, 1981.
5. Trewartha, G.T., The Earth's Problems Climates, University of Wisconsin Press, USA.

Paper – 202 Representation of Climatic Data (Practical)

Maximum Marks: 30

Time : 3 Hours

Distribution of Marks

Exercises = 18

Record File = 6

Viva-voce = 6

Note: There will be four questions in all and candidate has to attempt three exercises.

1. Measurement of temperature, rainfall, pressure and humidity.
2. Representation of temperature and rainfall.
 - (i) Line and Bar Graph – 1 Exercise.
 - (ii) Distribution of temperature (180 therms) – 1 Exercise.
 - (iii) Distribution of rainfall (180 hytes) – 1 Exercise.
 - (iv) Hythergraph - 1 Exercise.
 - (v) Rainfall deviation diagram - 1 Exercise.
3. Climograph (wet and dry places) - 2 Exercise.
4. Distribution of pressure (180 bars) - 2 Exercise.
5. Weather map Interpretation (January & July) - 2 Exercise.
6. Change and tape survey – 2 Exercise.

Suggested Readings:

1. Mishra R.P. and Ramesh A. 1999. Fundamentals of Cartography, Concept Publishing Company, New Delhi.
2. Monkhouse, FJ, and Wilkinson H.R., 1972. Maps and Diagrams, Methuen Press, London
3. Robinson, A.H. et.al. Elements of Cartography, John Wiley & Sons, 1995.
4. Singh, R.L., 1979. Elements of Practical Geography, Kalyani Publisher, New Delhi.

Paper 203 Human Geography

Maximum Marks : 50

Time : 3 Hours

Note: *Question 1 is compulsory and comprises of ten short answer type questions to be answered in 15-20 words. There will be eight long questions, two from each section. The candidate has to answer one question from each section. All five questions carry equal marks.*

Section - I

1. Nature and scope of Human Geography, Branches of Human Geography, Approaches to the study of Human Geography.
2. Division of Mankind: Spatial distribution of race and tribes of India; concept of man-environment relation: A historical approach.

Section - II

3. Human adaptation to the environment (i) Cold region – Eskimo (ii) Hot region- Bushman (iii) Plateau – Gonds (iv) Mountains – Gujjars
4. Meaning, nature and components of resources; Classification of resources – renewal and non-renewable ; biotic and abiotic, recyclable and non-recyclable. Distribution, utilization and conservation of biotic (flora and fauna) and abiotic (water, minerals and energy) resources.

Section - III

5. Distribution and density of world population, population growth, fertility and mortality patterns.
6. Concept of over, under and optimum population; Population theories: Malthus, Ricardo and Marx.

Section-IV

7. Rural settlements: Meaning, classification and types. Urban settlements: Origin, classification and functions of towns.
8. Population pressure, resource use and environment degradation; sustainable development, concept of deforestation, soil erosion, air and water pollution.

Suggested Readings:-

1. Agarwal, A et al : The Citizen's Fifth Citizen's Report, Centre for Science & Environment, New Delhi, 1999.
2. Alexander, John. W. : Economic Geography, Prentice Hall of India Ltd., New Delhi, 1988.
3. Bergman, Edward E: Human Geography: Culture Connections and Landscape, Prentice-Hall, New Jersey, 1985.

4. Carr, M. Patterns: Process and Change in Human Geography, McMillan Education, London, 1987.
5. Chandna, R.C. : A Geography of Population : Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi, 1986.
6. DeBlij, H. J. : Human Geography, Culture, Society and Space, John Wiley, New York, 1996.
7. Fellman, J.L. : Human Geography-Landscapes of Human Activities, Brown and Benchman Pub., USA, 1997.
8. Global Environment Outlook: Earthscan, London, 2000.
9. McBride, P.J. Human Geography; Systems Patterns and Change, Nelson, UK and Canada, 1996.
10. Michael, Can: New Patterns : Process and Change in Human Geography, Nelson, 1996.

Paper 204 Maps Projections (Practical)

Maximum Marks: 30

Time : 3 Hours

Distribution of Marks

Exercises = 18

Record File = 6

Viva-voce = 6

Note: There will be four questions in all and candidate has to attempt three exercises.

Total Exercises = 15

1. Introduction to Map Projection: Meaning, Classification and importance; Characteristics of latitudes and longitudes lines.
2. Cylindrical projections: Characteristics, applications and drawing; (3)
 - (i) Simple cylindrical projection
 - (ii) Cylindrical equal area projection.
 - (iii) True shape or orthomorphic or Mercator's Projection. (5)
3. Conical Projections: Characteristics, applications and drawing.
 - (i) Simple conical projections with one standard parallel
 - (ii) Simple conical projection with two standard parallel
 - (iii) Bonne's Projection
 - (iv) Polyconic projection.
 - (v) International Map Projection.
4. Zenithal Projections: Characteristics, applications and drawing. (5)
 - (i) Polar Zenithal Equidistant Projection.
 - (ii) Polar Zenithal Equal Area Projection
 - (iii) Polar Zenithal Gnomonic Projection
 - (iv) Polar Zenithal Stereographic Projection.
 - (v) Polar Zenithal Orthographic Projection
5. Characteristics, applications and drawings of (i) Sinosoidal and (2)
(ii) Mollweide Projections.
6. Plane Table Survey. (2)

Suggested Readings:-

1. Goyal K.K.1981.. Practical Geography, Manthan Publication, Rohtak.
2. Gregory S. 1963. Statistical Methods and the Geography, Longman, London.
3. Khan, A.A. 1996. Text Book of Practical Geography, Concept, New Delhi,.
4. Lawrence, G.P.1968. Cartographic Methods, Methuen, London,.
5. Monkhouse, F.J. and Wilkinson, H.R.1994. Maps and Diagrams, Methuen, London,
6. Pal. S.K. 1998: Statistics for Geoscientist- Techniques and Applications, Concept Publication, New Delhi,.
7. Sarkar, A.K 1997: Practical Geography-A Systematic Approach, Orient Longman, Calcutta,.
8. Singh, R.L. 1972. Elements of Practical Geography, Kalyani Pub., New Delhi
9. Steers, J.B. Map Projections; University of London Press, London.

Paper 301 Economic Geography

Maximum Marks : 50

Time : 3 Hours

Note: Question 1 is compulsory and comprises of ten short answer type questions to be answered in 15-20 words. There will be eight long questions, two from each section. The candidate has to answer one question from each section. All five questions carry equal marks.

Section A

1. Nature, scope and relationship of economic geography with economics and other branches of social sciences.
2. Classification of economic activities and their impact on environment.

Section B

3. World natural resources: Types, bases and classification.
4. Conservation and utilization of natural resources.

Section C

5. Spatial distribution of food (rice and wheat), commercial (cotton and sugarcane) and plantation crops (tea, rubber and coffee).
6. Classification of mineral resources (ferrous and non-ferrous), distribution and production of coal, iron ore, petroleum and natural gas.

Section D

7. Classification of industries, world distribution and production of iron and steel and textile industry, major industrial complexes of the world.
8. Transport, communication and trade: geographical factors in their development, major modes of water, land and air transport, recent trends in international trade

Suggested Readings:

1. Hartshorne TN and Alexander JW. 1988. Economic Geography, Prentice Hall, New Delhi.
2. Jones CF and Darkenwald GG. 1975. Economic Geography. McMillan Company, New York
3. Thomas, RS. 1962. The Geography of Economic Activities. McGraw Hill, New York.
4. Wheeler J et al. 1995. Economic Geography. John Wiley, New York.

Paper 302 Distribution Maps and Diagrams (Practical)

Maximum Marks: 30

Time : 3 Hours

Distribution of Marks

Exercises = 18

Record File = 6

Viva-voce = 6

Note: There will be four questions in all and candidate has to attempt three exercises.

1. Principal of map design and layout
2. Symbolization: point, line and area symbol
3. Lettering and toponomy
4. Mechanics of map construction
5. Distribution maps
 - (i) Qualitative distribution maps
 - Choroschematic maps- 1 Exercise
 - Chorochromatic maps- 2 Exercise
 - (ii) Quantitative distribution Maps
 - Isopleth maps-3 Exercises
 - Choropleth maps-3 Exercises
 - Dot maps-3 Exercises
 - Diagrammatic maps- 3 Exercises.
6. Prismatic Compass Survey – 2 Exercises.

Suggested readings:

1. Mishra RP and Ramesh A. 1999. Fundamentals of Cartography, Concept Publishing Company, New Delhi.
2. Monkhouse FJ and Wilkinson HR. 1972. Maps and Diagrams, Methuen Press, London
3. Singh Gopal. 2004. Map Work and Practical Geography, Vikas Publication House, New Delhi.
4. Singh RL. 1979. Elements of Practical Geography, Kalyani Publishers, New Delhi

Paper-303-Introduction to Remote Sensing, GIS & Quantitative Methods

Maximum Marks : 50

Time : 3 Hours

Note: *Question 1 is compulsory and comprises of ten short answer type questions to be answered in 15-20 words. There will be eight long questions, two from each section. The candidate has to answer one question from each section. All five questions carry equal marks.*

Section-A

1. Introduction to Aerial Photographs: their advantages and types.
2. Elements of aerial Photo interpretation.

Section-B

3. Introduction to Remote Sensing; Electromagnetic spectrum, stages in remote sensing, type of satellites.
4. Types of Imageries and their application in various fields such as agriculture, environment and resource mapping.

Section-C

5. Introduction to Geographical Information System: Definition, purpose, advantages and software and hardware requirements.
6. Application of GIS in various fields of geography.

Section-D

7. Measure of Central Tendency: Mean, Median and Mode.
8. Measure of Dispersion: Range, Quartile deviation and Mean deviation, Standard deviation, Coefficient of variation.

Suggested Readings:

1. Aslam Mahmood 1993. Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi,.
2. John R. Jensen 2009. Remote Sensing of the Environment;, An Earth Resource Perspective, Pearson Education, (India Edition) New Delhi,
3. Kumar Meenakshi 2001. Remote Sensing, NCERT, New Delhi,
4. Lillesand and R.W.Kiefer,2005. Remote Sensing and Image Interpretation, John Wiley and Sons.
5. Pritvish Nag, and M.Kudrat 1998. Digital Remote Sensing, Concept Publishing Company, New Delhi,

**Paper 304 – Introduction to Remote Sensing and Field Survey Report
(Practical)**

**Maximum Marks: 30
Time: 3 Hours**

I - Remote Sensing Practical -15 Marks

Marks Breakup

Exercise = 9

Record book = 3

Viva-voce = 3

Note: There will be four questions in all and candidate has to attempt three exercises.

1. Demarcation of Principal Point, Conjugate Principal point and Flight line on Aerial Photographs – 1 Exercise
2. Determination of Scale of Aerial Photographs – 1 Exercise.
3. Interpretation of Single Vertical Photographs – 1 Exercise.
4. Use of Stereoscope and Identification of Features – 1 Exercise.
5. Identification of Features on IRSID, LISS III imagery (Mark copy of FCC) -1 Exercise.

II Socio-economic Survey and Report Writing -15 marks.

Marks Breakup

Field Survey Report = 10 marks

Viva-voce = 5 marks

Suggested Readings:-

1. John R. Jensen, Remote Sensing of the Environment; An Earth Resource Perspective, Pearson Education, (India Edition) New Delhi, 2009.
2. Lillesand and R.W.Kiefer, Remote Sensing and Image Interpretation, John Wiley and Sons, 1994.

Bachelor in Tourism Management (BTM) – Course Structure-2014-15

SEMESTER – I

Paper No.	Paper title	Marks	
		Internal	External
*BTM 101	English (Compulsory)	20	80
*BTM 102	Hindi (compulsory)	20	80
BTM 103	Business Environment for Tourism	20	80
BTM 104	Introduction to Tourism	20	80
BTM 105	Tourism Product of India (Natural)	20	80
BTM 106	Tourism Product of India (Cultural)	20	80
TOTAL MARKS		600	

SEMESTER – II

Paper No.	Paper title	Marks	
		Internal	External
*BTM 201	English (Compulsory)	20	80
*BTM 202	Hindi (compulsory)	20	80
BTM 203	Geography of Tourism	20	80
BTM 204	Transport Management	20	80
BTM 205	Tourism Documentation	20	80
BTM 206	Haryana Tourism	20	80
TOTAL MARKS		600	

FIELD TRIP

SEMESTER – III

Paper No.	Paper title	Marks	
		Internal	External
*BTM 301	English (Compulsory)	20	80
BTM 302	Tourism in India	20	80
BTM 303	Hotel Business	20	80
BTM 304	HRM in Tourism	20	80
BTM 305	Computer Applications in Tourism	20+30	50
BTM 306	Communication Skills & Personality Development	20+30	50
FIELD – TRIP REPORT & VIVA-VOCE		100	
TOTAL MARKS		700	

*BTM-English and Hindi in all semester is same as B.A. General (English & Hindi Compulsory)

SEMESTER – IV

Paper No.	Paper title	Marks	
		Internal	External
*BTM 401	English	20	80
BTM 402	Pilgrimage Tourism	20	80
BTM 403	Principles of Management	20	80
BTM 404	Tourism Marketing	20	80
BTM 405	An Introduction to Travel Agency & Tour Operation Business in India	20	80
BTM 406	Communicative English	20	80
TOTAL MARKS		600	

ON – THE- JOB – TRAINING**SEMESTER – V**

Paper No.	Paper title	Marks	
		Internal	External
*BTM 501	English	20	80
BTM 502	Impacts of Tourism	20	80
BTM 503	Accounting for Tourism	20	80
BTM 504	Sustainable Tourism	20	80
BTM 505	Entrepreneurship in Tourism	20	80
BTM 506	International Tourism	20	80
On – the – job training Report & Viva – Voce		100	
TOTAL MARKS		700	

SEMESTER – VI

Paper No.	Paper title	Marks	
		Internal	External
*BTM 601	English	20	80
BTM 602	Tourism Administration in India	20	80
BTM 603	Economics of Tourism	20	80
BTM 604	Adventure Tourism	20	80
BTM 605	Tourist Guiding	20	80
BTM 606	Salesmanship in Tourism	20	80
TOTAL MARKS		600	

**B.A. Part-I English
Semester-I
Session 2014-15**

Text Prescribed – *Literature and Language I*

Edited by: Loveleen Mohan
Randeep Rana
Jaibir Singh Hooda

Publishers : Orient Blackswan

Workload: 8 periods of 45 minutes per week for Text; 2 periods of 45 minutes per week for composition for a group of 20 students per group

Scheme of Examination

Total 100 marks
Theory : 80
Int. Assessment : 20
Time : 3 hrs

Instructions to the Paper Setter and the Students:

Note: All questions are compulsory. Marks have been indicated after each question.

Q 1. This question will be based on phonetic transcription given in the chapters in the text book. The students shall transcribe eight words out of the given twelve.

(08)

Q 2. This question will be short answer type based on the chapters in the text book. The students shall answer any four out of the given six short questions(in about 30 words each).

(08)

Q 3. This question will be designed to assess the understanding of the text by the students. The students shall answer any five out of the given eight questions based on the chapters (in about 75-100 words each).

(20)

Q.4. This question will be based on a comprehension passage from the text followed by four questions.

(04)

Q 5. This question will be based on vocabulary from the exercises following the chapters. The students shall attempt questions on vocabulary as directed. (e.g. framing sentences of their own or giving various forms of the given words, synonyms, antonyms, one word substitutes). The students shall answer any eight out of the given twelve words.

(08)

Q 6 This question will be based on grammar from the text book. It will consist of two parts:

a) This part will be based on the use of tenses. The students shall attempt 12 out of 15 questions.

(12)

b) This part will be based on parts of the speech. The students shall attempt 12 out of 15 questions.

(12)

Note: Questions will be based on the exercises but not from the exercises as such.

Q 7. The students shall write one paragraph (in about 200 words) on any one of the four topics given.

(08)

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BTM&102

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- iB;Øe ea fu/Wjr dfo dchj I jnk] ry/hnk] ehjk ck] fcgkj] ?kukum] jI [kku

fu/Wjr vkykured izu

iB;Øe ea fu/Wjr dfo;ka ij muds I kgr; d ijfp;] vuhkrr os'k'V; rFk vfH0;fDrxr I kBo ij gh izu iNs tk;xA dfo;ka dh fo'k'V jkured idfr ij izu ugha iNs tk;xA

[k.M &[k 5 fglhh I kgr; dk vkfndky

iB;Øe ea fu/Wjr vkykured izu

- 1- fglhh I kgr; krgkl yqku dh ijEijk
- 2- vkfndky dk ukedj.k
- 3- vkfndky dh ijfLFkr; k
- 4- vkfndkyhu I kgr; dh I xkU; idfUk; k
- 5- jkekdk0; ijEijk % I {kr ijfp;
- 6-

[k.M&x% dK; 'M=k ij vK/Mjr fo'k;

- 1- dK; ds rRo
- 2- ju % Lo: i vLj vA
- 3- jI ds Hkn
- 4- vyoLj & vuqI] 'yS[K] ;ed] miek] : id] fo'k; kSDr] vU; kSDr] Ie; kSDrA
- 5- Nm&nsgk] plS kb] I kjBk] cjoS dqMfy; kj d.kk] dfoUk] ?kuk{kjhA
- 6- 'kCn'kfDr; k % vfe?k] y{k.kk] 0; a:ukA
- 7- dK; &xqk & id kn] ek/lqL vLj JkStA

[k.M&?k% oLrfu"B izu

funS k&

- 1- [k.M c) ea fu/MZjr ikB; &iLrd ea ls 0; k[; k ds fy, plj vorj.k iNs tk, aA ftuea ls ijh{kffkz ka dks fdUgh nks dh miL a 0; k[; k djuh gskA iR; d 0; k[; k 6 vad ds gskA ijk izu 12 vad dk gskA
- 2- [k.M c) ea fu/MZjr vkykpkRed izuka ea ls nks izu iNs tk, aS ftuea ls ijh{kffkz ka dks ,d izu dk mUkj nsik gskA ; g izu 8 vad dk gskA
- 3- [k.M c) us fu/MZjr ikB; &iLrd ,oa vkykpkRed izuka ea ls N% y?krjh izu iNs tk, aA ftuea ls ijh{kffkz ka dks yxHkx 150 'kCnka ea fdUgh plj izuka dk mUkj nsik gskA
- 4- [k.M c) ea fu/MZjr vkykpkRed izuka ea ls plj izu iNs tk, aS ftuea ls ijh{kffkz ka dks nks izuka dk mUkj nsik gskA iR; d izu 888 vad dk gskA bl idkj ; g vad izu 16 vad dk gskA
- 5- [k.M c) ea fu/MZjr izuka ea ls plj y?krjh izu iNs tk, aA ftuea ls ijh{kffkz ka yxHkx 150 'kCnka ea fdUgh nks izuka dk mUkj nsik gskA iR; d izu ds fy, ikp vad fu/MZjr gA ijk izu 10 vad dk gskA
- 6- [k.M c) ea fu/MZjr ikB; Øe ea ls plj y?krjh izu iNs tk, aS ftuea ls ijh{kffkz ka dks fdUgh nks izuka dk mUkj nsik gskA iR; d mi&izu 5 vad dk rFk ijk izu 10 vad dk gskA
- 7- [k.M c) ea ijs ikB; Øe ea ls 8 oLrfu"B izu iNs tk, aA iR; d izu 1 vad dk rFk ijk izu 8 vad dk gskA

Business Environment for Tourism

BTM -103:

Max. Marks: 100

External: 80

Internal: 20

Time: 3 Hours

Objectives: The primary objectives of this course are to acquaint the students emerging global trends in tourism business environment.

PAPER SETTING: Paper setter should set 9 questions. The examinee should be required to attempt five questions. Question no.1 is compulsory and comprising whole syllabus consisting 7 short answers each carries 2 marks. The remaining 4 questions are to be attempted from the 4 units selecting one question from each unit of 14 marks each.

TEACHING PRACTICES: Class room lectures, Assignments, Cases, Discussions and Seminars.

Course Contents

Unit-I

Tourism Business Environment- Nature, components and determinants. Assessing business environment risk- country risk and political risk.

Unit-II

Assessing current state of tourism business environment in India: Economic Reforms, Liberalization, Privatization and globalization. Small Scale tourism Enterprises: Meaning, Significance to the Indian economy, problems and various incentives given to these.

Unit-III

Various Industrial Policies of India with special emphasis on new industrial policy with various amendments related with tourism business, Competition Act and its impact on Indian tourism business.

Unit –IV

Various tourism & travel Trade Reforms announced in India in recent times. Trends in tourism business in India; Foreign Direct Investment in tourism - significance, policy and current position of India.

Suggested reading:

1. Daniel, John D and Radebanh, Lee H : International Business, 5th ed., New York, Addison Weley, 2007
2. Charles W. Hill, International Business, fourth edition, Tata McGraw Hill Publications Companies.2010.
3. AK. Sundaram J. StemartBlock : The International Business Environment PHI,2008

INTRODUCTION TO TOURISM

BTM-104

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Objectives:

The primary purpose of the paper is to acquaint the students about the basic and preliminary knowledge of the terms, concepts, systems and trends in tourism. It will form the first step to move forward to interact with the advanced knowledge pertaining to tourism.

PAPER SETTING: Paper setter should set 9 questions. The examinee should be required to attempt five questions. Question no.1 is compulsory and comprising whole syllabus consisting 7 short answers each carries 2 marks. The remaining 4 questions are to be attempted from the 4 units selecting one question from each unit of 14 marks each.

TEACHING PRACTICES: Class room lectures, Assignments, Cases, Discussions and Seminars.

UNIT – I

Meaning and Nature of Tourism

Concept and terminology in Tourism –

- Tourism; Tourist; Tourism Market;
- Tourism Resources; Tourism Product; Destination;
- Recreation; Pleasure and relaxation

UNIT – II

Types and Characteristics of Tourism

Motivations in Tourism - Push and Pull factors

UNIT – III

Transportation: Types and their significance for tourism

Accommodation: Types and their significance for tourism

Travel Agencies & Tour Operators: Types and their significance for tourism

UNIT – IV

Tangible and intangible services in tourism sector

Tangible and Intangible services in Hotel sector

Tourism Chain: Vertical and Horizontal Integration

TOURISM PRODUCTS OF INDIA (NATURAL)

BTM-105

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Objectives:

Tourism begins with the motivation to visit attractions at destinations. The attractions may be natural or manmade (cultural). The natural attraction such as mountains, hills, forests with wild animals, coastal areas and islands are attracting all. India is seventh largest country with rich diversity of natural tourist resources. It is very necessary for the students of tourism to know about these tourist products. This course will help the students to give an insight about the rich natural tourist products of India.

Unit-I

India: General introduction, physiographic units. The Northern Mountains: General introduction of the Himalayas & other ranges, their importance for religious, hill station & adventure tourism. A case study of Sri Nagar, Shimla, Nainital, Darjeeling & Gangtok.

Unit-II

The Central Plains: General introduction of deserts & central plains. Their importance for cultural, religious & adventure tourism. A case study of Amritsar, Jaipur, Delhi, Lucknow, Kolkata.

Unit-III

The Peninsula: General features of Indian peninsula with their tourism significance. A case study of Bhopal, Khajuraho, Hyderabad, Bangalore, Ooty

Unit-IV

The coastal plains and islands: General features of coastal regions, their importance for religious, cultural & beach tourism. A case study of Mumbai, Goa, Cochin, Chennai, Andaman & Nicobar.

REFERENCES:

- Ahmad, Aizaz: General Geography of India, NCERT, New Delhi
- Goh Cheong Long: An Economics Atlas of India, Oxford University.
- National Atlas of India, Govt. of India Publication, Calcutta 1997.
- Atlas of World Oxford Press, New Delhi.

- Singh, R.L.(ed) India: A Regional Geography National Geographical Society of India, Varanasi, 1989.
- Manorama Year Book 2009
- India Year Book 2009, Publication Division. Govt. of India, New Delhi
- Tourism Planner
- Tour Brochures etc.
- Lonely Planet – India
- Kumar, Ravi Bhushan: Coastal Tourism & Environment, AOH Publishing Corporation, New Delhi
- Pilgrimage in India, R.N.Pillai
- Kohli, M.S.: Mountaineering in India, Vikas Publishing House, and New Delhi.

TOURISM PRODUCT OF INDIA (CULTURAL)

BTM – 106

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Objective:

Since there exist a strong relationship between tourism and culture and more so in case of India, it becomes essential for the student of tourism to have first-hand information of Indian culture and to understand its significance for tourism. The paper gives a basic understanding of the concept of culture and that too in the Indian context.

Mode of Paper Setting: The examiner shall set ten questions selecting two questions from each unit. The student shall be required to attempt five questions in all selecting one question from each unit.

Unit – I

Introduction to Culture

- Culture: Concept and its essential Features
- Indian Culture: Fundamentals of Indian Culture; Indian culture through the ages
- Culture and tourism relationship with special reference to India

Unit – II

Indian Architecture – I

- Buddhist Architecture: Ajanta, Ellora and Sanchi
- Hindu Architecture: Khajuraho temples, Sun temple of Konark, Shore temple of Mamallapuram and Brihadisvara temple at Thanjavur

Unit – III

Indian Architecture – II

- Medieval Architecture: TajMahal, Red Fort of Delhi, FatehpurSikri and QutubMinar
- Modern Architecture: Gate Way of India, parliament house, New Delhi. Bahai's Lotus temple in Delhi

Unit – IV

Classical Dances and Music of India. Major Fairs and festivals of India and their significance for tourism

Holi, Dussehra, Diwali, Baisakhi, Pongal, Bihu, Desert festival – Jaisalmer, Surajkund Craft fair, International Trade Fair - New Delhi,

REFERENCES:

- Gupta, S.P.et.al 2002, Cultural Toursim in India, D.K. Printworld, New Delhi
- Upadhyaya, B.S. 1989, (reprint), Feeders of Indian Culture People,s Publishing House.
- Sharma, Chandradhar, 1991 (reprint), A Critical Survey of Indian Philosophy MotiLalBanarasi Das Publishers, Delhi
- Basham, A.L. 1985 (reprint) The Wonder That was India Rupa& Co., Delhi
- Sivaramamurti, C.2002 (reprint) Indian Painting, National Book Trust, Delhi
- Krishana Deva, 2002 (reprint) Temples of North India. National Book Trust, Delhi
- Pande, G.C. 1990 (2nd ed.) Foundations of Indian Culture, 2 vols. MotiLalBanarasi Das Publishers, Delhi
- Radhakrishnan, S. 1999 (Oxford India Paperbacks), Indian Philosophy, 2 vols. Oxford university press, New Delhi
- Hay,Stephen (Ed.) 1992, Sources of Indian Tradition, 2 vols, Penguin Books, Delhi
- Deshpande, Satish 2003, Contemporary India : A Sociological View, Penguin Books, Delhi
- Raju, P.T. 1985 Structural Depths of Indian Thought. South Asian Publishers, New Delhi
- Malik, S.C. Understanding Indian Civilization. Indian Institute of Advanced Study, Shimla
- Yogendra Singh, 1997. Social Stratification and Change in India. Manohar New Delhi. The observation made in the Human Development Report provides lose linkage regarding establishment of relationship between economic development and cultural growth.
- Banerji, S.C. 1993. Society in Ancient India, D.K. Printword (P) Ltd., New Delhi AbidHussain, S. 2003 (reprint) The National Cultural of India. National Book Trust, Delhi.
- Dube, Dina Nath, 1993, Bharat KeDurg, Publication Division, Ministry of Information & Broad Casting, Govt. of India, New Delhi
- Samson, Leela, 2002. The joy of Classical Dances of India, National Book Trust, India, New Delhi
- Thomas, P. 1990, Chruches in India, Publication Division, May IPB, GOI, New Delhi
- Desai, Ziyud- din, 1986, Indo-Islamic Architecture, Publication Division, GOI
- Aspects of Indian Music, 2006, Publication Division GOI, New Delhi.

SEMESTER II

B.T.M- 201

ENGLISH (COMPULSARY)

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Section A

Text Prescribed:

The Pointed Vision: An Anthology of Short Stories by UshaBande and KrishanGopal.

Section B

Text Prescribed:

Ideas Aglow edited by Dinesh Kumar and V.B.Abrol with the following deletions:

- i. 'It's Question Time' by JayantV.Narlikar
- ii. 'An Interview with Christian Barnard' by N.Ram
- iii. 'Inhumanisation of War' by Huck Gutman.

Section C

Grammar and Composition

Note: The question paper will carry a maximum of 80 marks.

The paper will have ten questions as per details given below

- Q.1. Explanation with reference to the context (with internal choice). The students will be required to attempt *one* passage from the prescribed book of essays. (8 marks)
- Q.2. One comprehension question (with internal choice) based on a passage from the prescribed book of short stories. (8 marks)
- Q.3. Short-answer type questions on the prescribed books of short stories and essays.
Four short-answer type questions will be set on the prescribed short-stories and *four* short -answer type questions will be set on the prescribed essays.
The students will be required to attempt any *five* out of the given *eight* questions. (10 marks)

Q.4. This question will be an essay-type question (with internal choice) based on the two prescribed text books. (10marks)

Q.5. Paragraph

The students will be required to write a paragraph on any *one* of the *four* given topics.
(8marks)

Q.6 Letter/Application (6 marks)

Q.7. Translation (from Hindi to English) of a passage consisting of 12 to 15 sentences.

(Non-Hindi speaking/foreign students will attempt a question of comprehension based on an unseen passage in lieu of this question) (6 marks)

Q. 8 Translation (from English to Hindi) of a passage consisting of 12 to 15 sentences.

(Non-Hindi speaking/foreign students will attempt a question on précis of a paragraph of 200 to 250 words in lieu of this question. (6 marks)

Q.9. Idioms and Phrases (*four* to be attempted out of the given *eight*) (6 marks)

Q.10. Common Errors (*Twelve* sentences to be corrected out of the given *fifteen*). (12 marks)

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BTM&202

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- 2- ^npLokfeuh* ukVd dh ik=k&;kstuk
- 3- ^npLokfeuh* ukVd dh {kfeus rk
- 4- id kn dh ukV;dyk

[k.M&[k % fglhh I kfgR; dk HkfDrdky

iB;Øe ea fu/Mjr vkyhpulRed izu

- 1- HkfDrdky dh ifjLFkfr; k;
- 2- I r dk0; dh idfuk; k;
- 3- I q i dk0; dh idfuk; k;
- 4- jke dk0; dh idfuk; k;
- 5- d".k dk0; dh idfuk; k;
- 6- HkfDrdky % Lo.kz q

[k.M&x% 0;ogkfjd fglhh

iB;Øe ea fu/Mjr fo"t;

- 1- Hkk"kk dh ifjHkk"kk
- 2- Hkk"kk ds fofo/k : i % ckyh] ekudHkk"kk] jktHkk"kk] jk"VHkk"kk] uk/oeHkk"kk] ekrHkk"kk
- 3- ekud&Hkk"kk dh iez[k idfUk; k;
- 4- fglUnh o.kèkyk % Loj , oa 0; ãu
- 5- fglUnh mržh % l eL; k vlg Lek/kku
- 6- egkojs , oa ykclKDr; k;

[k.M&?% oLrfu"B izu

funž k%

- 1- [k.M c) ea fu/wžjr ikB; &iqrd ea ls 0; k[; k ds fy, pkj vorj.k iNs tk, aš ftuea ls ijh{kkfFkz ka dks fdUgh nks dh liiã 0; k[; k djuh gskhA iR; d 0; k[; k 6 vrd dh gskhA ijk izu 12 vrd dk gskhA
- 2- [k.M c) ea fu/wžjr vkykpukRed izu ea ls nks izu iNs tk, aš ftuea ls ijh{kkfFkz ka dks , d izu dk mUkj nsik gskhA ; g izu 8 vrd dk gskhA
- 3- [k.M c) ea fu/wžjr ikB; &iqrd , oa vkykpukRed izuka ea ls N% y?krjh izu iNs tk, aš ftuea ls ijh{kkfFkz ka dks yxHkx 150 'kCnka ea fdUgh pkj izuka dk mUkj nsik gskhA iR; d izu ds fy, pkj vrd fu/wžjr gA ijk izu 16 vrd dk gskhA
- 4- [k.M c) ea fu/wžjr vkykpukRed izuka ea ls pkj izu iNs tk, aš ftuea ls ijh{kkfFkz ka dks nks izuka dk mUkj nsik gskhA iR; d izu 8&8 vrd dk gskhA bl izdkj ; g izu 16 vrd dk gskhA
- 5- [k.M c) ea fu/wžjr izuka ea ls pkj y?krjh izu iNs tk, aš ftuea ls ijh{kkfFkz ka yxHkx 150 'kCnka ea fdUgh nks izuka dk mUkj nsik gskhA iR; d izu ds fy, ikp vrd fu/wžjr gA ijk izu 10 vrd dk gskhA
- 6- [k.M c) ea fu/wžjr ikB; Øe ea ls pkj y?krjh izu iNs tk, aš ftuea ls ijh{kkfFkz ka dks fdUgh nks izuka dk mUkj nsik gskhA iR; d mi&izu ds fy, 5 vrd fu/wžjr gA ijk 10 vrd dk gskhA
- 7- [k.M c) us ijs ikB; Øe ea ls 8 oLrfu"B izu iNs tk, aš iR; d izu 1 vrd dk rFkk ijk izu 8 vrd dk gskhA

GEOGRAPHY OF TOURISM

BTM-203

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Objectives:

Geography of Tourism studies the phenomena of tourism over the global space with 'spatial' attention on the place of origin, place of destination & routes through which the travel & tourism takes place. It provides a thorough knowledge about the characteristics of tourist markets, attractions of destinations & the accessibility of the world with a focus on a few selected countries of world. This course has been simplified with very few case studies & broad information about the continents, so that in next semesters the BTM students can know more specific countries & destinations.

Unit-I

Brief introduction of continents & oceans. Map reading. Greenwich Mean Time. International Date Line. Elements of weather & climate. Climatic zones of the world. Natural vegetation of the world. Main tourist activities in different climatic zones.

Unit-II

Asia: General geographical features; physiography, climate, vegetation main countries, capitals & their tourist attractions. A Case study of Japan, Singapore, Sri Lanka, Saudi Arabia.

Unit-III

Europe: General geographical features; physiography, climate, vegetation. Main countries, capitals & their tourist attractions. A Case study of France, United Kingdom, Switzerland, Spain

Unit-IV

Other countries: General geographical features of given countries with information about physiography, climate, vegetation & tourist attractions of USA (only 5 Places) South Africa, Australia

REFERENCES:

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- Bickersteth, Jane & Eliot, Joshua: Singapore handbook: the travel guide, Footprint Travel Guides, 2001.
- Blore, Shawn; Davidson, Hilary; Karr, Paul; Livesey, Herbert Bailey & McRae, Bill: Frommer's

Canada, John Wiley and Sons, 2004.

- Boniface, Brian G. & Cooper, Chris: Worldwide destinations casebook: the geography of travel and tourism, Butterworth-Heinemann, London, 2005.
- Campbell, Jeff; Chilcoat, Loretta; Derby, Susan; Greenfield, Beth; Heller, Carolyn B.; Martin, Sam; Miller, Debra; Morris, Bob; Peevers, Andrea Schultze; Wolff, Kurt & Zimmerman, Karla: USA, Lonely Planet, 2004.
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- Ellis, Royston: Sri Lanka: The Bradt Travel Guide, Bradt Travel Guides, 2005.
- Plunkett, Richard; Ellemor, Brigitte & Campbell, Verity: Sri Lanka, Lonely Planet, 2003.
- Else, David: England, Lonely Planet, 2007.
- Europe on a Shoestring, Lonely Planet, 2003.
- Prosser, Robert: France, Evans Brothers, 2005.
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- Simonis, Damien; Johnstone, Sarah & Williams, Nicola: Switzerland, Lonely Planet, 2006.
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- Louis, Regis St.; Chandler, Gary Prado & Draffen, Andrew: Brazil, Lonely Planet, 2005.
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- O'Hagan, Tim: Travel South Africa, Southern Book Publishers, 2000.
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- McPhee, Margaret: Australia's Top Tourist Destinations, Universal Publishers, 2003.
- Smitz, Paul; Bain, Carolyn; Bao, Sandra & Farfor, Susannah: Australia, Lonely Planet, 2005.

TRANSPORT MANAGEMENT

BTM-204

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Objective: Transport is most important element of travel & tourism business. One cannot think of tourism industry without any mode of transportation. There are several modes of transportation which are relevant in different conditions. The course focuses on different modes of transport and their role in tourism.

Mode of paper setting:

The number of questions to be set will be ten in a manner that there are two questions from each unit. The students shall be required to attempt five questions in all, selecting one question from each unit.

Teaching Practices: Class room lectures, Assignments, Cases, Discussions and Seminars.

Course Contents

Unit-I

Transportation as important element of tourism industry. History of different modes of transportation. The physiographic & socio- economic factors affecting development of different modes of transportation with special reference to India.

Unit-II

Airlines & Tourism, History of Airlines in India. IATA, DGCA: Organizational structures and functions. Air India and Private Airlines. Role of airlines in tourism promotion.

Water transport- Limitation & scope of water transport in India. Cruise ships. The role of water transport in tourism.

Unit-III

Surface transport & Tourism: Importance of surface transportation. Coaches, Car rental system in India. Roads system in India: National and State Highways, Role of surface transport in tourism.

Unit-IV

Railway & tourism- History & present status of Indian railway, Special trains for tourists. Different packages & facilities given by Railway. Problems of Indian Railway. Role of Railway in tourism.

References

- Aggarwal Surinder: 'Travel Agency Management', Communication India, New Delhi

- Hannel Christine, Robert Harshman&Graham Draper- 'Travel & Tourism: A world Regional geography, John Wiley & Sons, New York
- Hurst, Elist, 'Transporation Geography' McGraw Hill, New York
- Mohinder Chand, Travel Agency Management – An Introductory Text. Anmol Publications, New Delhi. 2006
- OAG, Airlines time table
- OAG, Cruise lines time table
- Indian Railway Time table
- Other references as in BTM 104, 203 and 302

TOURISM DOCUMENTATION

BTM-205

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Course Objectives

Tourism industry is growing at very fast pace. In India the outbound tourism and inbound tourism are also growing. International tourism involves several types of formalities. The students of tourism should know about such formalities, which are needed in the form of several documents. In this course the students will learn about required documents in foreign travels.

Teaching Practice

Class room teaching, assignment writing, case discussion, glossary of terms students should be familiar with the glossary pertaining to above mentioned topics.

Mode of Paper-Setting

There will be five questions in all and candidates will have to attempt all the five questions. First question will be of 14 marks and shall contain 7 short answer type questions. These questions shall be spread over the whole syllabus. Remaining four questions shall be of 14 marks each and will be set unit wise, where internal option among 2 questions will be given. These questions shall judge both theoretical and applied knowledge of students. Case studies may also be given as questions.

Internal Evaluation

The performance of the students will be evaluated on the basis of class participation, class test, regularity and assignment writing carries 20% of the credit.

Unit- I

General history of passport, visa and other formalities in different parts of world and India. Documents needed for foreign travels. Immigration formalities at airport for outbound and inbound tourists.

Unit- II

Passport; Definition. How to get the passport form. The essential documents, photographs and fee for passport. Types of passports. Alternatives of passport.

Unit-III

Visa- Meaning. Types of Visa issued by India. How to obtain Visa. Necessary documents to get Visa, Visa on Arrival, Online Visa Registration, ETA, Schengen Visa, U.S. Visa, U.K. Visa

Unit-IV

Other formalities; Travel and baggage insurance, Disembarkation card, Baggage rules, Currency regulation. Foreign regional registration office. Health regulations; Yellow fever, Malaria, H.I.V. certificates,

References;

-Tourist information by Department of tourism, Government of India

-Visa formalities of different countries. (See websites of countries)

HARYANA TOURISM

BTM-206

External 80
Internal 20
Duration 3 Hours
Time: 3 Hours

Course Objectives:

The course aims at providing a comprehensive overview on Haryana Tourism: elucidating State' tourist resource potential, Tourism infrastructure and tourist trends over the years. It critically examines exiting tourism planning and policy, framework and reviews the performance of Haryana in the context of both domestic and international.

Mode of paper setting:

There will be five questions in all and candidates will have to attempt all the five questions. First question will be of 14 marks and shall contain 7 short answer type questions. These questions shall be spread over the whole syllabus. Remaining four questions shall be of 14 marks each and will be set unit wise, where internal option among 2 questions will be given. These questions shall judge both theoretical and applied knowledge of students. Case studies may also be given as questions.

Unit – I

Geographical and historical background of Haryana and their importance for tourism
Religious & cultural tourism potential in Haryana including dance, music, fair & festivals

UNIT – II

Tourist Resources of Haryana:

- Monuments of touristic significance and museums
- Religious & pilgrimage centres of Haryana
- Music, dance, fairs & festivals in Haryana

UNIT – III

Tourism Infrastructure in Haryana

- Transportation and accommodation sector in Haryana
- Recreational and entertainment facilities at the tourism complexes/resorts in Haryana
- Tourism organization in Haryana
- Haryana Tourism Policy - 2008

UNIT – IV

Tourism Trends in Haryana

Major types of tourism in Haryana

Major tourist destinations of Haryana

SEMESTER III
B.T.M - 301
ENGLISH (COMPULSORY)

Scheme of Examination

Max. Marks	100
End Semester Exam	80
Internal Assessment	20
Time	3 Hours

1. *Sounds in Stillness An Anthology of Poems*.ed.by S.S. Sangwan . Delhi: OUP,
2. Selected episodes from the *Mahabharata* by C.Raja Gopalachari, Mumbai 7 :Bharatiya Vidya Bhavan .

The episode "Ganapati, the Scribe" and first 24 Chapters from "Devarata" to "The Wager "are prescribed for study.

3. Grammar, Pronunciation/Transcription
From A *Text book of Grammar* by Inderjit Kumar and Sanjay Kumar,
Kurukshetra : K U K.

Instructions to the Paper-Setter and Students:

- Q1 Explanation with reference to the context : Candidates will be required to attempt *two* extracts *one* each from the book of poems i.e. *Sounds in Stillness Mahabharata*. The passages will have internal choice. 6 x2=12 marks
- Q2 Short-answer type questions
Four short-answer type questions will be set on the prescribed poems and *four* short-answer type questions will be set on the *Mahabharata*. Students will be required to attempt *five* questions out of given *eight* questions selecting at least *two* from each text (i.e. *Sounds in Stillness* and the *Mahabharata*)
5x4=20 marks
- Q3 *One* essay type question (with internal choice) will be set on the prescribed book of poems. 10 marks
- Q4 *One* essay type question (with internal choice) will be set on the *Mahabharata*.
10 marks

- Q5 *Fifteen* words / phrases from the book of poems and the *Mahabharata*. Students will be required to use any *twelve* in sentences of their own 12x1=12 marks
- Q6 Questions on Grammar on the prescribed items (use of Tenses in communicative situations, subject-verb concord, active and passive voice, narration, common errors, word power, vocabulary, idioms and phrases) and transcription based on prescribed text-book of Grammar but not necessarily the same as those given in the text book. The candidate will be required to attempt *sixteen* items out of given twenty. 16 marks

TOURISM IN INDIA

BTM – 302

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Course Objectives

India is one of the emerging economic powers of India. In tourism too India is one of the choicest destinations of the world. India has a great variety of natural and cultural tourist attractions, that's why it is said that India is for all reasons and all seasons. In this course few important and popular tourist destinations are mentioned, so that the students can know about main tourist attractions of given places.

Mode of paper setting:

There will be five questions in all and candidates will have to attempt all the five questions. First question will be of 14 marks and shall contain 7 short answer type questions. These questions shall be spread over the whole syllabus. Remaining four questions shall be of 14 marks each and will be set unit wise, where internal option among 2 questions will be given. These questions shall judge both theoretical and applied knowledge of students. Case studies may also be given as questions.

UNIT – I

Trends in inbound and outbound tourism in India

Trends in domestic tourism in India

Major types of tourism in India mainly cultural, pilgrimage, Wildlife and MICE tourism

UNIT – II

Tourism Policy and Planning in India: A historical view

Tourism in the current Five-Year Plan

National Tourism Policy – 2002

UNIT – III

Administration of Tourism in India:

- Role of Ministry of Tourism, Government of India
- Role of State Tourism Corporations
- Role of India Tourism Development Corporation (ITDC)

UNIT – IV

Tourism Infrastructure in India

- Transportation sector : Airlines and Railways

- Accommodation sector: Major hotel groups & Chains; Challenges before Indian Hotel Industry
- Tourism Marketing in India mainly the 'Incredible India' Marketing Campaign

REFERENCES

Amitabh Kant Branding India: An Incredible Story; 2009, Harper Collins (India), Delhi

HOTEL BUSINESS

BTM-303

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

OBJECTIVES: - Main objective of this paper is to introduce accommodation sector to the students of Tourism. Being a major component of tourism accommodation sector has expanded a lot in itself. This paper will touch upon various aspects of accommodation, hotel and hospitality sector.

PAPER SETTING: There will be five questions in all and candidates will have to attempt all the six questions. First question will be of 14 marks and shall contain 7 short answer type questions. These questions shall be spread over the whole syllabus. Remaining four questions shall be of 14 marks each and will be set unit wise, where internal option among 2 questions will be given. These questions shall judge both theoretical and applied knowledge of students. Case studies may also be given as questions.

TEACHING PRACTICES: Class room lectures, Assignments, Cases, Discussions and Seminars.

COURSE CONTENTS

Unit-I

Introduction – Tourism and Hotel, their relationship, Tourism Accommodation sector, Types of Tourist Accommodation: Different basis of categorization of accommodation sector. Main features of different basis of categorization of accommodation sector.

Unit-II

Growth and development of Hotel Industry. Growth of hotel industry in India. Major personalities associated with hotel growth in India and their contribution. Study of major hotel chains in India.

Unit-III

Hotel Accommodation and its various activities. Organisation structure and role of various departments of hotels : Front Office, Housekeeping, Food & Beverage (Service & Production), Engineering & Maintenance, Security, Human Resource, Sales & Marketing, Purchase, Stores and Accounts.

Unit-IV

Ownership and forms of hotel ownership. Sole – Proprietorship, Partnership. Joint stock companies. Referral Organizations, hotel chain, Lease Agreements, Management contracts, Franchise Organizations. Role of government in developing hotel Industry. Recent developments and challenges in hotel industry. Future of hotel industry in India.

References:-

1. Negi, Jagmohan: Hotels for Tourism Development (2nd Edition); Metropolitan, New Delhi, 2000.
2. Gee, Chuck Y.: International Hotel Management. Educational Institute, America, 1998
3. Kaul, R.N.: Dynamics of Tourism: a trilogy. Vol. 2: Accommodation. Sterling Publishers Pvt.Ltd. New Delhi,2001.
4. Mohinder , Chand , Managing Hospitality Operations , Anmol publications , New Delhi, 2009.
5. Anand M.M. – Tourism and Hotel Industry in India: Sterling Publishers, New Delhi
6. Madlik, S. – Hotel Business, Heinemann, London
7. Brymer, Robert A. –Introduction of Hotel and Restaurant Management: HUB Publication, Co., Iowa, 1984
8. John R. Walker : Introduction to Hospitality
9. Tiwari, J. R. : Hotel Front Office: Operation and Management, Oxford University Press

HRM IN TOURISM

BTM -304

Max. Marks: 100

External: 80

Internal: 20

Time: 3 Hours

Objectives: The primary objectives of this course are to acquaint the students emerging global trends in tourism business environment.

PAPER SETTING: Paper setter should set 9 questions. The examinee should be required to attempt five questions. Question no.1 is compulsory and comprising whole syllabus consisting 7 short answers each carries 2 marks. The remaining 4 questions are to be attempted from the 4 units selecting one question from each unit of 14 marks each.

TEACHING PRACTICES: Class room lectures, Assignments, Cases, Discussions and Seminars.

COURSE CONTENTS

Unit-I

Introduction of Human Resource:

Human Resource- Concept, meaning and definition; Importance of HR in tourism industry; Concept of employee life cycle; approaches to managing HRs in hotels: emerging role of HR manager in tourism sector.

Unit-II

Human Resources planning:

Human Resource planning- meaning, process, factors and need for HRs planning;

Job analysis- meaning, types, proposes and uses; job description of major positions in a travel agency and tour operation.

Unit-III

Acquisition of Human Resources

Recruitment -meaning, process, methods of Recruitment in tourism industry;
Selection procedure-essentials and steps in selection process; Interview- meaning, and types.

Employee promotion, transfer and separation- meaning, purpose, and types

Unit-IV

Maintenance of Human Resources:

Employee Training and development- need, importance, and methods of in tourism industry.

Performance appraisal- need & importance and techniques.

References:

1. Aswathappa, K,(2008) Human resource Management, The McGraw-hill publications, New Delhi.
2. Ian Beardwell and Ien Holden, (2000) Human Resource Management, Macmillan.
3. Robbins. (2000), the Management of Human resources, Prentic-hall,new Delhi.
4. Indian journal of industrial relations.
5. Employee Relation-International Journal (special issue on people management in India and sub- continents), 2007.
6. Subramanian,K.N. (2000)Wages in India, Tata McGraw –Hill Publication New Delhi.
7. C.bMamoria (1999), Management of Human Resources, Himalaya publication, New Delhi.
8. Mohinder C. (2006) Travel Agency Management-An Introductory Text, 2006 2nd revised edition.Anmol Publication Pvt. Ltd., New Delhi,
9. Tripathi, P.C.(2006), Human Resources Management, Vikas Publications, Delhi.
10. Hoque, K. (2000b), '*Human Resource management in Hotel Industry: Strategy, Innovations and Performance*', London: Routledge.
11. Woods, R.H. (1992). *Managing Hospitality Human Resources*, Michigan: Educational Institute of the American Hotel and Motel Association.
12. Boella, M.J (1992), *Human Resource Management in the Hospitality Industry*, 5th ed, Stanley Thornes Publishers, Avon.
13. Lee-Ross, D (1999), HRM in Tourism and Hospitality: International Perspectives on Small to Medium-sized Enterprises, Cassell Publications, London,

COMPUTER APPLICATIONS IN TOURISM

BTM – 305

Maximum Marks: 100

Internal: 20+30

External (Theory): 50

Time: 3 Hours

OBJECTIVE: Computer skills are essential in every modern framework of studies including tourism due to the need to manage fast multiplying information and data. The course requires consistent efforts on the part of the students to practice methods and mechanism of computing and analysis. The course focuses on the basic software(s) and new terms and technologies while providing an insight in Computing and related concepts.

PAPER SETTING: There will be five questions in all and candidates will have to attempt all the five questions. First question will be of 14 marks and shall contain 7 short answer type questions. These questions shall be spread over the whole syllabus. Remaining four questions shall be of 14 marks each and will be set unit wise, where internal option among 2 questions will be given. These questions shall judge both theoretical and applied knowledge of students. Case studies may also be given as questions.

TEACHING PRACTICES: Class room lectures, Assignments, Cases, Discussions, Seminars and Practical.

COURSE CONTENTS:

UNIT- I

COMPUTER FUNDAMENTALS and OFFICE OPERATIONS

Components and Units of a computer system, Characteristics, Features and Uses of computers, data entry devices, data output devices and storage devices.

Introduction to Windows

Basics of MS Office and Uses in Travel Agency

UNIT-II

ICT AND TOURISM

Introduction to Information and communication Technologies (ICT), Web Portal and Websites
Definition, Meaning, Role and Importance of ICT in Tourism sector, Future of ICT in Tourism Industry.

UNIT-III

E-COMMERCE

E-Commerce Meaning, Definition, Features, Functions of E-Commerce, Limitations of E-Commerce, Introduction to E-Tourism, Meaning and Definition, Case study of online Travel Agencies Selling E-Tourism: Yatra.com and Makemytrip.com.

UNIT-IV

AUTOMATION AND RESERVATION

Introduction to Internet; Its uses and applications of Internet in Tourism and Searching on internet using various search engines. Introduction to CRS; Need and history of CRS systems, Benefits and importance of the CRS system to the Travel trade.

References:

1. V. Ragaraman, Fundamental of computers, PHI, New Delhi
2. P.K. Sinha, Fundamentals of Computers
3. D.Buhalis, E-Tourism: Information Technology for strategic Tourism Management, Pearson Education Ltd, Essex, UK
4. C.S.V Murthy, E-Commerce Concepts, Models and Strategies, Himalaya Publications
5. Mathew Rergnolds, E-Commerce, Worx Publications
6. K. Bajaj and D. Nagm, E-Commerce: The Cutting Edge of the Business, Tata McGraw Hill
7. S. Bansundra, Computers Today
8. V. Raja Raman, Introduction to Computer Science
9. Leon Alexis and Mathews Leon, Fundamentals of Information Technology, Vikas Publishing House Pvt. Ltd, New Delhi
10. Leon Alexis and Mathews Leon, Internet for everyone, Vikas Publishing House Pvt. Ltd, New Delhi
11. V.P. Jaggi and S. Jain, Computers for Everyone, Academic India Publishers, New Delhi
12. S. Saxena, MS Office 2000 for everyone, Vikas Publishing House Pvt. Ltd, New Delhi
13. S. Shajahan and R. Priyadharshini, Management Information Systems, New Age International Publishers, New Delhi
14. S.C. Bhatnagar and K.V. Ramani, Computers and Information Management: A premier for Practicing Managers, PHI, New Delhi
15. Curtin, Foley, Sen, Morin: Information Technology- The Breaking Wave
16. Jerome Kanter: Managing with Information
17. Internet Sites and other Theory taught during lectures

COMMUNICATION SKILLS AND PERSONALITY DEVELOPMENT

BTM 306

Maximum Marks: 100

Internal: 20+30

External (Theory): 50

Time: 3 Hours

Course Objectives

The course introduces learners to the basic communication skills and personality traits requisite in tourism and hospitality industry jobs. The theoretical inputs are designed to be used with practical exercises in the class rooms and daily behavioral corrections.

Mode of paper setting:

The examiner shall set nine questions. Question no. 1 comprising of 7 short questions of 2 marks each will be compulsory. The remaining 4 questions are to be attempted from 4 units selecting 1 question from each unit. Each question shall be of 14 marks.

Teaching Practices

Lectures, Assignments, Cases, Discussions, Presentations

Course contents

Unit I

Understanding Communication- Concept, Process and Barriers to Communication. Qualities of Effective Communication. Ways of making communication effective and overcoming barriers.

Types of Communication-Verbal & Non-verbal communication – its importance, types & use in business communication; Upward, Downward, Internal and External.

Unit II

Written – various principles of effective writing; Letter - Types, Format and features of a good letter; Email writing, Curriculum Vitae & covering letter; General Guidelines for Preparing Personal Profile.

Oral communication - Group Discussions -Effective Conduct in Group Discussions, Group Discussion in Induction, Group Discussion Process, Topics in Group Discussion, Tips for Group Discussion, Clarity of Thoughts and Expression; Interviews-Purpose, Types & Preparation; Public

Speaking- Need,, Planning Presentation, Delivering Presentation, Basic Qualities in a Public Speaker

Unit III

Personality Development- Concept of Personality, Elements of Personality, Determinants of Personality, Personality Analysis-Myers-Briggs Type Indicator (MBTI) Assessment.

UNIT IV

Personality(Grooming and Social Skills)-Grooming and Personal Hygiene, Basic Concepts of Grooming, Personal Grooming and Corporate Grooming, Dining Etiquettes, Corporate Etiquettes for Dining, Cross-Cultural Dining Etiquettes, Interpersonal Skills: Developing Interpersonal Skills, Role Playing for Interpersonal Relations, Importance of Role Playing, Process of Role Playing.

BIBLIOGRAPHY

Asher Mark (1999). *Body Language*, Carlton Books Limited.

Barker Alan (2007). *Improve Your Communication Skills*, Kogan Page, New Delhi.

Chaturvedi, P. C. and Chaturvedi, M.(2005). *Business Communication*, Pearson Education.

Colman. J. C. (1988). *Abnormal Psychology & Modern Life*, Scott Foresman& Company.

Covey Stephen R. (1990). *The Seven Habits of Highly Effective People*, NY: Fireside/ Simon & Schuster.

George. B. & Chatterjee S. (2008). *Food & Beverage Service & Management*, Jaico Publishing House, Mumbai, India.

Fry Ron (2003). *Your First Resume*, Pearson Education.

Fuller J. and Currie. A. J. (2002). *The Waiter*, Sterling Book House. Mumbai, India.

Marden Orison Swett (2003). *The Power of Personality*, Kessinger Publishing.

Michael A. (2007). *Best Impression in Hospitality*, Delmar. Thomson Learning.

Morris Desmond(2002). *People Watching*, Vintage.

Pease Allan(2000). *Body Language*, Sudha Publications.

Sharma Vinay Mohan(2000). *Body Language*, Pustak Mahal.

Thorpe Edger and Thorpe Showick (2004). *Winning at Interviews*, Pearson Education.

Taylor Shirley (2008). *Communication for Business*, Pearson Education.

Websites: www.myersbriggs.org

SEMESTER IV

B.T.M.-401

ENGLISH (COMPULSORY)

Max. Marks	100
End Semester Exam	80
Internal Assessment	20
Time	3 Hours

1. *Snapshots: An Anthology of One-Act Plays*. ed. S.K. Sharma.
New Delhi: OUP
2. The Mahabharata chapter 25 to 49 i.e. "Draupadi's Grief" to "Arjuna's Charioteer."
3. Précis, Translation, Comprehension, email and Resume writing
From A *Text book of Grammar* by Inderjit Kumar and Sanjay Kumar,
Kurukshetra : K U K.

Instructions to the Paper-Setter and Students:

- Q1 Explanation with reference to the context. Candidates will be required to attempt *two* assuages (with internal choice) from the prescribed book of one act plays *i.e. Snapshots*.
4x2=8 marks
- Q2 Short answer type questions will be set on the prescribed book of one act plays.
Students will be required to attempt any *four* out of the given *six* questions.
4x3=12 marks
- Q.3 Short answer type questions will be set on the *Mahabharata* will be required to attempt any *four* out of the given *six* questions.
3x4 = 12 marks
- Q4 *Two* essay type questions (a) and (b) (with internal choice) will be set on the prescribed book of one act plays and *The Mahabharata*. Part (a) and (b) will be set respectively on each prescribed book.
2x5= 10 marks

Q5 The break up of Question No.5 is as under:-

a) Précis : 8 marks

A passage of about 350 words will be given.

b) Translation : 7 marks

Translation from English to Hindi of a passage consisting of 9 to 10 sentences on a general topic. (In lieu of translation, foreign students will be required to write a paragraph of about 150 words on any *one* of the *three* given topics)

c) Comprehension:

Comprehension passage of about 300 words followed by six questions at the end. 8 marks

d) Drafting email : 7 marks

expressing views about any current topic

e) Resume writing : 8 marks

The examiner will give specific details to the students about the purpose and the kind of the resume.

Suggested Reading:

Communication Skills in English by S.D. Sharma

Essentials of Communication by D.G. Saxena, Kuntal Tamang

PILGRIMAGE TOURISM

BTM – 402

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Mode of paper setting:

The examiner shall set nine questions. Question no. 1 comprising of 7 short questions of 2 marks each will be compulsory. The remaining 4 questions are to be attempted from 4 units selecting 1 question from each unit. Each question shall be of 14 marks.

UNIT – I

Major religions in India:

- Hinduism: Salient features
- Buddhism & Jainism : Main Teachings and Philosophy
- Islam and Sikhism: Basic features

UNIT – II

Major pilgrimage centres of India – I:

- Hinduism: Four Dham – Badrinath, Rameshwaram, Puri and Dwaraka
- Varanasi, Mathura-Vrindavan, Haridwar, Vaishno Devi, Allahabad, Kurukshetra & Tirupati

UNIT – III

Major pilgrimage Centres of India – II:

- Buddhism and Jainism: Bodh Gaya, Sarnath, Mount Abu, Palitana
- Islam, Christianity and Sikhism: Ajmer, Goa and Amritsar

UNIT – IV

Trends and Patterns in pilgrimage tourism in India

Strategies to promote pilgrimage tourism in India

Problems and prospects of pilgrimage tourism in India

BTM-403

Principles of Management-

Max Marks (internal) 20

Max Marks (External) 80

Objectives: To prepare the budding managers in tourism and to provide the students basic knowledge of management and managerial skills.

Approach: Lecture, group discussion, presentation, case studies etc.

Evaluation: As per the KUK norms for this course/ other papers.

Mode of Paper setting: same as that of the other papers of this course.

Unit 1

Concept of management, definition, nature, purpose, management as an art, science, and a profession, functions of management, systems approach to management.

Unit 2

Planning meaning, steps in planning process, purpose, type of plans, management by objectives, Decision making- meaning, definition, importance, ration, process of decision making, limitations.

Unit 3

Organizing- meaning process of organizing, levels of organizing, span of management, forms -line, functional, line & Staff and Committee form of organizations. Delegation of Authority, Decentralization & Centralization.

Unit 4

Motivation and theories of motivation, Leadership traits and styles, Communication process and barriers, Controlling process, need, feedback and feed forward control.

Books:

1. Weisbier, Helmut; N4tiL V-eannlce& Harold Koontz: Management: A Global and Entrepreneurial Perspective. Tata McGraw -Hill, New Delhi.
2. Ghuman, Karminder& K. Aswathappa: Management: Concept, Practice & Case, Tata McGraw -Hill, New Delhi.
3. Kase , F. L. and Rasonu, J.E. 1985, Organization and Management -A System and Contingency Approach, McGraw Hill Book Company, New York'
4. Becker, P.E, The Practices of Management, London, 1955.
5. May, D., The Evolution of Management Thought. Ronald Press, New York, 1972.
6. Singh. A.N., The Skills of Management, GoverEarnborough, 1980.
7. Ricks. S., Management of Organization. Macmillan publication. Honkong, 1981.
8. Y.A., Management, of Organization. McGraw Hill. 1958.
9. Crompton. Summer and Webber, 1973. Organizational Behavior and The Practices of Management, Scoft, Poresman, Cleneve'
- 10.K.-c., .lae, 1982. l''lanagementl, Prentice i{aii. }'Jerv Deihi.

TOURISM MARKETING

BTM-404

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Course Objectives

The course familiarizes students with the basic concepts of tourism marketing. The objective is to enable students to develop an understanding of application of these concepts. The themes covered are approaches towards marketing and marketing mix.

Mode of paper setting:

There will be five questions in all and candidates will have to attempt all the five questions. First question will be of 14 marks and shall contain 7 short answer type questions. These questions shall be spread over the whole syllabus. Remaining four questions shall be of 14 marks each and will be set unit wise, where internal option among 2 questions will be given. These questions shall judge both theoretical and applied knowledge of students. Case studies may also be given as questions.

Teaching Practices

Lectures, Assignments, Cases, Discussions, Presentations

Course Contents

Unit I

Introduction to Tourism Marketing- Tourism Marketing: Nature, Process and Growth. Services and their Marketing, Tourism Marketing and Development: Socially Responsible Marketing, Social Marketing, Participants in Socially Responsible Marketing and their Roles. Government Bodies- National Tourism Offices, State Tourism Offices and Local Bodies, Private Organizations, Non-Governmental Organizations in Tourism

Unit II

Challenges of Tourism Marketing- Nature and Characteristics of Tourism Offers: Tangibility and Intangibility, Non-perishability and Perishability, Homogeneity and Heterogeneity, Separability and Inseparability, Ownership and Non-ownership. Issues and Challenges in Tourism Marketing, Marketing Strategies to overcome limitations of Tourism

Unit III

Tourism Marketing Environment- Concept of Marketing Mix, Developing Marketing Mix, Tourism Markets, Types of Tourism Markets, Tourist Behavior, Tourist Buying Process, Factors Influencing Tourists' Buying Process, Tourism Product and Distribution- Concept of Tourism Product, Tourism as a packaged Product, Destination as a Product, Managing Products, New Product Development, Product Life Cycle

Unit IV

Tourism Pricing and Promotion- Concept, Importance and Process of Pricing, Factors influencing Tourism Pricing, Methods of Price Fixation, Pricing Strategies, Price Fixation. Tourism Promotion and Communication: Objectives of Promotion, Promotion Mix, Factors affecting Promotion Mix, Components of Promotion Mix, Important Promotional Tools in Tourism- Brochures, Events, Movies and Cinema

References

- Burkart, A.J., Medlik, S.(1981). *Tourism, Past, Present and Future*, Heinemann, London.
- Chris Cooper, Fletcher John, Gilbert David, Wanhill Stephen (1993). *Tourism Principles and Practice*, Pitman Publishing London.
- Christopher Lovelock and JochenWirtz.(2004), *Services Marketing-People, Technology, Strategy*, Pearson Education, India.
- Holloway, J.C., Plant, R.V. (1988). *Marketing for Tourism*, Pitman, London.
- Kotler, Philip, Bowen John, Makens James (2004). *Marketing for Hospitality and Tourism*, Pearson Education, India.
- Kotler Philip (1995). *Marketing Management-Analysis ,Planning, Implementation and Control*, Prentice Hall of India.
- Kotler Philip (2003). *Marketing Insights from A to Z: 80 concepts every manager needs to know*. John Wiley and sons, USA.
- Kotler Philip and Armstrong Gary (1991). *Principles of Marketing*, Prentice Hall of India.
- Majaro, Simon (1995). *The Essence of Marketing*, Prentice Hall of India.
- Middleton, V.T.C.(1988). *Marketing in Travel and Tourism*, Heinemann, Oxford.
- Schiffman G. Leon, KanukLazer Leslie (1992). *Consumer Behaviour*, Prentice Hall of India.
- Witt F Stephen, MoutinhoLuiz (1989). *Tourism Marketing and Management Handbook*, Prentice Hall International UK.
- Zeithaml, V.A. &Bitner, M.J.(1996).*Services Marketing: Integrating Customer Focus Across theFirm*,US:McCraw-Hill Higher Education.
- Zeithaml A. Valarie, Bitner Jo Mary (1996). *Services Marketing*, The Tata Mcgraw Hill Companies, Inc.

AN INTRODUCTION TO TRAVEL AGENCY & TOUR OPERATIONS BUSINESS IN INDIA

BTM-405

Max. Marks: 100

External: 80

Internal: 20

Time: 3 Hours

OBJECTIVES: The study includes the functions, Regulations for Recognition of Travel Agents, Tour Operators and Excursion Agents. The Role of Sectors like Airline, different Railways Transports is also covered. The learner will also be familiarized with the contribution of important Association in these sectors.

PAPER SETTING: Paper setter should set 9 questions. The examinee should be required to attempt five questions. Question no.1 is compulsory and comprising whole syllabus consisting 7 short answers each carries 2 marks. The remaining 4 questions are to be attempted from the 4 units selecting one question from each unit of 14 marks each.

TEACHING PRACTICES: Class room lectures, Assignments, Cases, Discussions and Seminars.

COURSE CONTENTS

Unit-I

Travel Agency/Tour Operations – meaning, definition, types, significance and growth over the years.

Unit-II

Functions of Travel Agencies and tour operators. Linkages and integrations in tour operation business.

Unit-III

Travel Agency Organization Structure – Meaning and significance, Procedure for recognitions of Travel Agency and tour operations from Ministry of tourism, Govt. of India.

Unit-IV

Tour Packaging – Concept, meaning, types. Role and contribution of Air Couriers in India and Indian Railways in promotion of tour package business.

References

1. Foster, D., the Business of Travel Agency, Pitman, 1990.
3. Aggarwal, Surrender, Travel Agency Management (Communication India, 1983).
4. Geo, Chack, Professional Travel Agency Management: (Prentice Hall, London, 1990).
5. Mohinder Chand , Travel Agency Management – An Introductory Text, Anmol Publications, New Delhi, 2006
6. IATA, IATO, TAAI manual./
7. Jag Mohan, Negi, Travel Agency and tour operation, Kanishka Publication New Delhi, 1990.

Communicative English

BTM 406

Note: The Examiners will set eight questions, taking two from each unit. The students are required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

UNIT -I

English Language

Growth and Development of English in India

Main features of British, American and Indian English

Introduction to Formal and Informal English

UNIT -II

Vocabulary and Grammar

Word meanings and their usage, Usage of Dictionary and Thesaurus

One word substitutes, Synonyms& Antonyms

Common errors in spellings and sentences

Subject-Verb agreement, Idioms& phrases

Active Voice and Passive Voice, Tag Questions

UNIT -III

English in Tourism Sector

Need of English language in promoting Tourism

List of terms and vocabulary commonly used in field of tourism

Role and Importance of English language for tourist guides

UNIT -IV

Composition

Resume Writing

Letter writing (Formal and Informal Letters)

Paragraph Writing

Dialogue Writing

Essentials of different types of conversation (telephonic, e-mail, public speech, group discussion)

REFERENCES:

1. Communicative English, Jimmy Sharma, Arihant Publishers, New Delhi
2. English for Occupational Purposes: One Language, Kim. D. London: Continuum. 2008.
3. Strengthen Your English, Bhaskaran and Horsburgh, Oxford University Press
4. Murphy's English Grammar with CD, Murphy, Cambridge University Press
6. Everyday Dialogues in English by Robert J. Dixon, Prentice-Hall of India Ltd., 2006.

SEMESTER – V

B.T.M.- 501

English

Theory: 80

Internal Assessment: 20

Time: 3 hours

Prescribed Books:

1. *The Eternal Muse* edited by Brajesh Sawhney and Neena Malhotra
2. *The Spectrum of Life: A Selection of Modern Essays* edited by M.K. Bhatnagar
3. *A Text Book of English Grammar and Composition* edited by S.C. Sharma, Shiv Narain, Gulab Singh and Pankaj Sharma

Instructions to the Paper-Setter and Students:

Q. 1 : This question will have *one* stanza (with internal choice) for explanation with reference to the context from *The Eternal Muse*. 8 marks

Q.2 : There will be *six* short answer type questions based on the first two text books. Students will be required to attempt *four* questions (in about 100 words each) choosing *two* from each text.

4x3 = 12 marks

Q.3 : *One* essay type question (with internal choice) on the book of poems, requiring first hand understanding of the poems. 10 marks

Q.4 : *One* essay type question (with internal choice) from *The Spectrum of Life : A Selection of Modern Essays*, requiring first hand understanding of the text. 10 marks

Q.5 : A paragraph of about 300 words will be given. The candidates will be required to attempt a précis and give it a suitable title. 15 marks

Q.6: This question will consist of *one* letter/ application (Personal/Business Correspondence). Students will be required to attempt either of the given *two*. 10 marks

Q.7 (a) Common errors (10 sentences to be corrected out of the given *fifteen* sentences) 10 marks

(b) Clauses (students will be required to attempt *five* out of *seven*) 5 marks

IMPACTS OF TOURISM

BTM – 502

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Course objectives:

The development has its own impacts and so in case of tourism. The students shall be given exposure of the patterns of development in tourism mainly in reference to the developed and developing countries. The study of the positive as well as the negative impacts of tourism becomes essential to understand the benefits and loss of tourism development.

APPROACHES

Lectures, Group Discussion, Presentation, Case studies.

MODE OF PAPER SETTING

There will be five questions in all and candidates will have to attempt all the five questions. First question will be of 14 marks and shall contain 7 short answer type questions. These questions shall be spread over the whole syllabus. Remaining four questions shall be of 14 marks each and will be set unit wise, where internal option among 2 questions will be given. These questions shall judge both theoretical and applied knowledge of students. Case studies may also be given as questions.

UNIT – I

Patterns of tourism development in the developed and the developing countries – a comparative analysis in terms of volume of tourist arrivals and earnings from tourism

Tourism Development in the regions – Europe, Americas, Asia-Pacific region, Middle East and Africa in terms of volume of tourist arrivals and earnings from tourism

Characteristics of mass tourism

UNIT – II

Economic significance of tourism

Direct, Indirect and Induced Economic Impacts of tourism

Negative Economic Impacts of Tourism

Economic Impact Analysis

UNIT – III

Socio-cultural dimensions of tourism

Positive Social & cultural Impacts of Tourism
Negative Social & Cultural Impacts of Tourism
Social Change and growth of tourism

UNIT – IV

Environmental significance of tourism
Major Impact Areas – Natural Resources, Pollution and Physical Impacts
Tourism development in relation to global warming, Climate Change, natural resource exploitation & Biodiversity loss
Environmental Impact Assessment

REFERENCES

- Bartelmuş, P. (1994). *Environment, Growth and Development: The Concepts and Strategies of Sustainability*. London, Routledge.
- Burns, P. and Holden, A. (1995). *Tourism: A New Perspective*. London, Prentice Hall.
- Butler, R. W. (1991). Tourism, environment and sustainable development. *Environmental Conservation*, **18**, 201–9.
- Cater, E. (1994). Introduction. In *Ecotourism: A Sustainable Option?* (E. Cater and G. Lowman, eds). London, John Wiley and Sons.
- Cooper, C., Fletcher, J., Gilbert, D. and Wanhill, S. (1998). *Tourism: Principles and Practice*. London, Longman.
- Davison, R. (1996). The impacts of tourism. In *Tourism Destinations* (R. Davison and Maitland, eds), pp. 18–45. London, Hodder and Stoughton
- Peter Mason, 2009, *Tourism Impacts, Planning and Management*, Butterworth Publication, NEW YORK

ACCOUNTING FOR TOURISM

BTM-503

Max. Marks: 100

External: 80

Internal: 20

Time: 3 Hours

COURSE OBJECTIVES: - The enormous changes during the past ten years in 'Tourism Industry" and the technology of information accessing have dramatically affected the environment accounting. Tourism Management, to service in this labile business environment, needs reliable, timely, complete and understandable accounting formation. This course equips the students with counting techniques, Methods and tools for preparation, understanding, analysis and interpretation of financial statements hotel companies.

PAPER SETTING: Paper setter should set 9 questions. The examinee should be required to attempt five questions. Question no.1 is compulsory and comprising whole syllabus consisting 7 short answers each carries 2 marks. The remaining 4 questions are to be attempted from the 4 units selecting one question from each unit of 14 marks each.

TEACHING PRACTICES: Class room lectures, Assignments, Cases, Discussions.

COURSE CONTENTS

Unit-I

Introduction to accounting:

Nature; Definition; accounting cycle uses; functions and types of accounting. Accounting principles conventions and concepts.

Unit-II

Double entry system of accounting

Cardinal rules of debit and credit; preparation of journals and other subsidiary books; preparation of ledger accounts and trail balance.

Unit-III

Final accounts: need and importance in tourism business, Preparation of Business Income Statement and Balance sheet.

Unit-IV

Interpretation of Business Income Statement and Balance Sheet of Travel Agencies with the help of ratio Analysis.

REFERENCES

1. Financial Management – Iqbal Mathur
2. Financial accounting – R.L.Gupta
3. Basic Accounting – Meig&Meig
4. Leslie Chadwick, 1995 : The Essance of Financial Accounting, Prentice Hall of India Pvt.Ltd.,ND
5. Donald F.Sutton, 1986 : Financial Management in Hotel and Catering, Heinemann, London
6. G. Boni and F.F. Shartes, 1988 : Hotel Organisation Management and Accountancy, Sir ISAAR. Pitman, London
7. Horwarth and Toth, 1979 : Hotel Accounting, Ronald Press, New York
8. Horwarth Earnest, 1986 : Hotel Accounting, Ronald Press, New York
9. Horwarth, E.B.andToth, 1986 : Hotel Accounting, Ronald Press, New York
10. Robert and Anthony, 1995: Management Accounting, Prentice Hall of India Pvt.Ltd., New Delhi
11. L.S.Porwal, 1993 : Accounting Theory, An Introduction, Tata McGraw-Hill Publishing Co., Pvt Ltd., New Delhi
12. R.D.Boardman, 1980 : Hotel and Catering Costing and Budgets, Heinemann, London.

BTM-504
Sustainable Tourism

Max Marks (internal) 20
Max Marks (External) 80

Objectives: To prepare the budding tourism professionals by providing basic knowledge about sustainable tourism related skills.

Approach: Lecture, group discussion, presentation, case studies etc.

Evaluation: As per the KUK norms for this course/ other papers. Mode of Paper setting: same as that of the other papers of this course.

Unit 1

Sustainable Tourism- meaning, definition, scope, sustainable development components, major issues in understanding sustainable development, principles of sustainable tourism management, aspects of ethics and social responsibility Key Stake holders.

Unit 2

Key issues of sustainable tourism development such as Ecotourism, carrying Capacity, de-marketing, fair pricing, transportation, education, role of industry, Role of public and private sector, community involvement and local control and linkages therein.

Unit 3

Three dimensions of Sustainable tourism i.e. environment, economic life, social aspects. Environment-scope of the concept of environment, major potential impacts of tourism on environment, Economic Dimension-scope of the concept, and major impacts of tourism on it, Social Dimension-scope of the concept of socio-cultural environment and impacts of tourism on socio cultural issues.

Unit 4

.Key actor in sustainable tourism- role of public sector, government bodies, local authorities, tourism industry, voluntary organizations host community, media, and tourists.

Books:

1. Swarbooke, J-sustainable Tourism Management-Rawat publication, Jaipur
2. William Theobald-Global Tourism: The Next Decade-Butterworth Heinemann.
3. <http://www.environment.gov.au/heritage/publications/strategy/pubs/steps.pdf>.
4. http://sanctuaries.noaa.gov/management/international/pdfs/day1_concepts_manual.pdf.
5. <http://www.unep.fr/shared/publications/pdf/IDTx0592xpA-TourismpolicyEfv.pAf>.
6. http://www.nwhf.no/files/File/culture_fulltext.pdf
7. http://www.rainforest-alliance.org/tourism/documents/tourism_practices_guide.pdf
8. http://unctad.org/en/Docs/ditctncd20065_en.pdf
9. http://ec.europa.eu/enterprise/sectors/tourism/files/docs/tsg/tsg_final_report_en.pdf
10. <http://www.visitcalifornia.com/media/uploads/files/edito>
ricTTC%ZosustainableTo20Tourism%20Handbook.pdf

BTM-505
Entrepreneurship in Tourism

Max Marks (internal) 20
Max Marks (External) 80

Objectives: To prepare the budding entrepreneurs in tourism and to provide the students basic Knowledge of entrepreneurship and entrepreneurial skills.

Approach: Lecture, group discussion, presentation, case studies etc.

Evaluation: As per the KUK norms for this course/ other papers

Mode of Paper setting: same as that of the other papers of this course.

Unit 1

Concept of Entrepreneur and entrepreneurship- its evolution, characteristics, role of entrepreneurship on economic development, Entrepreneurship in India- Factors and Institutional framework. Theories of entrepreneurship

Unit 2

Relationship between small and large business, problems of small scale industries in Indian context, growth of SSI's and Entrepreneurial motivation, policy support to small scale industries and entrepreneurship.

Unit 3

Forms of ownership- structural patterns, entrepreneurial development and training, aspects involved in the growth of entrepreneurial environment.

Unit 4

Issues relating to small business, financial, marketing channels, technological challenges in small business. Problems and remedies of entrepreneurship in India.

Books:

Rajeev Roy- Entrepreneurship: 2nd Edition - Oxford University press

Madhurima Lall & Shikha Sahai- Entrepreneurship- EB Excel Books

David H Holt- Entrepreneurship: New Venture Creation- Prentice Hall of India pvt Ltd

Methew J Manimala- Entrepreneurship Theory at the cross road: Paradigms & praxis- Biztantra, NewDelhi

Robert D Hisrich : Entrepreneurship- Mc Graw Hill Companies

Kanishika Bedi- Management & Entrepreneurship- oxford University press.

Vasant Desai-The Dynamics of Entrepreneurial Development and Management-Himalaya publishing House

INTERNATIONAL TOURISM

BTM – 506

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Objectives:

The paper provides a comprehensive view of the tourism trends and patterns at the international level. The trends are to be studied through volume of tourists' arrivals in different regions and their contribution in tourism earnings. The knowledge of the forces and factors responsible for tourism growth is other area of discussion in the paper. Since tourism growth is not uniform in all the regions, the issues like tourism gap or disparities form another key area of knowledge for the students. The paper is primarily based on the statistics available at various websites.

PAPER SETTING: Paper setter should set 9 questions. The examinee should be required to attempt five questions. Question no.1 is compulsory and comprising whole syllabus consisting 7 short answers each carries 2 marks. The remaining 4 questions are to be attempted from the 4 units selecting one question from each unit of 14 marks each.

UNIT – I

Tourism trends at international level: Tourist arrivals and tourism receipts

Factors affecting growth of international tourism

UNIT – II

Regional distribution of International tourism – I:

- Europe: Inbound tourism with special reference to France, Spain, United Kingdom and Italy and their major destinations i.e. Paris, Madrid, London and Rome
- Americas: Inbound tourism with special reference to USA, Canada and Mexico and their major destinations i.e. New York, Washington DC, Niagara Falls, Toronto and Mexico City

UNIT – III

Regional distribution of international tourism – II:

- Africa: Inbound tourism with special reference to Egypt, South Africa and Kenya and their major destinations i.e. Giza, Johannesburg and Nairobi
- East-Asia & Pacific: Inbound tourism with special reference to Australia, China, Japan and Thailand and their main destinations i.e. Sydney, Beijing, Tokyo and Bangkok

UNIT – IV

Role of International organization like UNWTO, PATA, IATA in the development of tourism

Challenges before international tourism

SEMESTER VI

B.T.M.- 601

English Compulsory

Scheme of Examination:

Max. Marks : 100

Theory : 80

Internal Assessment : 20

Time : 3 hours

Prescribed Books.

1. *Macbeth* by William Shakespeare
2. *A Text Book of English Grammar and Composition* edited by S.C.Sharma, Shiv Narain, GulabSingh and Pankaj Sharma.

Instructions to the Paper-Setter and Students:

Q.1 : This question will have *one* extract (with internal choice) for explanation with reference to the context from *Macbeth*. 8 marks

Q.2 : *Six* short answer type questions will be set on *Macbeth*. Students will be required to attempt any *four* (in about 150 words each) out of the given *six* questions. 4x5=20 marks

Q. 3: *One* essay type question (with internal choice) on the play requiring first hand understanding of the text, theme, character and plot. 10 marks

Q.4: The students will be required to attempt *one* essay out of the given *four* topics in about 400 words. The topics may be descriptive, reflective or of general nature. 15marks

Q.5: Translation from Hindi to English of a passage consisting of 12 to 15 sentences on a general topic (In lieu of translation, foreign students will be required to write a paragraph of about 250 words on any *one* of the *three* given topics). 10 marks

Q.6: (a) One word substitution (students will be required to attempt *five* out of *seven*)

5 marks

(b) English in Situations: Students will be required to develop *one* dialogue-based paragraph consisting of about 20 exchanges (with internal choice) on the situations given below: 12 marks

- i) Facing an interview for a job
- ii) Making enquiries
- iii) At a railway platform
- iv) Helping the victims of road accident
- v) Greetings
- vi) At a wedding party
- vii) Opening a bank account
- viii) Inside the examination hall
- ix) Calling the fire brigade
- x) Trying to save a drowning child
- xi) At the time of admission
- xii) Consulting a doctor
- xiii) Dealing with a broker
- xiv) Escorting the chief guest
- xv) At the police station

Suggested Reading:

English in Situations by R.O. Neill (O.U.P.)

Success with English: The Penguin Course Book I by Geoffrey Bronghton (Penguin Books).

What To Say When Ed. Viola Huggins (BBC London)

Fifty Ways to Improve Your Presentation Skills in English by Bob Dignen (Orient Black Swan)

TOURISM ADMINISTRATION IN INDIA

BTM- 602

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

PAPER SETTING: Paper setter should set 9 questions. The examinee should be required to attempt five questions. Question no.1 is compulsory and comprising whole syllabus consisting 7 short answers each carries 2 marks. The remaining 4 questions are to be attempted from the 4 units selecting one question from each unit of 14 marks each.

Unit – I

Role of Government in tourism Regulation and Management

Role of Ministry of Tourism, Government of India in terms of its Organization, Role and Functions

Unit – II

State Tourism Development Corporations and their organization and role in tourism development and promotion with special reference to:

Haryana Tourism Corporation

Rajasthan Tourism Development Corporation

Kerala Tourism Development Corporation

Goa Tourism Development Corporation

Unit – III

India Tourism Development Corporation (ITDC): organization, role and functions: Divisions of ITDC

Hospitality Development and Promotion Board (HDPB): Role and Functions

Role of Tourism Finance Corporation of India in tourism growth

Unit – IV

Tourism Planning in India: Growth and Performance

National Tourism Policy – 2002: Objectives and main features

Problems and challenges of Tourism Administration in India

ECONOMICS OF TOURISM

BTM-603

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Objectives: Tourism is now recognized as an economic activity of global significance. This complex and multi-faceted industry plays an important role in the economics of many developed and less developed countries. The main aim of this course is to give the macroeconomic picture of tourism's role within national economies using the fundamental concepts learned in introductory economics course.

Paper setting: There will be five questions in all and candidates will have to attempt all the five questions. First question will be of 14 marks and shall contain 7 short answer type questions. These questions shall be spread over the whole syllabus. Remaining four questions shall be of 14 marks each and will be set unit wise, where internal option among 2 questions will be given. These questions shall judge both theoretical and applied knowledge of students. Case studies may also be given as questions.

Teaching practices: Class Room lectures, Assignment. Cases, Discussions and Seminars

Unit-I

Introduction to Tourism Economics:

Concepts of economics and their relevance to tourism, Tourism development and national economy-contribution to GDP, Globalization, Liberalization, Privatization and their impacts on Tourism, FDI in Tourism-Trends and Implications

Unit-II

Economics of Tourism Demand:

Nature of demand, Factor influencing tourism demand, economic determinants of Tourism demand, price and income elasticity of tourism demand, trends in tourism demand.

Unit-III

Economics of Tourism supply:

Market Structure and Tourism supply, elasticity of supply, Integration in tourism supply, supply trends

Unit-IV

Economic impacts of Tourism:

Employment and income creation, Tourism Multiplier, Balance of payment, Foreign exchange.

Visible and invisible trade, Cost concept, types of costs, Tourism Taxation

REFERENCES:

- Vanhove, N. (2005), *The Economics of Tourism Destinations*, Oxford: Elsevier Butterworth-Heinemann.
- Bull. A. (1995), *The Economics of Travel and Tourism*, Australia: Longman.
- Ahuja. H.L.,(2006) *Business Economics*, S. Chand & Co. New Delhi.
- T.R.Jain,(2008) *Business Economics*, V.K. Publication, New Delhi.
- Nellis and Parker,(2005), *The essence of Business Economics*, Prentice Hall, New Delhi.

Adventure tourism

BTM 604

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Course Objective; Adventure tourism is a new but popular type of tourism in India. It is very popular among the youth. India has immense potential for most diverse type of adventure activities. Adventure tourisms are basically nature based activities. India has a large variety of geomorphologic and climatic conditions, so India can be a heaven for those tourists who want risk, excitement and thrill. For BTM students Adventure tourism provides a large scope of employment opportunity.

This course helps in understanding the resources potential for adventure tourism in India, existing popular destinations and activities.

Unit –I

Definition, nature and scope of Adventure tourism. Geographical diversities and opportunities for adventure tourism in India.

Unit –II

Land based Adventure activities; Mountaineering, trekking in Himalayan states. Necessary equipment, techniques and problems.

Unit-III

Water based activities- water resources of India; river- lakes and sea water. Rafting, kayaking boating, SCUBA diving and coastal activities.

Unit- IV

Air based activities, hang gliding, ballooning and sky diving. Places, organizations and equipments associated with above activities.

References

1. Ahmad Aizaz : **General Geography of India, NCERT, New Delhi**
2. Goh Cheong long : **An Economic Atlas of India, Oxford University**
3. **National Atlas of India, Govt. of India Publication, Calcutta**
4. **Atlas of World Oxford**

- 5. Singh, R.L.(ed) India : A Regional Geography National Geographical Society of India (Varansi 1989)**
- 6. Manorama Year Book**
7. Indian Year book, Publication Division, Govt. of India, New Delhi
8. Aluwalia H.P.S. and Manfred Garner : Himalayas: A Practical Guide, Himalayan Books (Delhi, 1985)
9. Bedi, Ramesh and Rajesh : Indian Wildlife, Brijbasi Printers (New Delhi, 1989)
10. Bose, S.C. Geography of the Himalayas, National Book trust, India (New Delhi, 1976)
11. Chand Gian and ManoharPuri 'Trekking' International publisher India (new Delhi,1989)
12. Gamma, Karl 'The Handbook of Skiing Pelham Books (London, 1985)
13. Lozawa, Tomoya : Trekking in the Himalayas, Allied published Pvt. Ltd., (New Delhi, 1980)
14. Law, B.C. (ed) : Mountains and Rivers of India, Calcutta, 1968
15. Rowe, Ray 'White in Water Kayaking', Salamander Books (London, 1987)
- 16. Saharia, V.B. "Wildlife in India' Natraj Publisher (Dehradun, 1982)**

TOURIST GUIDING

BTM-605

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Course objective; Tourist escort or guide is one of the essential linkages between tourists and the destination. He is the image maker of the destination/ country. A good escort or guide can make a permanent imprint on the visitors about the place. The students of BTM should know the personality, functions and basic qualifications of a tourist guide and escort so that they can contribute to tourism industry as a tourist escort or a guide if they like. It is a very challenging and interesting job where he meets and interacts with new persons from different parts of the world every day.

Unit-I

Basic requirement of an escort or a guide;

I-Personal grooming, smartness, proper dress sense, hygiene, pleasing personality, hard working.

li-Etiquette- how to welcome a visitor, the traditional style of welcoming in north India.

lii- Knowledge of geography, history, art & culture of the place, latest information about frontier formalities, e.g. passport, VISA, foreign exchange etc.

Unit-II

Communication Skills;

i-Principles of communications, Verbal and non-verbal, personal and organizational, effective communications, communication gaps and barriers.

Audio- visual aids.

ii- Body language

Unit- III

Pre tour preparation; Pre tour research about place, monuments and itinerary, timings of flights& railways.

Bus and cars arrangement at hotels, airports and railway stations. Reconfirmation of ground arrangement. Group arrival and departure. Welcome at airports/ railway station or hotels.

Unit- IV

Role and responsibility; Escort/ guide is the first and last contact with destination. Image maker, His responsibilities. Ethics, helpful attitude. Knowledge of tourism related laws and acts such as passport act, foreigners act, currency regulations, Immigration checks etc.

References; See the references of paper 105, 106, 203, 204,205,402, 403, 405,

Salesmanship in Tourism

BTM-606

Maximum Marks: 100

Internal: 20

External (Theory): 80

Time: 3 Hours

Course Objective The main objective of this course is to acquaint students with the nature of Salesmanship and its application in tourism Industry.

PAPER SETTING: There will be five questions in all and candidates will have to attempt all the five questions. First question will be of 14 marks and shall contain 7 short answer type questions. These questions shall be spread over the whole syllabus. Remaining four questions shall be of 14 marks each and will be set unit wise, where internal option among 2 questions will be given. These questions shall judge both theoretical and applied knowledge of students. Case studies may also be given as questions.

Teaching practices: Class Room lectures, Assignment. Cases, Discussions and Seminars

Unit- I

Sales Management: Concept, Objectives and Functions; Personal Selling: Concept & Importance, Personal Selling process; Theories of selling. Sales Management challenges in tourism.

Unit – II

Sales Planning: Importance, Approaches and Process of Sales Planning; Sales Forecasting; Sales Budgeting, Sales Organization: Purpose, Principles and Process of setting up a Sales Organization; Sales Organization Structures; Organizing for Global Sales, Determining Size of Sales Force.

Unit- III

Managing the Sales Force: Recruitment, Selection, Training, Compensation, Motivation, Territory and Quota Management: Need, Procedure for setting up Sales Territories; Time Management; Sales Quotas: Purpose, Types of Quotas, Administration of Sales Quota.

Unit -IV

Control process: Analysis of Sales Volume, Cost and Profitability; Management of Sales Expenses, Evaluating Sale-Force Performance; Ethical Issues in Sales Management. Role of IT in Sales Management.

Suggested Readings:

1. Spiro, Stanton & Rich (2003), Management of a Sales Force 11th edition. Tata McGraw-Hill:
2. Still, Cundiff & Govoni (2007), Sales Management, 5th edition, Sage publications New Delhi.
3. Tapan k. Panda, Sunil Sahadev (2008), Sales and Distribution Management, Oxford University Press, New Delhi.
4. Tanner, Honeycutt, Erffmeyer (2009), Sales Management, Pearson Education India, New Delhi.
5. S.A.Chunawala (2008), Sales and Distribution Management, Himalaya Publishing House, New Delhi.
6. Gupta, S. L. (2005), Sales and Distribution Management, Excel Books, 1st Edition, New Delhi.
7. David Jobber, Geoff Lancaster (2003), Selling and Sales Management, Pearson Education India, New Delhi.

COURSE STRUCTURE
&
SCHEME OF EXAMINATION
ACCORDING TO SEMESTER SYSTEM

OF
BACHELOR IN TOURISM MANAGEMENT
(BTM)
W.E.F. 2014-15

PG DIPLOMA IN GUIDANCE, COUNSELING AND PSYCHOTHERAPY

Scheme of Examination (From 2018-19)

There shall be three theory papers and one practical-cum-field work of 100 marks each. All the four papers are compulsory.

Paper	Nomenclature	Marks	Time
Paper-I:	GUIDANCE	100	3 Hour
Paper-II:	COUNSELLING PSYCHOLOGY	100	3 Hours
Paper-III:	PSYCHOTHERAPY	100	3 Hours
Paper-IV	(i) PRACTICAL	50	3 Hours
	(ii) FIELD WORK	50	3 Hours

PAPER -I

GUIDANCE

Max. Marks-100
Time: 3 Hours

NOTE- The paper setter shall set TEN questions-TWO questions from each unit. The candidates will have to attempt FIVE in all, selecting ONE from each unit

UNIT I

Guidance - Nature, need, principles, goals and scope of Guidance. Process of Guidance

Types of Guidance-Educational, Vocational and Personal Guidance

UNIT-II

Assessment in Guidance- Formal and Informal techniques.

Nature and types of Psychological tests.

Cognitive and behavioral assessment of children with Special needs

UNIT-III

Adjustment: Meaning, Nature and Determinants.

Adjustment Problems of Children and Adolescents.

Use of Clinical Methods for shaping healthy adjustment.

UNIT- IV

Approaches of Guidance: Individual V/S Group,

Meaning and Nature of Individual and Group Guidance;

Techniques of Group Guidance

UNIT- V

Organisation of Guidance services.

Guidance Personnel-Roles, skills and training

Guidance in classroom for learning and discipline

Recommended books

Anastasi, A. & Urbina, S. (1997). Psychological Testing. New York: Mc Millan.

Bernard, H.W. & Fuller, D.W. (1977). Principles of Guidance. New York: Crowell.

Bhatnagar, A. & Gupta, N. (2001). Guidance and Counselling, Vol. 1, A theoretical Perspective.

New Delhi: Vikas Publishing House.

Bhatnagar, A. & Gupta, N. (2001). Guidance and Counselling, Vol. 2, A Practical Approach.

New Delhi: Vikas Publishing House.

Crow, L. D. & Crow, A. V. B. (1961). Introduction to Guidance: Basic principles and practices.

New Delhi: Eurasia.

Gibson, R. & Mitchell, M. (2005). Introduction to Guidance and Counselling. New Delhi:

Prentice Hall of India.

Pietrofesa, J.J. (1980). Guidance: An introduction. Chicago: Rand Mc Nally.

Shaffer, L.P. and Shoben, E.J. (1986). Psychology of Adjustment: A Dynamic and Experimental

Approach to Personality and Mental Hygiene. Boston:Houghton Mifflin.

Paper-II

COUNSELING PSYCHOLOGY

Max. Marks: 100

Time: 3 Hours

Note: The paper setter shall set TEN questions- TWO questions from each unit. The candidate will have to attempt FIVE questions in all, selecting ONE from each unit.

UNIT-I

Introduction to counseling: Meaning, Goals and Objectives of counseling. Basic assumptions and principles of counseling.

UNIT-II

Role, Characteristics and training of counselor. Counseling skills: Listening, Reflecting, Summarizing, Confronting, Interpreting and Informing skills. Ethical issues in counseling.

UNIT-III

Components of Counseling Practice: Conduction of first session, developing communication and attending skills, Rapport/Relationship building, Assessing client problems, Process and outcome goals, Termination and Follow-up.

UNIT-IV

Counseling Approaches & Techniques- Directive, Non-Directive and Eclectic Counseling. Case study, Counseling interview, Sensitivity training, Transactional analysis, Psychodrama.

UNIT-V

Special areas of counseling: Counseling for children with emotional disturbance and learning disability; Exceptional children, Marital counseling Occupational counseling, Counseling patients with terminal disease/chronic illness – HIV/AIDS, cancer patients and their caretakers, Counseling drug addicts and alcoholics.

Recommended Books:

- Clough, P. Pardeck, J.T. & Yuen, F. (Eds) (2005). Handbook of emotional and behavioural Difficulties.
- Mozdzierz, G.J., Peluso, P.R. & Lisiecki, J. (2009). Principles of Counseling and Psychotherapy. New York: Routledge.
- Cormier, L.S. and Hackney, H. (1993). The Professional Counsellor. Englewood Cliffs, N.J: Prentice Hall.
- Woolfe, R. and Dryden, W. (1996). Handbook of Counselling. London: Sage Publications.
- Bender, W.N. (1995). Identification and Teaching Strategies for Learning Disabilities. New York: Allyn Bacon.
- Dryden, W. (1995). Key Issues for Counselling in Action. London: Sage Publications.
- Sharry, J. (2006). Counselling Children, Adolescents and Families: A Strength Based Approach. New York: Sage Publishers.
- George, R.L. Cristiani, T.S. (1990). Counselling: Theory and Practice. New Jersey: Prentice Hall (3rd edition).
- Peterson, J.V. and Nishenholz, B. (1999). Orientation to Counselling, New York: Allyn & Bacon.

Paper-III

PSYCHOTHERAPY

Max. Marks: 100

Time: 3 Hours

Note: The paper setter shall set TEN questions- TWO questions from each unit. The candidate will have to attempt FIVE questions in all, selecting ONE from each unit.

UNIT-I

Psychopathology: Meaning, Criteria, Approaches: Psychodynamic, Behaviouristic, and Humanistic and Existential.

Classification of Mental Disorders: ICD & DSM Systems.

UNIT-II

Psychotherapy: Definition, Objectives, ethical issues. Significant variables in Psychotherapy Training of Psychotherapist, Clinical Formulation.

Therapeutic Relationship: Client and Therapist characteristics, Factors Influencing Relationship.

UNIT-III

Taking History and Mental status examination.

Behaviour Therapies: Origin, Foundations and Principles; Behavioural Assessment. Desensitization- Extinction, Skill Training, Operant Procedures and Aversion.

UNIT-IV

Cognitive Therapies: Introduction to cognitive Model (Beck and Ellis), Basic Principles and Assumptions, Cognitive Behaviour Therapy, Rational Emotive Behaviour Therapy, Cognitive Restructuring, Gestalt Therapy

UNIT-V

Systemic Therapies: Origin, Theoretical Models and Techniques with respect to Family therapy, Marital Therapy, and Group therapy.

Recommended Books:

- Bellack, A.S., & Hersen, M. (2000). *Comprehensive Clinical Psychology (Vol. 5 & 6)*, New York: Elsevier Science Ltd.
- Gelder, M., Cowen, P., & Harrison, P. (2005). *Shorter Textbook of Psychiatry*, London: Oxford Press.
- Carson, R.C., Butcher, J.N., & Mineka, S. (2000). *Abnormal Psychology and Modern Life*, Delhi: Pearson Education.
- Wolberg, L.R. (1988). *The Techniques of Psychotherapy (Vol. I & II)*. London: Jason Aronson Inc.
- Hamilton, M. (1985). *Fish's Clinical Psychopathology: Signs and Symptoms in Psychiatry*, Bombay: Varghese Publishing House.
- Masters, J.C., Burish, T.G., Hollon, S.D., & Rimm, D.C. (1987). *Behaviour Therapy: Techniques and Empirical Findings*, Florida: Harcourt Brace & Company.
- Hawton, K., Salkovskis, P.M., Kirk, J., & Clark, D.M. (2004). *Cognitive Behaviour Therapy for Psychiatric Problems: A Practical Guide*. New York: Oxford University Press.

Paper-IV (i): Practical (Diagnostic Assessment Techniques)

Max. Marks: 50

Time: 3 Hours

Note: Any 8 practicals out of the following are to be conducted and reported during the course. One practical will be allotted to a candidate during the examination and evaluation will be based on Practical Note Book, Performance during practical examination and viva-voce.

N.B.: A series of lectures will be delivered on Diagnostic Testing to acquaint the students with: Nature of Psychological Tests, their functions, Psychometric Properties- Reliability, Validity Norms; Ethical Issues.

1. Clinical Analysis Questionnaire.
2. NEO PI- R
3. IPAT- ASQ
4. Interest Inventory
5. Beck Depression Inventory
6. WAIS-R
7. Wechsler Memory Scale
8. Rorschach Inkblot
9. AIIMS Neuropsychological Assessment Battery
10. Adjustment Inventory
11. Stress Inventory
12. Clinical Rating Scales- Autism, ADHD.
13. D.A.T.B

Paper-IV (ii) Field Work

Max. Marks: 50

Field Work

To provide hands on experience in acquiring the necessary skill and competency in selecting, administering, scoring, and interpreting psychological tests and treating the individuals suffering from Psychological problems, the candidates need to engage themselves in active training under supervision.

Submission of Psychodiagnostic and Psychotherapy records.

- Four full-length Psychodiagnostic records to be prepared and submitted by the candidate. The records should include a detail clinical history and a discussion on a) rationale for testing b) areas to be investigated c) tests administered (d) test findings and e) Impression.

- Four full-length counseling and Psychotherapy records to be prepared and submitted by the candidate. The records should include a) reasons for interventions (b) short-term and long term objectives (c) type and techniques of intervention used with rationale d) Process of therapy (e) changes occurred during therapy and (e) final outcome.