

13. ENVIRONMENTAL SCIENCE

B.Sc. Part III

Scheme:
Theory

| | | |
|----------------|------------------|---------------------------------|
| Max Marks: 100 | | Min. Marks:36 |
| Paper 1 | 3 hours duration | Max Marks:50 |
| Paper 2 | 3 hours duration | Max Marks:50 |
| Practical | 4 hours duration | Min. Marks:18 Max Marks:50 |

Note:

1. Two types of Question papers for each theory paper will be applicable. Total duration of 3 hours for each paper. One question paper will comprise of the objective questions and the other will be of descriptive type question.
2. Descriptive type question paper (to be given during 1st 2 hours of examination) will have 9 questions, 3 from each section out of which a student is supposed to attempt 4 questions selection at least 1 from each section. This portion of the paper will carry maximum 30 marks. Each descriptive question will be of 7.5 marks.
3. The objective question paper will be given after 2 hours of commencement of descriptive type paper and will have 35 questions of the objective type. This portion of the paper will carry 20 marks. The objective type questions will be of the following types:
 - Multiple choice type questions :20 questions of ½ marks each.
 - Fill in the blanks/one word/true or false type questions:10 questions of ½ mark each.
 - Very short answer type questions:5 questions of 1 mark each

Paper –I Environmental Management and Planning

Section –A

1. Air Pollution Abatement; Study of metrological parameters.
2. Vertical motion of air, and atmospheric stability;
3. Wind direction, frequency, and lapse rates.
4. Temperature inversion
5. Dispersal of pollutants in the air
6. Air pollution with respect to distance from source of emissions of pollutants

Section-B

1. Types of pollutant sampling and measurement.
2. Ambient air sampling
3. Collection of Gaseous air pollutants
4. Collection of particulate pollutants
5. Stack sampling
6. Analysis of air pollutants, SO_x, NO_x, CO₂, CO and SPM.

Section-C

1. Control methods; source correction method
2. Cleaning of Gaseous effluents
3. Air pollution control equipments, Gravitational settling chambers, cyclone separators, Fabric filters, Electrostatic precipitators, wet samplers.
4. Control of gaseous air pollutants; SO_x
5. Control of gaseous air pollutants; NO_x and CO

Suggested Readings:

- ❖ Baldwin, J.H.1985.Environmental Planning and Management. International Book Distribution, Dehradun
- ❖ Bandhu, D. and Ramnath, N.L.1982.Education for Environmental Planning and observation. Natraj publishers, Dehradun.
- ❖ Cornwell, D.A and Davis, M.L.2000.Introduction to Environmental Engineering. McGraw Hill. International Edition.
- ❖ De Nevers, N.L.2000.Pollution Control Engineering. McGraw Hill. International Edition.Mexico.
- ❖ Environmental Management and Planning
- ❖ Liu, D.H.F. and Liptak, B.G.2000.Air Pollution. Lewis Publishers. Washington, D.C.
- ❖ Mohan, I, 1989.Environmental pollution and Management, Ashish Publishing House, New Delhi.

- ❖ Pillai, K.M.1987, Water Management and Planning. Himalaya Publishing House, New Delhi.
- ❖ Reible, D.D.1998.Fundamentals of Environmental Engineering. Lewis Publishers. Washington, D.C.
- ❖ Sapru, R.K.1990.Environmental planning and Management in India. Ashish Publishing House, New Delhi.
- ❖ Singh, P.1985.Environmental pollution and Management .ChughPublications,Allahbad

Paper-II Environmental Impact Assessment and Sustainable Development

Section-A

1. Basic Concepts of Sustainable Development
2. Sustainable Industrialization.
3. Sustainable Agriculture
4. Sustainable Tourism
5. Sustainable Mining
6. Sustainable Transportation and Sustainable housing
7. Environmental awareness Programs
8. Role of National and International Organizations in Conservation of Environment
9. Role of Media in Environmental Conservation
10. Significance of International Conference on Human Environment, Stockholm, 1972; Earth Summit, Rio de Janerio, 1992; EarthSummit – II, Johannesburg, 2002; Earth Summit-III-2012.

Section-B

1. Environmental Impact Assessment, Processes in different developing and Developed Countries.
2. Environmental Impact Assessment: Methods; Adhoc, Simple Checklists, Overlays, Matrices, Networks.
3. Environmental Economics
4. Environmental Management Systems (EMS)
5. Environmental Policy of India
6. Environmental policy of Rajasthan.

Section-C

1. Concept of Environmental Audit
2. Setting up of an Audit programme.
3. Environmental Audit process.
4. Benefits of Environmental audit
5. Various methods of Environmental audit
6. Environmental Laws- Indian Forest Act, 1927, (The air prevention and control of pollution) Act, 1981, The Water (prevention and control of pollution) Act, 1974, The Wildlife Protection Act, 1972, Forest Conservation Act, 1980, The Environmental (Protection) Act, 1986, The Biodiversity Act, 2002.

Suggested Readings:

- ❖ Canter, L.W. 1997. Environmental Impact Assessment. McGraw Hill, New York
- ❖ Clarck, B.D., Biset, R. and Wathern, P. 1980. Environmental Impact Assessment, Mansell, London.
- ❖ Davies, G.S. and Mueller, F.G. 1983. A handbook on Environmental Impact Assessment for use in developing countries. UNEP, Nairobi. WCESD. 1987. Our Common Future oxford university press. Oxford U.K. Archibugi, F and Nijkamp. P. 1989. Economy and Ecology; Towards Sustainable Development. Kluwer Academic Publishers. London.
- ❖ Shashtri, S., Bakre, P.P. and Khan, T.I. 1996. Industry, Environment and Law, RBSA publishers, Jaipur
- ❖ Wathersn, P. 1998. Environmental Impact Assessment Theory and Practice. Unwin Hyman. London.

Suggested field and laboratory exercises :

It will be divisible into two parts:

Part A – 25 Marks – Field Report

Part B – 25 Marks – Experiments

Part – A: A candidate is supposed to write a field reports on some environmental problems based upon his/her personal observation. It may be a case study of river, mining, deforestation, and desertification, suffering of human beings due to local environmental pollution, textile or some other Industries. Report is to be written on the basis of analysis carried out in laboratories and personal observations. A presentation will be made on the day of practical examination.

Part- B: Industrial Pollution based experiments:

1. Estimation of SPM around Industries.
2. Estimation of SO_x around
3. Estimation of NO_x
4. Estimation of CO and CO₂.
5. Impact of air pollutants from Industries on Soil.
6. Impact of air pollutants from Industries on vegetation.

TEXTILE CRAFT

B.Sc. Part III

SCHEME: BA/B.Com PART-III

| | | Duration | Max mark | Min mark |
|----------------|-----------|----------|----------|----------|
| 1. Theory: | Paper-I | 3Hrs | 30 | |
| | Paper -II | 3Hrs | 30 | 22 |
| 2. Practical: | Paper -I | 3Hrs | 35 | |
| | Paper-II | 3Hrs | 35 | 25 |
| 3. Submission: | Paper -I | | 35 | |
| | Paper-II | | 35 | 25 |

Paper-I : Weaving Theory II

UNIT-I


1. Types of Spinning: Mechanical and Chemical
Mechanical spinning process: picking, ginning, combing/carding, drawing etc. Types of chemical spinning-melt spinning, dry spinning and wet spinning.
2. Types of Yarns: Simple and Fancy
Simple yarn: single and double/plied/folded yarn
3. Calculation of resultant count for folded yarn

UNIT-II

1. Manmade and Synthetic fibres
Man-made fibres: Basic methods of producing rayon fibre, Different types of man-made fibres
Synthetic fibres: Different types of synthetic/chemical fibre, method of their production, properties of polyester fibre, nylon fibre, glass fibre.
2. Silk and Wool
Production, spinning, properties and uses of silk, different types of silk
Classification of wool, wool spinning process, difference between woollen and worsted fabric
3. Concept of Mixing and Blending, Basic difference between mixing and blending.
Concept of Staple and Filament fibre; difference between staple fibre and filament fibre

UNIT-III

- 1 Derivatives of Twill weave: Broken weave, Herringbone weave and Diamond weave
- 2 Towel weaves: Huckaback and Honeycomb; quality of yarn and weave selected for towels
- 3 Concept of shedding mechanism; Dobby and Jacquard shedding mechanism


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Paper-II: Dyeing Theory II

UNIT-I

1. Dye molecule; Concept and Importance of Chromophores and Auxochrome in a dye
2. Objectives of Fabric finishes; different mechanical and chemical fabric finishes; Determinants of finishes
3. Different types of natural and synthetic dyes.

UNIT-II

4. Method of direct printing: Screen printing; colour preparation and screen preparation
5. Discharge and Resist printing; different styles of discharge and resist printing
6. Factors affecting colour fastness: composition of fibre, chemical structure of dye, techniques of dyeing/printing, addition of other useful additives

UNIT-III

7. Importance of fabric finishes
8. Different types of chemical finishes- crease resistant finish, water proof finish, fire proof finish, moth proofing finish and absorbency finish.
9. Determinants of fabric finishes.

Practical (Paper-I)

1. Concept of yarn twist(S twist and Z twist) and plied yarn(single and double yarn)
2. Calculation of Ends and Picks per inch in given piece of fabric
3. Towel weaves preparation using paper strips

Practical (Paper-II)

1. Screen preparation (simple tracing method)
2. Table cover preparation by screen printing

Submission (paper-I)

1. Assessment of yarn and fabric samples
2. Assessment of weave samples

Submission (paper-II)

1. Assessment of samples
2. Any one article using screen printing

Practical Examination Scheme:

Major Problem: 20 Marks

Minor Problem: 15 Marks


Reference books:

Booth, J.E. (1996) Principles of Textile Testing, 1st edition, CBS publishers & distributors PVT.Ltd. New delhi

Sahnai, V.A. (1980) Technology of Dyeing, Sevak publications. Mumbai

Sahnai, V.A. (1979) Technology of printing, Sevak publications. Mumbai

Sahnai, V.A. (1999) Technology of finishing, Sevak publications. Mumbai


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GARMENT PRODUCTION & EXPORT MANAGEMENT

B.Sc. Part III

PAPER – 1 : APPAREL TECHNOLOGY

B.A./B.Com. – M.M 40

B.Sc.- M.M. 50

Hrs. – 3

OBJECTIVES:


1. To create awareness on the basics of Fashion
2. To study the psychological effects of clothing on the individual in social situation.
3. To develop understanding of manufacturing technology of the garment Industry.
4. To understand the fundamental concepts of dyeing and printing.

SECTION-A : INTRODCUTION TO FASHION

1. Fashion terminology, sources of fashion, factors influencing fashion.
2. Fashion forecasting and fashion cycle.
3. India and international fashion designers (five each).
4. Sociological and psychological significance of clothing.

SECTION-B : MANUFACTURING TECHNOLOGY

5. Product development, design development, developing a sample garment.
6. Apparel production
 - I. Costing a garment
 - II. Purchasing pattern making
 - III. Production scheduling
 - IV. Spreading and cutting procedure
 - V. Contracting
 - VI. Garment assembly
7. Introduction to industrial machines-
 - I. cutting : round , straight and band
 - II. fusing: collars, facing
 - III. sewing: chain stitch, lock stitch, button hole, blind stitching
8. Use of components and trims –
 - (i) Performance and properties of components and trims.
 - (ii) labels and motifs
 - (iii) linings and interlinings
 - (iv) face, braids, elastics
 - (v) fasteners; loops
 - (vi) seam binding and tapes
 - (vii) shoulder pads, eyelets


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SECTION –C : DYEING AND PRINTING

Application of design:

7. i. Printing methods – block, screen, stencil, roller.
- ii. Styles of printing – direct, discharge and resist.
8. Dyeing – introduction to natural and synthetic dyes (acid, basic, sulphur, vat, reactive and direct dyes)
9. Stages of dyeing : Fiber, yarn and fabric

References:

1. Rouse Blizabeth, 1999, Understanding Fashion, Blackwell science.
2. Carr Harold and John pomerory, 1996. Fashion design and product development. Blackwell science.
3. Jain Ruby and Rathore Girja, Design, Fashion and Garment Production, CBH publication Jaipur 2019.

PAPER- II : INTERNATIONAL MARKETING

B.A./ B.Com.- M.M. 40

B.Sc. – M.M. 50

Hrs. -3

OBJECTIVES:

1. To study the importance of marketing to the global economy
2. To develop insight into the development of marketing strategies for international markets
3. To Identify business opportunities in an international business environment

SECTION –A

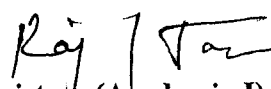
1. International Marketing: nature and scope of international marketing.
2. International marketing v/s domestic marketing.
3. Importance of international marketing.
4. Problems and challenges of international marketing.
5. Selection of agents.

SECTION – B

6. Identification of markets for readymade garments.
7. Market entry conditions.
8. Channels of distribution.
9. Direct and indirect export
10. Trade fair and Exhibitions.

SECTION – C

11. Pricing, role of price and non price factors, factors influencing pricing, price quotation, information needed for export pricing.
12. Role of trading and export houses.


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13. Institutional segments and packaging for exports: packing material, boxing and pressing department, machinery and equipments used in packaging department.
14. Quality control
15. Labeling and consumer protection meaning and its role.

References :

1. R. K. Kothari, B. S. Rathore, P. C. Jain (2009) International Marketing (2009) 1st ed. Ramesh Book Depot, Jaipur, New Delhi
2. R. Kothari and P. C Jain (2009) International Management 1st ed. Ramesh Book Depot, Jaipur, New Delhi
3. M. J. Methew International Marketing (Procedures and practices) 1st ed. RBSA publishers, Jaipur

PRACTICAL – 1 : APPAREL PRODUCTION

B.A/B.Com.-M.M.60

B.Sc.-M.M. 25

Hrs.- 4

OBJECTIVES :

1. To develop basic adult drafts of bodice, sleeve and collar.
2. To develop various patterns of textile techniques
3. Guidance for preparation of portfolio

CONTENT

1. Prepare an adult's bodice and sleeve block.
2. Sketching and designing of men/women garments (5 each)
3. To prepare with specific details of necklines and sari blouses. (20)
4. To identify patterns and its application for women designer dress on fashion figures:
5. Types of patterns include –
 - I. Structural
 - II. Geometrical
 - III. Stripes and plaids
 - IV. Floral
6. Design and prepare an adult dress for fashion shows.

Examination Scheme:

B.A.\B.Com. -Max Marks:-60

1.Major Problems :-30

2.Minor Problems:-20

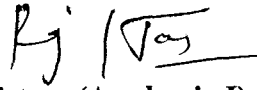
Internal :-10

B.Sc:-Max Marks:-25

1.Major Problems :-10

2.Minor Problems:-10

Internal :-5


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PRACTICAL – II : DYEING AND PRINTING

B.A./B.Com.-M.M. 60

B.Sc.- M.M. 25

Hrs.- 4

OBJECTIVES:

1. To learn the various types of skills in dyeing
2. To develop various textile printing techniques
3. Guidance of practical knowledge of export houses

Contents

1. Prepare and article of each: Tie and dye, stencil printing, block printing and batik
2. Field trips to Export houses and mass production centers.
3. Exhibition ;

References:

1. Bhargava, Ritu, 2005, fashion illustration and rendering, Jain Publications Pvt. Ltd. New Delhi.
2. Ireland, fashion designing drawing and presentation.
3. Prayag: Technology of textile printing.
4. Shenai: Technology of dyeing

Examination Scheme :

B.A.\B.COM:-Max Marks:-60

1.Major Problems :-30

2.Minor Problems:-20

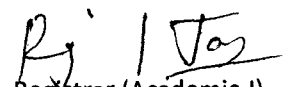
Internal :-10

B.SC:-Max Marks:-25

1.Major Problems :-10

2.Minor Problems:-10

Internal :-5


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3

Geology and Mining.

Scheme:

| | | |
|--|----------------|------------------------|
| Theory: | Max Marks 100 | Minimum Pass marks: 36 |
| Paper I: Mineral Resources | 3 hrs duration | Max Marks 50 |
| Paper II: Mineral Exploration & Mining Geology | 3 hrs duration | Max Marks 50 |
| Practical (one) | 4 hrs duration | Max Marks 50 |

Paper I: Mineral Resources

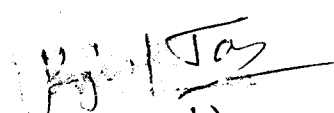
Note: The paper will contain nine questions, having three questions in each section. Candidates are required to attempt five questions in all, selecting at least one question from each section.

Section -A

Economic Geology: Definition; Magma and its relationship with mineral deposits. Ore and gangue minerals. Processes of Mineral formation: Magmatic, Hydrothermal, Contact metasomatic, Evaporation, Oxidation and supergene enrichment, Sedimentation.

Section -B

Classification of mineral deposits: outline of Lindgren's and Bateman's classification, Important ores, Composition physical properties, mode of occurrence, association, origin, distribution in India & uses of the following metals: copper, lead, iron, manganese, and aluminum.


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Section -C

Important industrial minerals: Mode of occurrence, Physical properties, chemical composition and distribution in India-Refractory, Abrasives, Ceramics, cement and Fertilizers.

Coal, petroleum and radioactive minerals: their occurrences & distribution in India and origin.

Paper II: Mineral Exploration & Mining Geology

- Note: The paper will contain nine questions having three questions in each section. Candidates are required to attempt five questions in all, selecting at least one question from each section.

Section-A

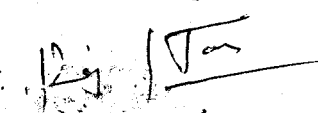
Ore reserves and resources: definition and outline of classification of mineral reserves and resources. Methods of ore reserve estimation; concept of sampling, Assaying, bore hole drilling

Section-B

- Outline of geophysical and geochemical exploration. Explosives: types, storage and precautions in handling of explosives; blasting: various patterns of blast holes and methods of their charging and blasting.

Section-C

Elements of mining: Factors controlling selection of open cast and underground mining. Alluvial and opencast Mining methods. Underground mining methods


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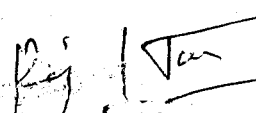
with special referees to sub -level stoping Coal mining methods: room and pillar method, long wall method.

Practical

Systematic study, identification, description, mode of occurrence and uses of the following minerals: haematite, magnetite, limonite, siderite, pyrite, pyrrhotite, pyrolusite, Psilomelane, chromite, ilmenite, wolframite, chalcopyrite, cuprite, malachite, galena, sphalerite, magnesite, bauxite, realgar, orpiment, stibnite, cinnabar, asbestos, graphite and other important industrial minerals.

In an outline map of India plotting of occurrence of important ore minerals
Plane table and prismatic compass survey

Geological field work and collection of samples. Visit of at least one open cast mine.


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4.

BIO-TECHNOLOGY

14. Bio Technology

Paper – I : Animal Cell Biotechnology & Environmental Biotechnology
Max. Marks–50

Section – A

General metabolism

Special secondary metabolites/products (Insulin, Growth hormone, Interferon, plasminogen activator, factor VIII etc.)

Expressing cloned proteins in animal cells. Over production and processing of chosen protein.

The need to express in animal cells

Production of vaccines in animal cells

Production of monoclonal antibodies

Growth factors promoting proliferation of animal cells (EGF, FGF, PDGF, IL-1 IL-2, NGF, erythropietin etc.)

Bioreactors for large-scale culture of cells.

Transplanting cultures cells.

Section – B

Renewable and no-renewable resources

What is renewable should be bioassimilable/biodegradable

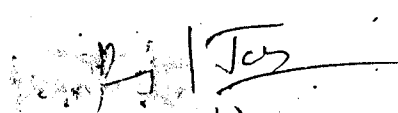
Major consumer items: Food, fuel and fibres

Conventional fuels and their environmental impacts;

- Firewood
- Plant and animal
- Coal
- Gas
- Animal oils

Modern fuels and their environmental impacts:

- Methogenic bacteria and biogas
- Microbial hydrogen production
- Conversion of sugars to ethanol. The gasohol experiment.
- Solar energy converters—Hopes from the photosynthetic pigments


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Syllabus : B.Sc. Part III

- Plant based petroleum industry?
- Cellulose degradation for combustible fuel

Section - C

Biotechnological inputs in producing good quality natural fibres
Transgenic sheep and transgenic plants
Microbiological quality of food and water
Treatment of municipal waste and industries effluents
Degradation of pesticides and other toxic chemicals by microorganisms
Thuringiensis toxin as a natural pesticide
Biological control of other insects swarming the agricultural fields
Enrichment of ores by microorganisms
Biofertilizers, Nitrogen fixing microorganisms enrich the soil with assimilable nitrogen.

Paper—II : Plant Biotechnology

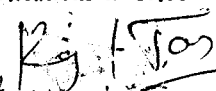
Max.Marks—50

Section—A

Introduction to in vitro methods. Terms and definitions. Use of growth regulators.
Beginning in-vitro cultures in our country (Over and ovule culture, in vitro-pollination and fertilization.
Embryo culture, embryo rescue after wide hybridization and its applications
Introduction to the processes of embryogenesis and organogenesis and their practical applications.
Clonal multiplication of lite species (Micropropagation) axillary bud, shoot-tip and meristem culture.

Section -B

Haploids and their applications, Somaclonal variations and applications (Treasure your exceptions).
Endosperm culture and production of triploids.
Practical applications of tissue and organ culture (summarizing the practical applications of all above mentioned techniques).
Single-cell suspension cultures and their applications in selec-


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85

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tion of variants/mutants with or without nutagen treatment (of haploid culture preferably).

Introduction to protoplast isolation: Principles and applications.

Testing of viability of isolated protoplasts.

Various steps in the regeneration of protoplasts.

Somatic hybridization-an introduction.

Section -C

Various methods for fusing protoplasts. Chemical, electrical.

Use of markers for selection of hybrid cells.

Practical applications of somatic hybridization (hybrids vs cybrids)

Use of plant cell, protoplasts and tissue culture for genetic manipulation of plants. Introduction to *A. tumefaciens*.

Tumor formation on plants using *A. tumefaciens* (Monocots vs Dicots).

Root-formation using *A. rhizogenes*.

Practical application of genetic transformation.

Practical-Based on theory syllabus

Max.Marks-50


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