ENVIRONMENTAL SCIENCE
ENV - 101: Environmental Geosciences (Old) (2008 Pattern) (Semester - I)

Time : 3 Hours] [Max. Marks : 80

Instructions to the candidates:
1) Answer to the two section’s should be written in separate books.
2) Neat diagram must be drawn wherever necessary.
3) All questions carry equal marks.
4) All questions are compulsory.

SECTION - I

Q1) Attempt any two from the following.
   a) What is albedo? Explain the heat budget of atmosphere.
   b) What is wind? Discuss the model of general circulation.
   c) Explain dry and wet adiabatic lapse rate in detail.

Q2) Write any two from the following.
   a) What is pressure? Comment on relationship between wind & pressure.
   b) Define terrestrial radiation? Write a note on electromagnetic spectrum in detail.
   c) Explain basic types of rock in detail.

Q3) Write any two from the following.
   a) What is atmosphere? Explain detail structure of atmosphere.
   b) Define global warming. Discuss the impact of global warming on environment.
   c) Explain various effects of trace metals on human health.

Q4) Write short notes on any two.
   a) Atmospheric disturbances.
   b) Jet stream.
   c) Global warming potential.

P.T.O.
SECTION - II

Q5) Attempt any two from the following.
   a) Explain Geological evolution of earth in detail.
   b) Write a brief note on soil profile.
   c) Explain temperature inversion phenomenon in detail.

Q6) Write any two of the following.
   a) What is land use? Comment on diseases induced by human use of land.
   b) What is hydrological cycle? Explain the factor’s influencing the surface water.
   c) Give detail composition of sea water.

Q7) Write any two of the following.
   a) What is weathering? Explain the types of weathering in detail.
   b) What are trace elements? Give its classification in detail.
   c) Give an account on Global water balance.

Q8) Write short notes on any two.
   a) Soils of India.
   b) Geological hazards.
   c) Mobility of trace metals.
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 102: Environmental Chemistry
(2008 Pattern) (Semester - I)

Time: 3 Hours

Instructions to the candidates:
1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) Figures to the right indicate full marks.
4) All questions carry equal marks.
5) All questions are compulsory.

SECTION - A

Q1) Solve any two from the following:
   a) Explain the sulphur cycle with neat labelled diagram.
   b) Define solute, solvent solution.
   c) What are factors that influence mutation.

Q2) Answer any two from the following:
   a) Narrate the types and functions of RNA in living cells.
   b) Explain the role of water as supporter of life.
   c) Describe the microbial degradation of polymer.

Q3) Answer any two from the following:
   a) Briefly explain the carcinogenic effects of organic compounds.
   b) Classify the pesticide. Add note on DDT.
   c) How the plastic biodegrade in environment.

P.T.O.
Q4) Write short notes on any two:
   a) Cationic detergents
   b) Photo sensitize additives.
   c) Properties of water.

SECTION - B

Q5) Solve any two from the following:
   a) What are the merits of isotope dilution methods.
   b) Write the significance of detectors in HPLC.
   c) Explain in brief carbon cycle.

Q6) Solve any two from the following:
   a) What are the limitations of colorimetric analysis.
   b) Write principle and functions of polarography.
   c) What are merits of spectroscopy.

Q7) Solve any two from the following:
   a) What are the factors responsible for solubility of gases.
   b) Sketch a neat labelled diagram of AAS.
   c) Explain the principle of Gibb’s energy with suitable examples.

Q8) Write short notes on any two:
   a) Acid-base Reaction.
   b) Afla toxins.
   c) Hallow cathod lamp.
P1661

[5130]-13

M.Sc.

ENVIRONMENTAL SCIENCE

ENV - 103 : Environmental Biology

(2008 Pattern) (Semester - I) (Old)

Time : 3 Hours]  [Max. Marks : 80

Instructions to the candidates:

1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) All questions carry equal marks.
4) All questions are compulsory.

SECTION - I

Q1) Attempt any two of the following:

a) Explain energy flow in ecosystem with suitable diagram.

b) Discuss important applications of environmental microbiology.

c) Which are the environmental factors that influence population growth.

Q2) Attempt any two of the following:

a) What are wetlands? Discuss various ecological functions of them.

b) What are biomes? Explain the species diversity of marine biome.

c) Write an account on biodiversity of India.

Q3) Attempt any two of the following:

a) What is meant by community ecology? Explain interspecific interactions among the species.

b) Write an account on development and evolution of ecosystems.

c) Discuss the factors influencing cultivation and growth of microorganisms.

P.T.O.
**Q4)** Write short notes on any two of the following:

a) Ecotone and Edge Effect.

b) Vegetation types in India.

c) Classification of Biomes.

**SECTION - II**

**Q5)** Attempt any two of the following:

a) Which are the conservation issues associated with wetlands in India?

b) Write an account on current ecological status of forests in India.

c) Explain the role of local communities in wildlife management.

**Q6)** Attempt any two of the following:

a) Which are the factors that influence wildlife management?

b) Discuss the salient features of national forest policy.

c) What are the applications of environmental biotechnology in conservation of species?

**Q7)** Attempt any two of the following:

a) What are the threatened species categories of IUCN?

b) What are the adaptations of aquatic life in marine environment?

c) Write an account on important projects run for conservation of wildlife in India.

**Q8)** Write short notes on any two of the following:

a) Red data book.

b) Convention on Biodiversity.

c) Protected Areas Network in India.

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[5130]-13  2
P1662 [5130]-14
M.Sc.-I
ENVIRONMENTAL SCIENCE
ENV-104: Statistical and Research Methods
(2008 Pattern) (Old) (Semester-I)

Time : 3 Hours] [Max. Marks : 80

Instructions to the candidates:
1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) All questions carry equal marks.
4) Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.

SECTION-I

Q1) Solve any two from the following: [20]

a) Calculate arithmetic mean and mode for the following data:

<table>
<thead>
<tr>
<th>class</th>
<th>0-10</th>
<th>10-20</th>
<th>20-30</th>
<th>30-40</th>
<th>40-50</th>
<th>50-60</th>
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<td>5</td>
<td>10</td>
<td>25</td>
<td>30</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

b) Write short note on:
   i) Types of random sampling.
   ii) Histogram.

c) What is dispersion? Discuss method of calculation for standard deviation.

Q2) Solve any two from the following: [20]

a) Calculate regression coefficient.

<table>
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<tr>
<th>X</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
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<tbody>
<tr>
<td>Y</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>4</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

b) Define Kurtosis, Discuss types of Kurtosis with suitable sketch.

c) Calculate variance for following frequency distribution:

<table>
<thead>
<tr>
<th>class</th>
<th>51-55</th>
<th>56-60</th>
<th>61-65</th>
<th>66-70</th>
<th>71-75</th>
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<td>10</td>
<td>7</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

P.T.O.
### SECTION-II

**Q3)** Solve *any two* from the following: [20]

a) Discuss properties of Normal distribution. Add a note on probability mass function of poisson distribution.

b) What is time series analysis? Add a note on its application in Environmental science.

c) What is computer based models? Explain any model used for population studies.

**Q4)** Solve *any two* from the following: [20]

a) Discuss chi-square test for goodness of fit.

b) Explain the method of calculation for two way ANOVA.

c) Write the meaning of following terms:
   i) Type I error
   ii) Alternate Hypothesis.
   iii) Mutually exclusive event.
   iv) Parameter.
   v) Level of significance

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P1663 [5130]-21

M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 201: Environmental Economics
(2008 Pattern) (Semester - II)

Time: 3 Hours
Max. Marks: 80

Instructions to the candidates:

1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) All questions carry equal marks.
4) All questions are compulsory.

SECTION - I

Q1) Answer any two of the following.
   a) What is market failure? Discuss its effect on economy.
   b) How interlinkage between environment and economy protect the environment?
   c) What is social-cost? How it affect the quality of environment? Explain.

Q2) Attempt any two of the following.
   a) What is economic instrument? How to protect the environment?
   b) “Incentives and subsidies are obstacle in protection of environment”. Justify the statement.
   c) What are methods of valuation of resources? Explain.

Q3) Answer any two of the following.
   a) “Cost benefit analysis is a tool to understand the development”. Comment the statement.
   b) Write an essay on renewable resources.
   c) “Only environmental policies not sufficient to protect the environment”. Discuss.

P.T.O.
Q4) Write short notes (any two).
   a) Economic instrument.
   b) Foundation of Environmental Economics.
   c) Resources and economy.

SECTION - II

Q5) Attempt any two from the following.
   a) What are the merits & demerits of non renewable resources?
   b) Explain the components included in strategic planning of sustainable resource use.
   c) Explain the term sustainability indicators & elaborate their significance in policy instrument.

Q6) Justify the statement (any two).
   a) Adaptive changes are significant in combating climate change.
   b) Environmental quality matters for Foreign investment.
   c) Carbon treading is effective tool for environmental management.

Q7) Attempt any two of the following.
   a) Explain the term cost benefit analysis & comment on its utilities used to identify social cost.
   b) Why the non renewable resources programme are promoted in India.
   c) What are the different impacts of population migration.

Q8) Write note on (any two)
   a) UNEP.
   b) Micro Level Planning.
   c) Global warming.
M.Sc.
ENVIRONMENTAL SCIENCE
ENV-202: Water and Waste Water Engineering
(2008 Pattern) (Semester - II)

Time : 3 Hours

Instructions to the candidates:

1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) Figures to the right indicate full marks.
4) All questions carry equal marks.

SECTION-I

Q1) Answer any two of the following:

a) Explain physical, chemical & biological characteristics of water.
b) What are the objectives of water treatment?
c) Explain the term water demand. What are the factors affecting it.

Q2) Attempt any two of the following:

a) Design a plain sedimentation tank to treat 5 MLD water assuming horizontal velocity 0.2m/min. Depth restricted to 3m.
b) Give the advantages of rapid sand filter over slow sand filter.
c) Explain the mechanism of chlorination in detail.

Q3) Answer any two of the following:

a) What are the advanced methods of water treatment. Elaborate anyone.
b) What are the types of hardness? Explain sodalime process for hardness removal.
c) Write a note on iron removal.
Q4) Write short note on any two:
   a) Clariflocculator.
   b) Population forecasting.
   c) Ozonation.

SECTION-II

Q5) Answer any two of the following:
   a) Why is it necessary to treat waste water prior to disposal?
   b) Draw a flow diagram for a sewage treatment plant.
   c) Explain impact of development on sewage quality & quantity.

Q6) Attempt any two of the following:
   a) Why is screen chamber/grit chamber provided at beginning of waste water treatment plant.
   b) What is SVI? Give its importance in biological treatment.
   c) Draw a neatly labelled diagram of trickling filter and explain its operation.

Q7) Answer any two of the following:
   a) Give the characteristics of effluent from pulp & paper industry. Draw flowsheet of ETP for the said industry.
   b) What are the benefits & limitations of anaerobic digestions? Which wastes are suitable for anaerobic digestion.
   c) What is the treatment for sludge? Why is it necessary.

Q8) Write short notes on any two:
   a) Sludge bulking.
   b) Phenol Removal.
   c) Rotating Biological Contactor.

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M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 203: Environmental Pollution - I - Water & Soil
(2008 Pattern) (Semester - II)

Time: 3 Hours
[Max. Marks: 80]

Instructions to the candidates:
1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) Figures to the right indicate full marks.
4) All questions carry equal marks.

SECTION - I

Q1) Solve any two from the following:
   a) What are the objectives of water quality monitoring?
   b) Explain the types of sampling sites.
   c) What is the role of society in maintaining the health of aquatic ecosystem.

Q2) Attempt any two from the following:
   a) Draw diagram of oxygen sag curve and explain it briefly.
   b) Explain why and how Eutrophication is called as Aging of lakes.
   c) What are algal blooms? What are its impacts?

Q3) Solve any two from the following:
   a) Write an account of water pollution from Coal Mines and Coal Processing
      and its impact on surroundings.
   b) Explain the ways to deal with oil spills.
   c) Elaborate on water quality parameters.

P.T.O.
**Q4)** Write short notes on any two:
   a) Toxin free lifestyle and river water quality.
   b) Minamata Disease.
   c) Trophic State.

**SECTION - II**

**Q5)** Attempt any two of the following:
   a) Give the appropriate methods of soil sampling.
   b) Describe the environmental and health problems caused by the use of pesticides.
   c) Describe in detail essential feature of sanitary Land fill.

**Q6)** Answer Any Two of the following:
   a) Draw and discuss working of Semi-conductor detector.
   b) Classify the solid waste and add a note on its disposal by decentralise methods.
   c) What are the sources of radiation in Environment. Explain in brief the effects of radiation.

**Q7)** Attempt any two of the following:
   a) Explain the concept of Integrated Pest Management.
   b) Draw schematic diagram of G.M. Counter. Explain its working in detail.
   c) What is Mining? Explain effects of Mining on soil.

**Q8)** Write short notes on any two:
   a) Three ‘R’ Principle.
   b) Organic Farming.
   c) Polluter Pay Principle.
P1666 [5130]-24
M.Sc. - I
ENVIRONMENTAL SCIENCE
ENV - 204 : Environmental Law, Ethics and Policy
(2008 Pattern) (Semester - II)

Time : 3 Hours] [Max. Marks : 80

Instructions to the candidates:
1) Answers to the two sections should be written in separate book.
2) Neat diagrams must be drawn wherever necessary.
3) Figures to the right indicate full marks.
4) All questions carry equal marks.

SECTION - I

Q1) Answer any two of the following: [10]
   a) Discuss the role of “international environmental laws in protection of global environment”.
   b) Which are the multinational agreements carried out to control global warming?
   c) Discuss the constitutional provisions which are helpful in protection of environment.

Q2) Answer any two of the following: [10]
   a) How Panchayat Raj System is supportive to protect local environment?
   b) Why environment protection act is called as Umbrella act?
   c) Discuss the important provisions of water act, 1974.

Q3) Answer any two of the following: [10]
   a) Discuss the role of courts in protection of environment with reference to various case studies.
   b) Which are the functions of central pollution control board to protect Indian environment?
   c) Discuss the salient features of air act, 1981.

P.T.O.
Q4) Write short notes on any two of the following: [10]
   b) Nairobi Declaration.
   c) Fundamental Duties and Rights.

SECTION - II

Q5) Answer any two of the following: [10]
   a) Write an account on survival need of mankind and protection of environment.
   b) Why there is need to integrate developmental aspects with carrying capacity of environment?
   c) What are the objectives and strategies of national environmental policy?

Q6) Answer any two of the following: [10]
   a) Explain the important pillars of sustainable development.
   b) What are the requirements of environmental audit under rule 14 of EPA, 1986?
   c) What is the importance of natural resources in achieving goals of sustainable development?

Q7) Answer any two of the following: [10]
   a) Discuss the important guidelines for disposal of hazardous wastes.
   b) What is the importance of review of plan with reference to short term and long term gains?
   c) How cost-benefit analysis is useful in protection of environment?

Q8) Write short notes on any two of the following: [10]
   a) Ecological Growth Factor.
   b) National Policy on EIA.
   c) Safeguards for Environmental Protection.
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 301 : Air Pollution and Climate Change
(2008 Pattern) (Semester - III)

Time : 3 Hours
[Max. Marks : 80

Instructions to the candidates:

1) All questions are compulsory.
2) All questions carry equal marks.
3) Neat diagrams must be drawn wherever necessary.
4) Answer to the two sections should be written in separate answer books.

SECTION - 1

Q1) Attempt any two from the following:
   a) Discuss the reactions in the troposphere.
   b) What are the sources of air pollution?
   c) How air pollutant are classified?

Q2) Answer any two from the following:
   a) Define air pollution and add a note on their effect on human.
   b) Discuss in detail emission of air pollutant from vehicle.
   c) Write a note on Montreal protocol.

Q3) Attempt any two from the following:
   a) What are green gases? Discuss in detail green house effect.
   b) What are the principle causes of air pollution in cement industry?
   c) Write sources of air pollution in Thermal Power Plant.

P.T.O.
Q4) Write short notes on any two:
   a) Monitoring of NO₂.
   b) Ozone depletion.
   c) Effect of SO₂ on human.

SECTION - II

Q5) Attempt any two from the following:
   a) Describe the structure and working of scrubbers.
   b) Write in detail any two methods for industrial pollution control.
   c) What is cyclone? Write its principle and working.

Q6) Answer any two from the following:
   a) How filter remove the particulate matter?
   b) Write principle and working of ESP.
   c) Describe the Wet- Scrubber in detail.

Q7) Attempt any two from the following:
   a) How does the carbon subseqestion control the climate change.
   b) What is UNFCCC? Write its background and working.
   c) Write in detail regarding CDM.

Q8) Write short notes on any two:
   a) Zoning of air pollution.
   b) Advantages and disadvantages of ESP.
   c) IPCC.

[5130]-31
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 302 : EIA & Environmental Auditing
(2008 Pattern) (Semester - III)

Time : 3 Hours

Instructions to the candidates:
1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) All questions carry equal marks.
4) All questions are compulsory.

SECTION - I

Q1) Attempt any two from the following:
   a) Briefly write the salient features of environmental protection Act-1986.
   b) Explain in brief the steps involved in environmental management planning.
   c) Write in brief the objectives and types of public participation in decision making.

Q2) Solve any two from the following:
   a) Briefly narrate the generic topical outline for an environmental impact report.
   b) Which document and legislation has made prior environmental clearance mandatory.
   c) What are the advantages of checklist and matrices methodology used for EIA study.

Q3) Attempt any two from the following:
   a) Explain the objectives and steps involved in environmental auditing.
   b) What is significance of ISO 14000 in environment protection.
   c) In an EIA report, How ‘Analysis of alternatives’ is explained.

P.T.O.
Q4) Write short notes on any two:
   a) Rule 14 for Environmental Auditing.
   b) LCA
   c) Hazard identification.

SECTION - II

Q5) Solve any two from the following:
   a) Explain the conceptual approach to the biological environment in EIA studies.
   b) What are the basic steps involved in EIA report preparation.
   c) Explain the significance of Legislative consideration in EIA study.

Q6) Attempt any two from the following:
   a) Explain the importance of baseline data in socio-economic analysis.
   b) What are the criteria for selection of appropriate procedure for environmental management planning.
   c) Recommend the environmental monitoring programme for newly expanded national highway.

Q7) Solve any two from the following:
   a) What are the importance of ecological environment in EIA studies.
   b) Briefly explain the constitution of state level expert appraisal committee (SEAC).
   c) What are the aspect involved in preparation of environmental management plan for Air environment.

Q8) Write short notes on any two:
   a) Terminology of EIA.
   b) Geo-physical data in EIA.
   c) Environmental inventory for petrochemical industry.
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 303: Remote Sensing and GIS
(2008 Pattern) (New) (Semester - III)

Time : 3 Hours

Instructions to the candidates:
1) All questions are compulsory.
2) All questions carry equal marks.
3) Neat diagrams must be drawn wherever necessary.
4) Answer to the two sections should be written in separate answer books.

SECTION - I

Q1) Attempt any two from the following:
   a) Discuss the electromagnetic signals emitted from a material /black body.
   b) Describe the atmospheric scattering processes due to radiation interaction.
   c) Describe sensor systems used in Remote sensing.

Q2) Answer any two from the following:
   a) What are the steps involved in image rectification and registration.
   b) Explain the passive microwave sensing and its application.
   c) Describe the classification types used in image processing.

Q3) Attempt any two from the following:
   a) Describe the image rectification and enhancement process.
   b) Explain post classification steps involved in image processing.
   c) Describe along the track scanning techniques through satellite.

P.T.O.
Q4) Write short notes on any two: [10]
   a) Indian satellite Remote sensing Odessey-The IRS series.
   b) Importance of ground control in aerial photogrammetry.
   c) SPOT satellite program.

SECTION-II

Q5) Attempt any two from the following: [10]
   a) Briefly explain the application RS-GIS Wildlife Ecology
   b) Describe the Land use/Land cover mapping through GIS.
   c) Explain the importance of attribute data in digitization and mapping.

Q6) Answer any two from the following: [10]
   a) Describe the components of Data Base Management Systems.
   b) Discuss the need for integration of Remote Sensing and GIS data.
   c) Explain the role of GPS in mapping.

Q7) Attempt any two from the following: [10]
   a) Compare the Raster and Vector GIS models.
   b) Explain the importance of scale in aerial photogrammetry.
   c) What is meant by connectivity, containment and congenity in the context of topology.

Q8) Write short notes on any two: [10]
   a) Mirror stereoscope
   b) Data input methods in GIS
   c) Various GIS out put for interpretation.
SECTION-I

Q1) Solve any two from the following:
   a) What are problems associated with wetland management programme.
   b) What are problems associated with displacement of a soil in open cast mining?
   c) Briefly explain the restoration techniques for store quarries.

Q2) Attempt any two from the following:
   a) Explain the role of ecological succession in altering the terristrial ecosystem.
   b) What is bioredmediation? Explain with suitable example.
   c) Explain the interaction between biotic and abiotic components in the environment.

Q3) Solve any two from the following:
   a) What are the selection criteria for species selection in restoration technology.
   b) Differentiate between ‘entrapping’ and ‘encapsulation’.
   c) What are the problem associate with solid waste dumping site.
Q4) Write short notes on any two:
   a) Rhizofiltration
   b) Organic farming
   c) Bioscrubber.

SECTION II

Q5) Attempt any two of the following:
   a) Describe in brief the concept of watershed and its significance.
   b) Discuss the various hydrological characteristic of watershed.
   c) Which are various engineering structures applicable to watershed management.

Q6) Justify any two of the following:
   a) Drain line treatment are more suitable for water and soil conservation.
   b) Selection of particular plant species is more important in watershed management in aired and semi aired region.
   c) Self-help Groups for women can run a watershed management programme more efficiently in rural areas.

Q7) Explain any two of the following:
   a) Rain water arvesting is a need of time in semi-urban areas.
   b) Explain the role of topographic in water conservation.
   c) Give the advantages and disadvantages of cooperative-lift irrigation.

Q8) Write notes on any two of the following:
   a) Organic farming.
   b) Land-cover classification.
   c) Watershed a unit of sustainable development.
P1671

[5130] - 35

M.Sc.
ENVIRONMENTAL SCIENCE
ENV-312: Biodiversity & Conservation
(2008 Pattern) (Semester-III)

Time: 3 Hours

Max. Marks: 80

Instructions to the candidates:
1) Answer to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) All questions carry equal marks.
4) All questions are compulsory.

SECTION-I

Q1) Attempt any two of the following: [10]
   a) Explain aims & objectives of biodiversity science.
   b) Explain alpha, beta and gama diversity.
   c) How economy is affected by loss of biodiversity.

Q2) Attempt any two of the following: [10]
   a) Describe the scales, planning and approaches of inventorying and monitoring of biodiversity.
   b) What is extinction of species? Describe the types of extinction process.
   c) Explain role of sacrid grove in conservation of biodiversity.

Q3) Attempt any two of the following: [10]
   a) Explain the factors causing loss of species and genetic diversity
   b) What are centers of origin and diversification of species? Add note on introduced species.
   c) What is extinction of species? Describe the types of extinction process.

Q4) Write short notes on any two of the following: [10]
   a) Founder effect.
   b) Genetic drift

P.T.O.
SECTION-II

Q5) Attempt any two of the following: [10]
   a) What are the organizations involved in financing the biodiversity management? add a note on their function.
   b) Describe the trade related intellectual property rights.
   c) Explain the role of Biodiversity Act 2002 in conservation and management of biodiversity.

Q6) Attempt any two of the following: [10]
   a) What are the sources and legal aspects of biodiversity information management?
   b) Explain the adverse impacts of biotechnology on biodiversity.
   c) Describe the use and non-use values of biodiversity.

Q7) Write short notes on any two of the following: [10]
   a) Social approach to biodiversity conservation.
   b) Traditional resource rights.
   c) Concept of sustainable development.

Q8) Attempt any two of the following: [10]
   b) Explain the problems and prospects in participatory management of biodiversity.
   c) Describe the In-Situ methods of biodiversity conservation.

[5130]-35 2
M.Sc.
ENVIRONMENTAL SCIENCE
ENV 401: Environmental Toxicology, Health & Safety
(2008 Pattern) (Semester - IV)

Time : 3 Hours
Max. Marks : 80

Instructions to the candidates:
1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) Figures to the right indicate full marks.
4) All questions carry equal marks.

SECTION - 1

Q1) Answer any two from the following:
   a) State the health and safety provisions relating to hazardous processes.
   b) Give safety approach related to temp and pressure in industry.
   c) Describe ‘fire triangle’ and its components.

Q2) Briefly explain. (any two)
   a) Guidelines for OSHAS - 18000.
   b) Factory act - 1948.
   c) Occupational hazards and its preventive measures.

Q3) Answer any two from the following -
   a) Describe ‘corrosion’ and ‘erosion’ in safety.
   b) Explain the role of management in factory environment policy.
   c) Explain the a importance of ambient air quality in working environment.
Q4) Write short notes on (any two)
   a) Risk identification.
   b) Impact of vibration on human health.
   c) Importance of PDCA in ISO 14000.

SECTION - II

Q5) Answer any two from the following.
   a) Explain physiological disorder caused by VOC in industry.
   b) Explain the carcinogenicity with suitable example.
   c) What are the threats of biological war.

Q6) Briefly explain (any two)
   a) Acute and chronic toxicity.
   b) Water borne pathogens and their implication.
   c) Metabolic effects of arsenic.

Q7) Answer any two from the following.
   a) Explain the hazardous material handling. Storage and disposal rules.
   b) Explain the types of mutation with suitable examples.
   c) What are the safeguards for water resources for safe uses.

Q8) Write short notes on any two.
   a) Short term disaster management plan.
   b) Functions of WHO.
   c) Role of NGO in health and sanitation programme.

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M.Sc.
ENVIRONMENTAL SCIENCE
ENV-402: Watershed Management
(2008 Pattern) (Semester - IV)

Instructions to the candidates:
1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) All questions carry equal marks.
4) All questions are compulsory.

Q1) Answer any two of the following:
   a) Discuss the various causes of watershed deterioration.
   b) Explain the principles of watershed management.
   c) Describe the characteristics of aerial aspect of watershed.

Q2) Answer any two of the following:
   a) Describe the role of soil characteristics in Land capability classification.
   b) Discuss the format for watershed resource appraisal.
   c) Describe the climatic factors role in land capability classification.

Q3) Explain any two of the following:
   a) Explain the various watershed resources appraisal techniques.
   b) Explain the factors required in planning for watershed protection.
   c) Explain the constraint and management alternatives in watershed planning.

Q4) Write notes on any two of the following:
   a) Geomorphological characteristics of watershed.
   b) Data requirement in watershed resource appraisal.
   c) Planning for rural and integrated watershed development.
Q5) Answer any two of the following:
   a) Describe the environmental impact of watershed.
   b) Describe the different steps required in environmental regeneration in a watershed.
   c) Describe the different parameters needed in monitoring watershed.

Q6) Answer any two of the following:
   a) Discuss the various techniques for promotion of peoples participation in watershed development.
   b) Discuss in short the hydrological cycle.
   c) Discuss the role of wind in soil erosion processes.

Q7) Explain any two of the following:
   a) Tillage practices and mulching are the conservation measures for aerable land in a watershed. “Explain”.
   b) Reclamation of ravine land is a conservation measures for non-aerable lands in a watershed. “Explain”.
   c) Explain ecosystem management challenges required for monitoring and evaluation of watershed projects.

Q8) Write notes on any two of the following:
   a) Evaluation of self help groups in watershed monitoring.
   b) Sericulture in watershed.
   c) Water harvesting techniques.

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ENVIRONMENTAL SCIENCE
ENV:411- Optional: Forestry and Habitat Management
(2008 Pattern)(Semester - IV)

Instructions to the candidates:
1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) Figures to the right indicate full marks.
4) All questions carry equal marks.
5) All questions are compulsory.

SECTION - I

Q1) Answer the following (any two):
   a) Describe forest as an ecosystem and elaborate on nutrient cycling in the same.
   b) Explain the general concept of tree improvement along with methods.
   c) What is forest working Plan? Describe it in details.

Q2) Answer the following (any two):
   a) Explain environmentally sound forest harvesting practices.
   b) Give a detailed account of tannins & dyes-a non-timber forest produce.
   c) Describe the need & importance of wood seasoning & preservation.

Q3) Answer the following (any two):
   a) Discuss in detail, the scope, objective and general technique followed for joint forest management.
   b) Describe the silviculture system followed for mangrove forest.
   c) Discuss the procedure for in-situ conservation of plant resources.

Q4) Write short notes on following (any two):
   a) Shifting cultivation.
   b) Agro forestry.
   c) Yield table.
SECTION - II

Q5) Answer the following (any two):
   a) Describe various methods for propagation of forest tree species.
   b) Write in detail about common pests & diseases of forest trees.
   c) Elaborate on the significances of measurement of girth & diameter of trees.

Q6) Answer the following (any two):
   a) Describe the different modes of transport of timber and explain the criteria for selection of such mode.
   b) How India penal code is effective in protection of forests/Wildlife?
   c) Write a detail note on wood based manufacturing industries?

Q7) Answer the following (any two):
   a) Explain the general principles of forest engineering.
   b) Explain the fundamentals of forest conservation act-1980.
   c) Write in details about damages/injuries caused by animals to forest plants/trees.

Q8) Write a short note on following (any two):
   a) Storage of timber.
   b) Afforestation and forest regeneration.
   c) Role of non-government organizations (NGOs) in social forestry.
M.Sc.  
ENVIRONMENTAL SCIENCE  
ENV - 412 : Environmental Planning and Management  
(Optional) (2008 Pattern) (Semester - IV)  

Time : 3 Hours  
[Max. Marks : 80]  

Instructions to the candidates:  
1) Answers to the two sections should be written in separate books.  
2) Neat diagrams must be drawn wherever necessary.  
3) All questions carry equal marks.  
4) All questions are compulsory.  

SECTION - 1  

Q1) Solve any two of the following:  
[10]  
a) Enlist and describe methods used in EIA.  
b) What is concept of planning? Discuss in brief parameters of planning.  
c) ‘Willingness play important role in planning’ comment.  

Q2) Attempt any two of the following:  
[10]  
a) “Population explosion is obstacle in development” - Justify.  
b) Write in brief advantages of environmental planning.  
c) Discuss the problem associated with Rehabilitation.  

Q3) Answer any two of the following:  
[10]  
a) Write in short role of environmental planning in development.  
b) How transportation and accessibility play role in environmental planning.  
c) Discuss in brief parameter required for rural planning.  

P.T.O.
Q4) Write short notes (any two):
   a) Urplan planning.
   b) Importance of baseline information.
   c) Adverse impact of planning.

SECTION - II

Q5) Solve any two of the following:
   a) “Environment and development are two side of same coin”. Justify.
   b) What is EIA? Write importance of EIA in development.
   c) Write the role of laws in regulating the pollution & protection of environment.

Q6) Answer any two of the following:
   a) “Biomedical waste doesn’t require planning for its disposal”. Comment on the statement.
   b) Write in brief importance of development.
   c) “Industrial development depends on natural resources”. Comment.

Q7) Attempt any two of the following:
   a) What is development? Which parameters require for it? Explain in brief.
   b) What is conservation? Discuss any one method of it.
   c) Write in brief environmental policies of India.

Q8) Write short notes (any two):
   a) Exploitation of Environmental Resources.
   b) Importance of Environmental Protection Act.
   c) Solid waste disposal.
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M.Sc.
ENVIRONMENTAL SCIENCE
ENV:413 - Environmental Management Systems
(2008 Pattern)(Semester - IV)(Theory & Licensing)

Time : 3 Hours]
[Max. Marks : 80

Instructions to the candidates:
1) Answers to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) Figures to the right side indicate full marks.
4) All questions carry equal marks.

SECTION - I

Q1) Answer any two of the following:
   a) What are the different tools of Environmental Management?
   b) Describe the approaches in environmental management to achieve sustainability.
   c) What are the different international standards in environmental management?

Q2) Attempt any two of the following:
   a) Define Environmental Management System. What are its core elements.
   b) How does EMS help in improving environmental quality?
   c) What are the ED strategies for building construction.

Q3) Answer any two of the following:
   a) Give the procedure for carrying out Life Cycle Analysis. Explain with example.
   b) Give the importance by inventory analysis in LCA.
   c) Explain the role of environmental design in sustainability.

Q4) Write short notes on any two:
   a) Cradle to Grave concept.
   b) Energy efficiency in building.
   c) Ecolabelling.

P.T.O.
SECTION - II

Q5) Answer any two of the following:
   a)  What are the properties of solid waste?
   b)  Write a note on transportation of solid waste in India.
   c)  Discuss environmental impacts of solid waste.

Q6) Attempt any one of the following:
   a)  What are the problems associated with solid waste collection?
   b)  Discuss the significance of segregation of solid waste.
   c)  What is the role of municipal corporation in solid waste management.

Q7) Answer any one of the following:
   a)  Explain the process of incineration with advantages & limitations.
   b)  What are the criteria for hazardous waste disposal site selection.
   c)  Give the health impacts of biomedical waste.

Q8) Write short notes on any two:
   a)  Windrow composting.
   b)  Pyrolysis.
   c)  Sanitary landfill.