

Total No. of Questions : 8]

SEAT No. :

P1659

[5130]-11

[Total No. of Pages : 2

M.Sc.

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 seperate 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.



Total No. of Questions : 8]

SEAT No. :

P1660

[5130]-12

[Total No. of Pages : 2

M.Sc.

ENVIRONMENTAL SCIENCE

ENV - 102 : Environmental Chemistry

(2008 Pattern) (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) *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 sensetize 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.



Total No. of Questions : 8]

SEAT No. :

P1661

[5130]-13

[Total No. of Pages : 2

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 micro organisms.

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.



Total No. of Questions : 4]

SEAT No. :

P1662

[5130]-14

[Total No. of Pages : 2

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:

class	0-10	10-20	20-30	30-40	40-50	50-60
F	5	10	25	30	20	10

- 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.

X	2	4	6	8	10	12	14
Y	4	2	5	10	4	11	12

- b) Define Kurtosis, Discuss types of Kurtosis with suitable sketch.
- c) Calculate variance for following frequency distribution.

class	51-55	56-60	61-65	66-70	71-75	76-80	81-85
F	4	6	8	10	7	5	2

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 Rit.
- 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



Total No. of Questions : 8]

SEAT No. :

P1663

[5130]-21

[Total No. of Pages : 2

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) "Insentives and subsidies are abstacle 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 trading 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.

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Total No. of Questions : 8]

SEAT No. :

P1664

[5130]-22

[Total No. of Pages : 2

M.Sc.

ENVIRONMENTAL SCIENCE

ENV-202: Water and Waste Water Engineering

(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) 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.

P.T.O.

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.



Total No. of Questions : 8]

SEAT No. :

P1665

[5130]-23

[Total No. of Pages : 2

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.



Total No. of Questions : 8]

SEAT No. :

P1666

[5130]-24

[Total No. of Pages : 2

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]

- a) Motor Vehicle Act.
- 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.



Total No. of Questions : 8]

SEAT No. :

P1667

[5130]-31

[Total No. of Pages : 2

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 - I

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 subsequestration 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.



Total No. of Questions : 8]

SEAT No. :

P1668

[5130]-32

[Total No. of Pages : 2

M.Sc.

ENVIRONMENTAL SCIENCE

**ENV - 302 : EIA & Environmental Auditing
(2008 Pattern) (Semester - III)**

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 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.



Total No. of Questions : 8]

SEAT No :

P1669

[5130] - 33

[Total No. of Pages :2

M.Sc.

ENVIRONMENTAL SCIENCE

ENV - 303: Remote Sensing and GIS

(2008 Pattern) (New) (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 - I

Q1) Attempt any two from the following: **[10]**

- 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: **[10]**

- 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: **[10]**

- 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.



Total No. of Questions : 8]

SEAT No. :

P1670

[5130]-34

[Total No. of Pages : 2

M.Sc.

ENVIRONMENTAL SCIENCE

ENV-311: Restoration Ecology

(2008 Pattern) (Semester-III)

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) 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 terrestrial ecosystem.
- b) What is bioremediation? 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 'entrapment' and 'encapsulation'.
- c) What are the problems associated with solid waste dumping site.

P.T.O.

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 arid and semi arid 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 harvesting 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.



Total No. of Questions :8]

SEAT No :

P1671

[5130] - 35

[Total No. of Pages :2

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]**

- a) Describe in details the 'Indigenous Knowledge Systems' and its role in conservation.
- b) Explain the problems and prospects in participatory management of biodiversity.
- c) Describe the In-Situ methods of biodiversity conservation.



Total No. of Questions : 8]

SEAT No. :

P1672

[5130]-41

[Total No. of Pages : 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 - I

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 importance of ambient air quality in working environment.

P.T.O.

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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Total No. of Questions : 8]

SEAT No. :

P1673

[5130]-42

[Total No. of Pages : 2

M.Sc.

ENVIRONMENTAL SCIENCE

ENV-402: Watershed Management

(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.*

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.

P.T.O.

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.



Total No. of Questions : 8]

SEAT No. :

P1674

[5130]-43

[Total No. of Pages : 2

M.Sc.

ENVIRONMENTAL SCIENCE

ENV:411- Optional: Forestry and Habitat Management

(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.*
- 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.

P.T.O.

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 peral 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.



Total No. of Questions : 8]

SEAT No. :

P1675

[5130]-44

[Total No. of Pages : 2

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 - I

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): **[10]**

- a) Urplan planning.
- b) Importance of baseline information.
- c) Adverse impact of planning.

SECTION - II

Q5) Solve any two of the following: **[10]**

- 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: **[10]**

- 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: **[10]**

- 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): **[10]**

- a) Exploitation of Environmental Resources.
- b) Importance of Environmental Protection Act.
- c) Solid waste disposal.



Total No. of Questions : 8]

SEAT No. :

P1676

[5130]-45

[Total No. of Pages : 2

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.

