

Total No. of Questions : 8]

SEAT No. :

P2721

[Total No. of Pages : 2

[4833] - 11

M.Sc. (ENVIRONMENTAL SCIENCE) (Semester - I)

ENV - 101 : Environmental Geo Science

(2008 Pattern)

Time :3 Hours]

[Max. Marks :80

Instructions to the candidates:

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

SECTION - I

Q1) Answer any two of the following :

- a) Describe the electromagnetic spectrum effect on seasonal variations.
- b) Discuss Green house effect on heat budget.
- c) Give an brief account on chemical composition of the atmosphere.

Q2) Attempt any two of the following :

- a) Give an account on dry and wet adiabatic lapse rate.
- b) Give various methods used for temperature measurement of atmosphere and add a note on its controls.
- c) Explain various factors affecting wind with suitable example.

Q3) Discuss any two of the following :

- a) Discuss in brief wind observation and add a note on Jet stream.
- b) Describe in short atmospheric moisture.
- c) Discuss various atmospheric disturbance factors related to thunderstorm.

P.T.O.

Q4) Write notes on any two of the following :

- a) Floods in India.
- b) Structure of atmosphere.
- c) Causes of lightening.

SECTION - II

Q5) Justify any two of the following :

- a) A complete soil profile are formed insitu. “Justify”.
- b) Biological weathering are more regerious than chemical weathering “Justify”.
- c) Minerals and rocks are classified on the basis of SiO₂ percentage. “Jusitfy”.

Q6) Answer any two of the following :

- a) Describe various factors influencing on the surface water.
- b) Describe the Internal structure of Earth.
- c) Discuss in brief the soils of India.

Q7) Attempt any two of the following :

- a) Explain the concept of Rare Earth Element.
- b) Explain the possible effects of imbalance of some trace elements.
- c) Explain various mitigation measures taken to reduce Tsunami hazards.

Q8) Write notes on any two of the following :

- a) Volcanoic Hazards.
- b) Diseases induced by human use of land.
- c) Geo Chemical Cycle.



Total No. of Questions : 8]

SEAT No. :

P2722

[Total No. of Pages : 2

[4833] - 12

M.Sc. (ENVIRONMENTAL SCIENCE) (Semester - I)

ENV - 102 : Environmental Chemistry

(2008 Pattern)

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) How RNA synthesis in biological life?
- b) Explain the various types of mutation.
- c) Explain the structure of any one polycyclic aromatic hydrocarbon and its action in environment.

Q2) Solve any two from the following :

- a) Explain the biodegradation of plastic in nature.
- b) Differentiate between Cationic, anionic and non-ionic detergent.
- c) Define Solvent? Add a note on its properties.

Q3) Attempt any two from the following :

- a) Explain the carcinogenicity of radioactive Compound with suitable example.
- b) How polymer biologically decay in nature?
- c) Explain the properties of water.

P.T.O.

Q4) Write a short notes on any two :

- a) Biomagnification of DDT.
- b) Structure of DNA.
- c) Photo sensitize additives.

SECTION - II

Q5) Attempt any two from the following :

- a) Draw a structure of aflatoxin B.
- b) What are the limitations of NAA?
- c) Write the principle of Gibb's energy.

Q6) Solve any two from the following :

- a) Which are the factors influencing the dissolving of gases in water?
- b) Explain the various components of HPLC.
- c) Differentiate between XRF and XRD.

Q7) Attempt any two from the following :

- a) Briefly write polarography technique with suitable diagram.
- b) Which methods used for Biomedical waste disposal?
- c) Explain the working of Gas chromatography.

Q8) Write a short notes on any two :

- a) Radionuclides.
- b) Chemical equilibria.
- c) Merits of XRD.



Total No. of Questions : 8]

SEAT No. :

P2723

[Total No. of Pages : 2

[4833] - 13

M.Sc. (ENVIRONMENTAL SCIENCE)

ENV - 103 : Environmental Biology

(2008 Pattern)

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) Define ecosystem. Write a components of Desert ecosystem.
- b) Discuss the Y-shaped model of energy flow in ecosystem.
- c) What is endemism? Discuss its types and importance.

Q2) Solve any two from the following :

- a) Explain the symbiotic relationship of micro organisms and plants.
- b) Outline the evolutionary steps of ecosystem.
- c) What are the impact of climate change on biodiversity. Add a note on India's biogeography.

Q3) Attempt any two from the following :

- a) What are wetlands? Add a note on RAMSAR convention.
- b) Discuss the salient features of esturine ecosystem.
- c) Explain the process of sucession in hydrosere.

P.T.O.

Q4) Write a short notes on any two :

- a) Ecotone and edge effect.
- b) Faunal Biodiversity in India.
- c) Population Density.

SECTION - II

Q5) Attempt any two from the following :

- a) What are threaten species categories of IUCN? Define each category.
- b) Describe the characteristics of Coastal environment.
- c) Write an account on protected areas network in India.

Q6) Solve any two from the following :

- a) Explain the function and role of National Biodiversity Authority.
- b) What are the direct and Indirect values of Biodiversity?
- c) Discuss the biotechnology application in species conservation.

Q7) Attempt any two from the following :

- a) Narrate the importance of buffer zone in forest ecosystem.
- b) What is role and function of Coastal Regulatory Zone authority? (CRZ).
- c) Enumerate the importance of Key Stone Species.

Q8) Write a short notes on any two :

- a) Intellectual property rights.
- b) Red data Book.
- c) Project Tiger.



Total No. of Questions : 4]

SEAT No. :

P2724

[Total No. of Pages : 3

[4833] - 14

M.Sc. (Environmental Science) (Semester - I)

ENV - 104 : Statistical & Research Methods

(2008 Pattern)

Time :3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer books.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *All questions carry equal marks.*
- 4) *Figures to the right indicate full marks.*
- 5) *Statistical tables will be provided on request.*
- 6) *Pocket calculators are allowed.*

SECTION - I

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

- a) Explain brief the following terms :
 - i) Raw Data
 - ii) Sampling frame
 - iii) Skewness
 - iv) Class boundries
- b) Explain the term Kurtosis. State the types of Kurtosis and state measure of Kurtosis.
- c) Following table gives the data on oil yield (g/100 g MAF) :
4.24, 30.87, 33.01, 44.61, 33.84, 41.26
41.88, 70.79, 66.82, 66.82, 8.92, 17.98
Compute coefficient variation.

Q2) Solve any two of the following : **[20]**

- a) Partial calculations using data on two variables X and Y :

$$n = 10, \sum x^2 = 385, \sum y^2 = 192, \sum xy = 185, \bar{x} = 5.5, \bar{y} = 4.00$$

Compute correlation coefficient between X and Y and interpret it.

P.T.O.

- b) State the regression line of Y on X. Interpret the coefficients involved in it. Explain in short the term error.
- c) What are the different measures of dispersion? Explain any one with illustration.

SECTION - II

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

- a) Write short notes on :
- i) Statistical test
 - ii) Level of significance
 - iii) Probability density function
 - iv) Type II Error
- b) State the probability mass function of Poisson distribution. State mean and variance of it. Also compute $P[0 < x \leq 3]$ if $X \sim P(m = 1.2)$.
- c) The table below gives the plant height (in cm) of wheat plant after 7 days of germination of wheat subjected to different fertiliser treatments.

Treatment	Replication		
	I	II	III
Control	3.2	3.4	4.9
A_2	4.3	4.4	4.3
A_4	3.2	3.2	3.2
A_6	2.2	2.1	3.2

Test at 5% level of significance whether there is any effect of fertiliser on plant height.

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

- a) i) Explain the procedure of testing equality of variances of two populations? Mention clearly the assumptions too.

ii) Explain the applications of time series in environmental studies.
Explain the component 'trend'.

b) Obtain a solution of the following system of linear equations

$$2x_1 + x_2 - 4x_3 = 0$$

$$4x_1 + 3x_2 - 5x_3 = 0$$

$$x_1 + 2x_2 + 3x_3 = 0$$

c) Root length (in cm) of 10 plants in 7th day and 15th day is given below

7th day : 2.1, 2.4, 2.1, 2.7, 2.6, 2.9, 2.8, 2.4, 2.3, 2.4

15th day : 3.2, 3.4, 3.1, 3.2, 3.4, 3.2, 3.4, 3.3, 3.1, 3.2

Is plant height increased significantly? Use 5% los.



Total No. of Questions : 8]

SEAT No. :

P2725

[Total No. of Pages : 2

[4833] - 21

M.Sc. (ENVIRONMENTAL SCIENCE) (Semester - II)

ENV - 201 : Environmental Economics

(2008 Pattern)

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) How FDI influences the development programme and environmental legislation? **[10]**

Q2) Justify any two : **[10]**

- a) Public participation in development project delayed the programme.
- b) Energy audit can influences global climate change.
- c) Environmental degradation rate in higher in industrial revolution era.

Q3) Write short notes on any two : **[10]**

- a) Explain the importance of buffer zone in forest resource management.
- b) What are the externalities for market failure?
- c) Explain the functional role of instruments in environmental policies.

Q4) Write short notes on any two : **[10]**

- a) Kyoto protocol.
- b) EL-nino effect and agriculture.
- c) Cost Benefit analysis.

P.T.O.

SECTION - II

Q5) How the migration of population influences Social Structure and development activities. **[10]**

Q6) Justify any two : **[10]**

- a) Sustainable development programme is effective process.
- b) FDI can influences local environmental policies.
- c) Non-renewable resources are economically not feasible.

Q7) Write any two of the following : **[10]**

- a) What is impact of global climate change on bioresources?
- b) How investment inflow influences environmental Quality?
- c) Explain the analysis procedures of cost benefit analysis.

Q8) Write short notes on any two : **[10]**

- a) Economic reforms.
- b) Subsidies and incentives.
- c) Kuznet's curve.



Total No. of Questions : 8]

SEAT No. :

P2726

[Total No. of Pages : 2

[4833] - 22

M.Sc. (Environmental Science) (Semester - II)

ENV - 202 : Water and Waste Water Engineering

(2008 Pattern)

Time :3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer 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) What are methods for population forecasting? Explain one of them.
- b) What are the impacts of developmental activities and changing life style on water quality?
- c) Explain in brief solids in waste water.

Q2) Attempt any two of the following :

- a) What are water quality standards? Explain their need for industrial purpose.
- b) What is disinfection? Explain the process of Ozonization.
- c) What is aeration? Explain different types of aeration.

Q3) Answer any two of the following :

- a) Sketch a flow chart for common sewage treatment plant.
- b) Explain the process of ultra filtration.
- c) What is water softening? How it is done?

P.T.O.

Q4) Write short notes :

- a) Screens and their role.
- b) Indian standards for drinking water.
- c) Availability and quality of surface water.

SECTION - II

Q5) Answer any two of the following :

- a) Explain physical, chemical and biological properties of sewage.
- b) What is principle of biological treatment of waste water?
- c) What is meant by SVI? How it is calculated? What is its significance in sewage treatment?

Q6) Attempt any two of the following :

- a) Define BOD. What is it's significance?
- b) Explain principle and working of UASB reactor.
- c) Explain characteristics and treatment of dairy waste water.

Q7) Answer any two of the following :

- a) What is trickling filter? How does it works?
- b) Describe biological treatment for spent wash.
- c) Explain different methods used for sludge disposal.

Q8) Write short notes :

- a) Grit chamber.
- b) Stabilization pond.
- c) Phenol removal.



Total No. of Questions : 8]

SEAT No. :

P2727

[Total No. of Pages : 2

[4833] - 23

M.Sc. (Environmental Science) (Semester - II)

ENV - 203 : Environmental Pollution : Water & Soil

(2008 Pattern)

Time :3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *Answer to the two sections should be written in separate answer 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 the effects of water pollution due to radioactive elements.
- b) Give the characteristics of domestic waste.
- c) Discuss the different water quality parameters.

Q2) Write notes on any two of the following : **[10]**

- a) Any two methods used to check water pollution levels.
- b) Consequences of water pollution on the economy of a nation.
- c) Biotransformation of DDT.

Q3) Answer any two of the following : **[10]**

- a) Describe the sources of marine pollution.
- b) Give the specifications for sewage disposal into sea.
- c) Mention the effluent standards for sugar industry waste.

P.T.O.

- Q4)** Write notes on : (any two) **[10]**
- a) Consequences of Soil Pollution.
 - b) Specifications for disposal of industrial effluent on irrigation land.
 - c) Temporal and Spatial sampling.

SECTION - II

- Q5)** Answer any two of the following : **[10]**
- a) Discuss the impact of land use for disposal of lime sludge from pulp and paper mill.
 - b) Explain the effect of mining on soil.
 - c) Discuss the effects of heavy metal disposal on soil quality.

- Q6)** Write notes on : (any two) **[10]**
- a) Consequences of Solid Waste Pollution.
 - b) 3R principles in solid waste management.
 - c) Agricultural solid waste.

- Q7)** Answer any two of the following : **[10]**
- a) Discuss the consequences of Radioactive pollution.
 - b) Explain the working principles of “Scintillating Counter”.
 - c) Discuss the ICRP recommendations.

- Q8)** Write notes on : **[10]**
- a) Radioactive Pollution-sampling methods.
 - b) Interaction of radiations with matter.
 - c) Biological effects of ionizing radiations.



Total No. of Questions : 8]

SEAT No. :

P2728

[Total No. of Pages : 2

[4833] - 24

M.Sc. (Environmental Science) (Semester - II)

ENV - 204 : Environmental Law, Ethics and Policy

(2008 Pattern)

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 in brief the outcome of Rio conference.
- b) What are the salient features of Factories Act?
- c) Discuss in detail about the role of United Nations authorities in protection of environment.

Q2) Answer any two of the following :

- a) Discuss the important functions of Central Pollution Control Board.
- b) Write an account on Panchayat Raj System in India.
- c) What are the salient features of Environment (Protection) Act, 1986?

Q3) Answer any two of the following :

- a) Discuss in detail on constitutional provisions related to environmental protection.
- b) What are the important provisions of Water (Prevention and Control) Act, 1974?
- c) Explain in detail about positive aspects of environmental governance in India.

P.T.O.

Q4) Write short notes on any two of the following :

- a) Fundamental Rights.
- b) Hazardous Waste Management Rules.
- c) Nairobi Declaration.

SECTION - II

Q5) Answer any two of the following :

- a) Discuss in detail on exploitation of resources and safeguards for their conservation.
- b) Explain the importance of plan with respect to gains of development.
- c) Write an account on important pillar's of sustainable development.

Q6) Answer any two of the following :

- a) What are the major drawbacks involved in traditional evaluation of development?
- b) What is meant by environmental audit? What are various steps involved in it?
- c) Discuss the important features of biomedical waste management rules.

Q7) Answer any two of the following :

- a) Discuss in detail the important features of National Environmental Policy.
- b) Write an account on sustainable developmental activities.
- c) Explain the ideal concepts of development in relation with carrying capacity.

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

- a) Environment protection as Survival need.
- b) Ecological Growth and Economic Growth.
- c) Biodiversity conservation and development.



Total No. of Questions : 8]

SEAT No. :

P2729

[Total No. of Pages : 2

[4833] - 31

M.Sc. (Environmental Science) (Semester - III)

ENV - 301 : Air Pollution and Climate Change

(2008 Pattern)

Time :3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer 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 : **[10]**

- a) Discuss in detail sources of air pollution.
- b) Describe in brief reactions in the atmosphere.
- c) How air pollutant are classified?

Q2) Answer any two of the following : **[10]**

- a) Define air pollutant and add a note on their effect on human.
- b) Write a note on Vehicular Pollution.
- c) Explain the ozone depletion with reactions.

Q3) Answer any two of the following : **[10]**

- a) What is globe warming? Write its effect in detail.
- b) What is aerosoles? Write in brief their effects.
- c) What are sources of air pollution in Thermal Power Plant?

P.T.O.

- Q4)** Write short note (any two) : **[10]**
- a) Monitoring method of SPM.
 - b) Effect of Noise on animal.
 - c) Effect of ozone depletion.

SECTION - II

- Q5)** Answer any two of the following : **[10]**
- a) Discuss the criteria to control the air pollution.
 - b) Describe the structure and working of ESP.
 - c) What is Cyclone? Write its principle and working.

- Q6)** Solve any two of the following : **[10]**
- a) Differentiate between adsorption and absorption technique for removal of gases.
 - b) Describe the different types of scrubber in detail.
 - c) Write principle and working of filters.

- Q7)** Answer any two of the following : **[10]**
- a) What is Kyoto protocol? How it helping to metain the climate?
 - b) What is CDM? Explain it with any one caste study.
 - c) What are the effect of globe warming?

- Q8)** Write notes on (any two) : **[10]**
- a) Advantage and disadvantage Wet Scrubbers.
 - b) Effect of air pollution on animal.
 - c) UNFCCC.



Total No. of Questions : 8]

SEAT No. :

P2730

[Total No. of Pages : 2

[4833] - 32

M.Sc. (Environmental Science) (Semester - III)

ENV - 302 : EIA and Environmental Auditing

(2008 Pattern)

Time :3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) Answers to the two sections should be written in separate answer 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) Discuss the salient features of EIA notification 2006.
- b) Explain importance of baseline data collection in EIA studies.
- c) Which are the various aspects considered in collection of baseline data?

Q2) Answer any two of the following :

- a) What are the stages for prior to environmental clearance process?
- b) Explain the importance of risk assessment in EIA studies.
- c) What are the legal requirements to conduct public participation in EIA?

Q3) Answer any two of the following :

- a) Explain the importance of GIS in EIA studies.
- b) Discuss the requirements under Form-1A related with checklist of impacts.
- c) Discuss the advantages of public participation in EIA.

P.T.O.

Q4) Write short notes on any two of the following :

- a) Adhoc method.
- b) Recent developments in EIA practices.
- c) Salient features of National Environmental Policy Act.

SECTION - II

Q5) Answer any two of the following :

- a) Explain the benefits of Environmental Management Plan.
- b) Discuss the importance of planning in Environmental Plan.
- c) Predict the impact of road construction on air, water and biological environment.

Q6) Answer any two of the following :

- a) Prepare an outline of the EIA report in relation with sugar industry.
- b) What is the significance of Environmental Budgeting?
- c) What is Environmental Audit? Discuss the general requirements of it.

Q7) Answer any two of the following :

- a) What are the general requirements of environmental management plan?
- b) Discuss the types of environmental audit.
- c) Prepare a detailed outline of environmental management plan in relation with oil refinery.

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

- a) Appropriate procedure for Environmental Management Plan.
- b) Importance of ISO-14000.
- c) Solid waste audit.



Total No. of Questions : 8]

SEAT No. :

P2731

[4833]-33

[Total No. of Pages : 2

M.Sc. (Semester - III)

ENVIRONMENTAL SCIENCE

**ENV - 303 : Remote Sensing and GIS
(2008 Pattern)**

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) Discuss how "Atmospheric Windows" control the Remote-Sensing techniques.
- b) Explain the causes and effects of Raleigh scatter.
- c) Define the term "Spectral Reflectance" and explain spectral reflectance of vegetation.

Q2) Attempt any two of the following :

- a) Describe the geometrical characteristics of an aerial photograph.
- b) Discuss the planning of stereoscopic aerial photography.
- c) Explain different discrepancies occurring in an aerial photo.

Q3) Answer any two of the following :

- a) Explain the working principles of an across-track scanner.
- b) Discuss the principles and applications of LIDAR.
- c) Discuss the advantages of Hyperspectral sensing.

P.T.O.

Q4) Write notes on any two of the following :

- a) Salient features of IRS-Series.
- b) Applications of RS in Wild-life ecology study.
- c) Tone and texture as Photo-recognition elements.

SECTION - II

Q5) Answer any two of the following :

- a) Define GIS and describe it's components in brief.
- b) Explain the spatial Models of GIS.
- c) Discuss about the merits and demerits of vector data.

Q6) Attempt any two of the following :

- a) Discuss the synergy between RS and GIS.
- b) Explain the role of RS-GIS in forestry.
- c) Describe the stages in GIS data modelling.

Q7) Answer any two of the following :

- a) Describe different categories of GIS.
- b) Discuss the various data reduction and generalization methods used in GIS.
- c) Describe the process of rasterization and georeferencing.

Q8) Write notes on (any two) :

- a) Digitization
- b) Scales of measurement
- c) Softwares used in GIS.



Total No. of Questions : 8]

SEAT No. :

P2732

[Total No. of Pages : 2

[4833]-34

M.Sc. (Semester - III)
ENVIRONMENTAL SCIENCE
ENV - 311 : Restoration Ecology
(Optional)

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 any two of the following : **[10]**

- a) Discuss the problems in restoration of coastal ecosystem.
- b) Differentiate between saline and alkaline soils. Comment on their restoration methods.
- c) Write about the process of bioremediation of hydrocarbon contaminated soils.

Q2) Justify the following sentence (any two) : **[10]**

- a) Micro-organisms play a significant role in restoration.
- b) Biotic & abiotic interactions are important in the restoration.
- c) Eco-restoration is necessary for the degraded lands.

Q3) Attempt any two from the following : **[10]**

- a) Discuss the role of plants in remediation process with suitable examples.
- b) Explain the hydrological characters of watershed area.
- c) Write about various control measures of the leachates from solid waste dumping sites.

P.T.O.

- Q4)** Write a note on (Any two) : **[10]**
- a) Land use and land cover study
 - b) Constructed wetlands
 - c) Ecological principles of restoration.

SECTION - II

- Q5)** Answer any two of the following : **[10]**
- a) Discuss the concept of small scale irrigation system.
 - b) Mention various criterias for the selection of plant species for agro forestry.
 - c) What are the problems of scaling up process in watershed development.

- Q6)** Justify the following sentence (Any two) : **[10]**
- a) Watershed development committees play significant role in watershed.
 - b) Ethnosilviculture systems are known as refugia.
 - c) Watershed is also possible at semi-Urban areas.

- Q7)** Attempt any two from the following : **[10]**
- a) Discuss the concept & methods of drain-line treatment.
 - b) Write about the role of Gram-Panchayat in watershed.
 - c) Explain the concept of conservation of soil & water through watershed development.

- Q8)** Write a note on (any two) : **[10]**
- a) Roof top water harvesting
 - b) Role of self Help Groups
 - c) Organic fertilizer



Total No. of Questions : 8]

SEAT No. :

P2733

[4833]-35

[Total No. of Pages : 2

M.Sc.

ENVIRONMENTAL SCIENCE

ENV - 312 : Biodiversity and Conservation

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) Explain the process of diversification at genetic and species level.

Q2) Attempt any two from the following :

- a) Explain the composition and levels of Biodiversity.
- b) Briefly explain the factors affecting ecosystem degradation.
- c) Explain the role of IUCN.

Q3) Solve any two from the following :

- a) Explain the importance of Species diversity in food web.
- b) What is impact of monoculture practices in Agriculture.
- c) Explain the functional properties of biodiversity.

Q4) Write short notes on any two :

- a) Red Data Book
- b) Gamma diversity
- c) Genetic Drift

P.T.O.

SECTION - II

Q5) Explain in brief various social approaches to conservation of indigenous knowledge system.

Q6) Attempt any two from the following :

- a) What is ex. situ conservation.
- b) Explain the role of media in biodiversity conservation.
- c) Give the importance of indigenous knowledge system in conservation programme.

Q7) Solve any two from the following :

- a) Explain the importance of intellectual property right in traditional aspects.
- b) What are the methods used for conservation of species diversity.
- c) Narrate the importance of Biodiversity education programme.

Q8) Write short notes on any two :

- a) Bio Prospecting
- b) Participatory forest management
- c) Biodiversity economic value



Total No. of Questions : 8]

SEAT No. :

P2734

[4833]-41

[Total No. of Pages : 2

M.Sc. (Semester - IV)

ENVIRONMENTAL SCIENCE

**ENV - 401 : Environmental Toxicology, Health and Safety
(2008 Pattern)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

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

SECTION - I

Q1) Answer any two from the following :

- a) Discuss duties of EHS officer in safety issues of an organization.
- b) Write in brief important regulations of Hazardous waste (Management and Handling) rules, 1989.
- c) Discuss occupational health issues in construction sector.

Q2) Attempt any two from the following :

- a) Explain in brief incineration technique.
- b) What are occupational hazards? Add a note on importance of safety policy.
- c) Explain health hazards associated with paint industry.

Q3) Answer any two from the following :

- a) Write in brief mitigation measures for noise pollution.
- b) Discuss salient features of Air Act, 1981.
- c) Discuss role of Management in implementing safety policies.

P.T.O.

Q4) Write short notes on any two from the following :

- a) Mock drill
- b) Indoor air pollution
- c) Lethality studies in toxicity measurement.

SECTION - II

Q5) Answer any two from the following :

- a) Discuss in brief causes and effects of flurosis.
- b) Explain in brief carcinogenic effects of Cd.
- c) Discuss role of WHO in implementing public health policies.

Q6) Attempt any two from the following :

- a) Write in brief role of social network media in sanitation awareness campaign.
- b) Give sources of Zn in Environment.
- c) Discuss salient features of Hazardous waste (Management & Handling) rules, 1989.

Q7) Answer any two from the following :

- a) Discuss physiological effects of mercury toxicity.
- b) Explain role of community in disaster management.
- c) Write in brief methods of safeguarding water resources.

Q8) Write short notes on any two from the following :

- a) Dose-response study
- b) Bioaccumulation
- c) Swine-flu



Total No. of Questions : 8]

SEAT No. :

P2735

[4833]-42

[Total No. of Pages : 2

M.Sc. (Semester - IV)

ENVIRONMENTAL SCIENCE

**ENV - 402 : Watershed Management
(2008 Pattern)**

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) Describe and state the principles of a watershed management. Add a note on causes of deterioration and consequences encounter in a watershed area.
- b) Describe the method how a delination and codeing is done for a watershed area.
- c) Describe external and climatic factors rotesin land Capability classification in a watershed.

Q2) Attempt any two the following :

- a) Explain the various watershed survey methods used for watershed resource appraisal.
- b) Explain with the help of example aerial and relief aspect used as a characteristics of watershed.
- c) Explain the various characteristics of land classes for land capability classification of a watershed.

Q3) Justify any two of the following :

- a) Land use and soil conservation and necessary for watershed planning.
- b) Rural and integrated watershed development are integrated part of watershed planning.
- c) Regular Environmental impact assessment of a watershed should be mandatory.

P.T.O.

Q4) Write notes on any two of the following :

- a) Geomorphological Characteristic of a watershed.
- b) Resource map importance in watershed resource appraisal.
- c) Need of watershed.

SECTION - II

Q5) Answer any two of the following :

- a) Discuss various techniques required for promotions of peoples participation in watershed development and management.
- b) Discuss the mechanism of interception and infiltration hydrological process in watershed.
- c) Discuss the role of wind erosion their types in soil erosion process in watershed area.

Q6) Attempt any two of the following :

- a) Differentiate between strip cropping and mulching practices as a conservation measures for aerable land in a watershed.
- b) Differentiate between reclamation of river land and mined land as a conservation measures for non-aerable lands in a watershed.
- c) Differentiate between conservation horticulture and conservation forestry as a conservation measures in watershed areas.

Q7) Explain any two of the following :

- a) Explain with indian examples traditional methods use for storage and control of water in a watershed basic.
- b) Explain the various watershed based forming system in a watershed.
- c) Explain how ecosystem management challenges are over come in evaluation of watershed projects.

Q8) Write notes on any two of the following :

- a) Watershed development program executed in India.
- b) Selected indicators in monitoring a water shed.
- c) Role of sericulture in watershed.



Total No. of Questions : 8]

SEAT No. :

P2736

[Total No. of Pages : 2

[4833] - 44

M.Sc (Semester - IV)

ENVIRONMENTAL SCIENCE

**ENV - 412 : Environment Planning
(2008 Pattern)**

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 **[10]**

- a) "Development is not possible without exploitation of natural resources". Comment the statement.
- b) How historical background of planning helps in any developmental project?
- c) What is concept of planning? Discuss in brief parameters of planning.

Q2) Attempt any two from the following **[10]**

- a) Write important concept and parameters of planning in brief.
- b) "Social willingness play important role in planning" Comment on statement.
- c) What is regional planning? Write in brief parameters in regional planning.

Q3) Solve any two from the following **[10]**

- a) "Environmental planning play important role in development" justify the statement.
- b) "Population explosion is obstacle in Development" justify the statement.
- c) Write in brief parameters required for rural planning.

P.T.O.

Q4) Write short notes (any two) [10]

- a) Adverse impact of planning.
- b) Importance of national law in planning.
- c) Rehabilitation problems.

SECTION - II

Q5) Solve any two from the following [10]

- a) “Development and environment are two side of same coin” justify the statement.
- b) Enlist the Indian laws for protection of environment.
- c) “Disposal of solid waste doesn’t require planning” justify the statement.

Q6) Solve any two from the following [10]

- a) “State pollution control boards play important role in protection of environment” comment the statement.
- b) What is biomedical waste? Write in brief its disposal methods.
- c) What is solid waste? How you cal plan for its disposal?

Q7) Attempt any two from the following. [10]

- a) What is conservation? How you plan for conservation of water resource?
- b) What is national policy? How policy helps for development.
- c) “Environmental policies are important for any development” comment the statement.

Q8) Write short notes (any two) [10]

- a) Exploitation and safeguard of environment.
- b) Public participation.
- c) Importance of law in protection of environment.



Total No. of Questions : 8]

SEAT No. :

P2737

[Total No. of Pages : 2

[4833] - 45

M.Sc (Semester - IV)

ENVIRONMENTAL SCIENCE

ENV - 413 : Environmental Management Systems

(Theory & Job Licensing)

(2008 Pattern) (Optional)

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 **[10]**

- a) Discuss importance of inventory analysis in LCA.
- b) Which ISO 14000 standard is applicable for EMS? Add a note on implementation guidelines.
- c) Explain applications of Environmental Design.

Q2) Attempt any two of the following **[10]**

- a) Discuss characteristics of ISO 14000 standard.
- b) Enlist types of LCA and explain cradle to grave.
- c) Discuss importance of environmental design in resource conservation.

Q3) Answer any two of the following **[10]**

- a) Discuss various tools of Environmental Management.
- b) Explain different benefits of EMS.
- c) Describe significance of functional units.

P.T.O.

- Q4)** Write short notes on (any two) [10]
- a) PDCA model.
 - b) Aspect - impact study.
 - c) Environmental Design for manufactured products.

SECTION - II

- Q5)** Answer any two of the following [10]
- a) Enlist types of solid waste. Add a note on agricultural solid waste.
 - b) Discuss factors affecting composition of municipal solid waste.
 - c) Describe process of pyrolysis.

- Q6)** Answer any two of the following [10]
- a) Give composition of solid waste.
 - b) Discuss criteria used in identification of hazardous waste.
 - c) What are limitations of disposal of solid waste by landfill.

- Q7)** Answer any two of the following. [10]
- a) Explain health impacts of industrial solid waste treatment.
 - b) Write in short physical and chemical treatment of Hazardous waste.
 - c) Briefly comment on present municipal solid waste management situation in India.

- Q8)** Write short notes on (any two) [10]
- a) Composting.
 - b) Disposal of solid waste at sea.
 - c) Environmental impacts of incineration.

