Total No. of Questions : 8]

SEAT No. :

P507

[Total No. of Pages : 2

[4335] - 11
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 101 : Fundamental of Environmental Science
(2004 Pattern)

Time :3 Hours] *[Max. Marks :80*

Instructions to the candidates:-

1) ***Attempt not more than 5 questions of which at least 2 questions must be from each section.***
2) ***Answers to the two Sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***All questions carry equal marks.***

SECTION - I

Q1) a) Discuss the objectives and guiding principles of environmental education with reference to India.

b) Give an account of organizations and agencies engaged with environment protection in India.

[16]

Q2) a) Discuss in detail composition of lithosphere with suitable diagram.

b) Give an account on evolution of atmosphere and different views regarding its origin.

[16]

Q3) a) Why season occurs? Explain the stability of climate system with reference to earth and sun.

b) Explain various views and ancient agenda for environmental protection.

[16]

Q4) Write short notes on the following : **[16]**

a) Structure and composition of atmosphere.

b) Greenhouse effect and associated climate change.

P.T.O.

SECTION - II

Q5) a) Discuss the zonation in marine ecosystem. Also add a note on role played by oceans in climate regulation.

b) What do you mean by sustainable development? What are the major measures to attain sustainability?

[16]

Q6) a) Discuss the process of ecological succession.

b) What are ecological pyramids? Explain various types with suitable examples.

[16]

Q7) a) What are biogeochemical cycles? Explain with the help of a diagram the phosphorus cycle.

b) What are the types of ecosystem productivity? Also add a note on ecosystem regulation.

[16]

Q8) Write short notes on the following : **[16]**

a) Characteristics of terrestrial ecosystem.

b) Food chains and food web.

Total No. of Questions : 8]

SEAT No. :

P508

[Total No. of Pages : 2

[4335] - 12
M.Sc. (Semester - I)
ENVIRONMENTAL SCIENCE
ENV - 103 : Environmental Biology
(2004 Pattern)

Time :3 Hours] *[Max. Marks :80*

Instructions to the candidates:-

1) ***Attempt not more then 5 questions of which at least 2 questions must be from each section.***
2) ***Answer to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***All questions carry equal marks.***

SECTION - I

Q1) a) Write a brief note on biogeography of India.

b) Explain the role of microorganisms in industrial application.

[16]

Q2) a) Classify the biomes. Add a note on tundra biome.

b) Discuss the characteristics of grassland ecosystem.

[16]

Q3) a) Explain the impact of climatic conditions on distribution of floral diversity.

b) Write in brief on survivalship curve for different types of species.

[16]

Q4) a) Describe the process of ecological sucession, on xerosere.

b) Differential between Western and Eastern himalyan vegetation.

[16]

P.T.O.

SECTION - II

Q5) a) Describe the various IUCN categories of threaten species.

b) Explain the role of Red data book for conservation of species.

[16]

Q6) a) Explain the importance of buffer zone in protected area Networks.

b) Discuss the conservation status of the major critically endangered animal species of India.

[16]

Q7) a) Explain the role of GMO in conservation technology.

b) Write the various methods and tools used for data collection in forest managment practices.

[16]

Q8) a) Briefly explain - ex-situ conservation.

b) Briefly explain - Zonation of marine environment.

[16]

Total No. of Questions : 8]

SEAT No. :

P509

[Total No. of Pages : 2

[4335] - 31
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 301 : Environmental Planning Rural and Urban
(2004 Pattern)

Time :3 Hours] ***[Max. Marks :80***

Instructions to the candidates:-

1) ***Attempt not more then 5 questions of which atleast 2 questions must be from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***All questions carry equal marks.***

SECTION - I

Q1) a) Write in brief importance of baseline status of any one resourse in planning.

b) "Pollitical willingness play an important role in planning". Justify the statement.

Q2) a) "Any development depends on population" - Discuss.

b) "What is urban planning? Write in brief parameters required for urban planning.

Q3) a) Write in brief Historical importance of planning.

b) "Willingness play important role in planning". Justify.

Q4) Write short notes on :

a) Adverse impact of planning.

b) Rehabilitation problems.

P.T.O.

SECTION - II

Q5) a) Enlist the Indian laws for protection of environment.

b) What is hazardous solid waste? Give its sources.

Q6) a) What is EIA? Write in brief method of EIA.

b) Why sustainable development is important for mankind.

Q7) a) "State pollution control boards play important role in protection of environment". Comment the statement.

b) What is conservation? How you plan for conservation of water resource.

Q8) Write short notes on :

a) Carrying capacity of environment.

b) Socio-economic issues in planning.

Total No. of Questions : 8]

SEAT No. :

P510

[Total No. of Pages : 2

[4335] - 41
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 402 : Environmental Health and Safety
(2004 Pattern)

Time :3 Hours] ***[Max. Marks :80***

Instructions to the candidates:-

1) ***Attempt not more than 5 questions of which at least 2 questions must be from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***All questions carry equal marks.***

SECTION - I

Q1) a) Discuss in short the potential health hazards of electroplating industry.

b) Explain physiological effects of lead on flora.

Q2) a) What is toxicity? Briefly explain OECD guidelines.

b) Discuss implementation guidelines of OSHAS.

Q3) a) Discuss in brief on-site risk mitigation strategies.

b) Explain metal recovery by biological leaching method.

Q4) Write a short note on any 2 :

a) Effects of cadmium.

b) Factory Act 1948

c) Role of public participation in mitigating Environmental hazards.

P.T.O.

SECTION - II

Q5) a) Discuss causes and effects of airborne diseases with any one suitable example.

b) Discuss safe drinking water programs for rural India.

Q6) a) Discuss UNEP's health security programs.

b) What is global warming? Explain factors responsible for it.

Q7) a) What is 'inversion of temperature'? Discuss types of inversion.

b) Briefly explain pulse polio eradication programs in India.

Q8) Write a short notes on any 2 :

a) Green house effects.

b) Epidemic diseases.

c) Health and sanitation problems in Urban India.

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Total No. of Questions : 8]

SEAT No. :

P511

[Total No. of Pages : 2

[4335] - 42
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 403 : Information Technology & Bio-informatics for Environmental Sciences
(2004 Pattern)

Time :3 Hours] ***[Max. Marks :80***

Instructions to the candidates:-

1) ***Attempt not more than 5 questions of which at least 2 questions must be from each section.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***All questions carry equal marks.***
4) ***Answers to the two sections should be written in separate books.***

SECTION - I

Q1) a) Define GIS and describe it's components with their significance.

b) Explain the meaning of spatial and attribute data in GIS, giving suitable examples.

Q2) a) Explain the interactions of electro-magnetic radiations with earth surface features. Add a note on spectral reflectance of water and dry soil.

b) Explain how images/photographs in NIR are useful during forest cover/ mapping study.

Q3) a) Explain the factors controlling relief displacement in aerial photographs.

b) Enumerate different photo-recognition elements and describe Tone and Texture in detail.

Q4) a) Give the orbital characteristics of Oceansat/Radarsat and add a note on it's applications.

b) Discuss the applications of remote sensing in land cover mapping.

P.T.O.

SECTION - II

Q5) a) Define the term emissivity and explain the uses of thermal images in environmental studies.

b) What is meant by microwave sensing? Describe the working of SLAR system.

Q6) a) Explain, under what circumstances would it be better to use a computer network as compared to an individual powerful machine? Illustrate with examples.

b) What are the various components of a website? Design a simple website for the Environmental Science department of your college.

Q7) a) Discuss the various software tools, which you would be using for Land-use cover mapping. Explain the use of each tool.

b) Write notes on :

i) Components of DBMS.

ii) Advantages of RDBMS.

Q8) Write a detailed visit report about your visit to any sanctuary or environment sensitive area.

Total No. of Questions : 8]

SEAT No. :

P512

[Total No. of Pages : 2

[4335] - 101
M.Sc. (Semester - I)
ENVIRONMENTAL SCIENCE
ENV - 101 : Environmental Geoscience
(2008 Pattern)

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) ***Answers to the two sections should be written in separate answer books.***

SECTION - I

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

a) Explain with reactions how earth's atmosphere has evoluted.

b) Describe the role of ozone layer in stratosphere.

c) Discuss how atmospheric moisture control hydrological cycle?

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

a) How does inversion of temperature is related to atmospheric stability.

b) Give various factors affecting wind and its measurement.

c) What do you meant by heat budget. Add a note on its effect on Green house phenomenon.

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

a) What are floods? How are they related to atmospheric disturbances?

b) Describe in brief dry and wet adiabatic lapse rate.

c) Give various forms of condensation. Add a note on precipitation.

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

a) Terrestrial radiation.

b) Jet stream.

c) Chemical composition of atmosphere.

P.T.O.

SECTION - II

Q5) Attempt any two from the following : **[10]**

a) What are metamorphic rocks? Discuss any one classification of metamorphic rock.

b) Which are the physical parameter related to soil formation.

c) Explain the theory related to origin and composition of seawater.

Q6) Answer any two from the following : **[10]**

a) Describe Global Water Balance and its effect on water resource.

b) Dams are the best source of surface water to human. Explain.

c) Explain the concept of trace element with respect to human health.

Q7) Attempt any two from the following : **[10]**

a) Explain various biochemical factors in environmental health.

b) What are Landslides? Explain various mitigation measures to landslides?

c) Describe any four mineral related to iron & their physical property.

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

a) Geochemical cycle.

b) REE.

c) Types of water.

Total No. of Questions : 8]

SEAT No. :

P513

[Total No. of Pages : 2

[4335] - 102
M.Sc. - I (Semester - I)
ENVIRONMENTAL SCIENCE
ENV - 102 : Environmental Chemistry
(2008 Pattern)

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) Explain the sources of lead and its derivatives. Add a note on physicochemical properties of lead.

b) Comment on the stationary and mobile sources of Hydrocarbons.

c) Explain in brief the structure of DNA.

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

a) Classify surfactants with examples. Explain why ABS are replaced by LAS?

b) What is carcinogen? Discuss organic compounds as carcinogen with suitable examples.

c) What is mutation? Discuss its types with examples.

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

a) Draw the structure of DDT and explain environmental problems associated with DDT.

b) Explain in brief sources and effects of PAH.

c) What are sedimentary cycle? Explain cyclic pathway of sulphur in environment.

P.T.O.

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

a) Classification of protein and their functions.

b) Polymer decay.

c) Lithosphere.

SECTION - II

Q5) Attempt any two from the following : **[10]**

a) Explain the principle of colorimetry with schematic diagram.

b) Explain XRD technique with reference to analysis of Environmental pollutants.

c) Define :

i) Chemical potential ii) Chemical equilibria

iii) Polymer iv) Solubility product

v) Radionuclides

Q6) Answer any two from the following : **[10]**

a) Explain use of ion exchange chromatography in estimation of environmental pollutants.

b) Explain the principle and applications of polarography.

c) Give an account of safety considerations during handling and distruction of hazardous chemicals.

Q7) Attempt any two from the following : **[10]**

a) Explain the principle, merits and demerits of gas chromatography.

b) Explain the principle and working of AAS with schematic diagram.

c) What are aflatoxins. Add a note on its toxic properties.

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

a) Methods used for estimation of organochlorine pesticides.

b) Toxicity and distruction of cyanogens and cyanogen bromides.

c) Stoichometry.

Total No. of Questions : 8]

SEAT No. :

P514

[Total No. of Pages : 2

[4335] - 103
M.Sc. (Semester - I)
ENVIRONMENTAL SCIENCE
ENV - 103 : Environmental Biology
(2008 Pattern)

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) Give an account on biogeographical zones of India.

b) Explain the process of ecological succession in hydrosere.

c) Discuss in brief various factors that regulate population growth.

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

a) Comment upon the undirectional flow of energy in an ecosystem.

b) Give an account on characteristic features of forest biome.

c) What are wetlands? Explain the productive nature of wetlands.

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

a) Write a note on conservation issues of wetlands.

b) Discuss the salient features of estuarine ecosystem.

c) Explain with the help of diagram phosphorus cycle.

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

a) Classification of biomes.

b) Ecotone and edge effect.

c) Microbes as antimicrobial agents.

P.T.O.

SECTION - II

Q5) Attempt any two from the following : **[10]**

a) Give an account on important projects run in India for conservation of biodiversity.

b) Describe the characteristics of coastal environment.

c) What are the reasons behind loss of biodiversity in India.

Q6) Answer any two from the following : **[10]**

a) Explain the role of local communities in biodiversity conservation.

b) Give an account on salient features of wildlife protection act, 1972.

c) Discuss the influence of developmental activities on wildlife management with suitable examples.

Q7) Attempt any two from the following : **[10]**

a) Write an account on protected areas network in India.

b) Discuss the applications of biotechnology in species conservation.

c) Discuss the contribution global environmental agreements in biodiversity conservation.

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

a) Red data book.

b) National forest policy.

c) Convention on biodiversity.

Total No. of Questions : 4]

SEAT No. : ____

P515

[Total No. of Pages : 3

[4335] - 104
M.Sc. (Semester - I)
ENVIRONMENTAL SCIENCE
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 in brief the following terms.

i) Sampling ii) Exclusive method of classification

iii) Open end class iv) Kurtosis

b) Following table gives the data on % relative humidity in the morning of a metrological station for 365 days. Compute coefficient of quartile deviation.

% Relative Humidity in the morning	Number of days
44-54	90
55-64	78
65-74	90
75-84	75
85-94	32

c) Explain the term skewness. State the types of skewness and the relation between mean, mode and median.

P.T.O.

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

a) Partial calculations using data of X-Average spike length (in cm) after 90 days of germination and Y-Average number of seeds per spike for 10 randomly selected plants of Wheat gives the following results.

$\Sigma X = 136.9, \Sigma Y = 466, \Sigma X.Y = 6419.1, \Sigma X^2 = 1901.15, \Sigma Y^2 = 21822$

Fit the correlation coefficient between X and Y. Interpret it.

b) Define linear regression. How many regression lines are there? Give the equations of them and interpret the coefficients involved in each.

c) Explain the term dispersion. Give an example illustrating the need of dispersion. Explain the importance of coefficient of variation.

SECTION - II

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

a) Write short notes on

i) P - value ii) Time series

iii) Critical Region iv) Probability density Function

b) State the probability mass function of Binomial distribution. State mean and variance of it. Also compute $P[2 \leq X < 4]$ if $X \sim B(n = 6, p = 0.40)$.

c) The data below is the root length (in cm) of wheat plant after 7 days of germination of Wheat under different mutation exposure period.

Treatment	Replication		
	I	II	III
Control	2.1	2.3	3.8
M_1-5 Minute	3.2	3.7	3.1
M_2-10 Minute	2.8	2.9	2.5
M_3-15 Minute	1.5	1.9	2.3

Test at 5 % level of significance whether there is any effect of mutation on root length.

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

a) i) Explain the procedure of chi-square test for independence. Mention clearly the assumptions also.

ii) What is time series? What are the components of time series? Give one example of time series data in environmental studies.

b) The following sample data gives Peroxides activity (units/min/g.f.wt.) on rough lemon of two varieties.

Variety A	5.6	6.2	4.2	5.2	4.1	5.2	6.9	4.8	5.4	5.7
Variety B	7.2	3.4	6.8	3.8	5.8	7.2	4.5	3.9		

Test whether two varieties of lemon differ significantly with respect to Peroxides activity.

c) Obtain a solution of the following system of linear equations.

$X_1 + 2X_2 - 3X_3 = 0$

$2X_1 + 4X_2 - 6X_3 = 0$

$X_1 - 2X_2 + 5X_3 = 0$

Total No. of Questions : 8]

SEAT No. : ____

P516

[Total No. of Pages : 2

[4335] - 201
M.Sc. (Semester - II)
ENVIRONMENTAL SCIENCE
ENV - 201 : Environmental Economics
(2008 Pattern)

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) Answer any two of the following :

a) How environmental impact affects on Market?

b) How environment and economy linked together? Explain in detail.

c) Define social-cost and discuss the problems associated with social cost with examples.

Q2) Attempt any two of the following :

a) Discuss in detail functional role of economic instrument in protection of environment.

b) How insentives and subsidies decrease the quality of environment?

c) "Economy is dependant on exploitation of natural resources" Justify.

Q3) Answer any two of the following :

a) Why cost and benefit analysis is important for protection of environment.

b) Differentiate between renewable and non-renewable resources.

c) Discuss the need of environmental policies for protection?

P.T.O.

Q4) Write short notes (any two) :

a) Theory of public good.

b) Demand and supply.

c) Valuation of resources.

SECTION - II

Q5) Attempt any two of the following :

a) Explain in detail longterm impacts of global warming.

b) Write in detail Environmental Kuznet's curve.

c) How does climate change impact Environmental Economics in India?

Q6) Attempt any two of the following :

a) Write a brief note on concept & issues in sustainable development?

b) Enlist the various methods of Environmental growth & quality measurement.

c) What are the alternative options for combating the climate change.

Q7) Justify the statement (any two) :

a) Carbon trading is effective tool for Environmental Management.

b) Sustainable development help to solve different Environmental problems.

c) Climate change makes impact on Environmental Economics.

Q8) Write notes on (any two) :

a) Problems of social cost.

b) Foreign Direct Investment.

c) Components of strategic planning.

Total No. of Questions : 8]

SEAT No. : ____

P517

[Total No. of Pages : 2

[4335] - 202

M.Sc. (Semester - II)

ENVIRONMENTAL SCIENCE

ENV - 202 : Water and Wastewater Engineering

(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) What is forecasting of population? Explain with geometrical progression method.

b) Briefly explain various demands of water.

c) Draw neat & labelled diagram of ground water treatment units.

Q2) Attempt any two of the following :

a) Describe in detail mechanism of sand filter.

b) What is water quality standards? Explain with the help of ISO.

c) What are common impurities found in natural source of water.

Q3) Answer any two of the following :

a) What is softening? Describe soda-lime process of softening.

b) Discuss the theory and principle of adsorption.

c) Why treatment to drinking water is essential. Explain.

P.T.O.

Q4) Write short notes (any two) :

a) Ultra filtration.

b) Iron removal.

c) Floculation.

SECTION - II

Q5) Answer any two of the following :

a) What is sewage? Write about the various constituents of sewage.

b) Why is it necessary to have standards for disposal of sewage?

c) What is the role of screen chamber in waste water treatment? Give the different types of screens.

Q6) Attempt any two of the following :

a) Write a note on the collection and pumping of sewage.

b) Describe in detail with diagram the activated sludge process.

c) What is the principle of biological treatment of waste water.

Q7) Answer any two of the following :

a) Explain with drawing, the flow chart of process and sources of wastewater in pulp and paper industry.

b) Write a note on treatment of whey.

c) What are the advantages and limitations of anaerobic digestion.

Q8) Write short notes on any two :

a) Removal of cyanide.

b) Upflow Anaerobic sludge Blanket reactor.

c) Recovery of chromium from wastewater.

Total No. of Questions : 8]

SEAT No. :

P518

[Total No. of Pages : 2

[4335] - 203
M.Sc. (Semester - II)
ENVIRONMENTAL SCIENCE
ENV - 203 : Environmental Pollution-Water & Soil
(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 of the following :

a) What is water sampling? Explain its types?

b) What are effects of soil pollution on agriculture?

c) Write a note on ocean pollution.

Q2) Attempt any two of the following :

a) Write a note on macro nutrients of soil, and add estimation of them.

b) What is effect of municipal sewage on ground water?

c) What is hazardous waste? Add a note on its disposal.

Q3) Attempt any two of the following :

a) Explain in brief impact of pollutants on flora & fauna.

b) Write in brief about properties of sea water.

c) What is eutrophication? Add a note on types of it.

P.T.O.

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

a) Soil profil.

b) Sanitary landfill.

c) Characteristic of domestic waste.

SECTION - II

Q5) Attempt any two of the following :

a) Write a note on scintillation counter.

b) Explain ICRP recommendations.

c) What is 3R principal? Explain it with suitable example.

Q6) Attempt any two of the following :

a) What are effects of radiation on humanbeing?

b) Explain in brief conversion of waste into energy.

c) What is role of Municipal Corporation & ULB's for waste management?

Q7) Answer the following :

a) Write a note on radioactive decay and half life period of radioactive elements.

b) How to treate hospital waste? Add a note on instruments used for it.

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

a) Soil deterioration.

b) G.M. Counter.

c) Characteristic of nuclear waste.

Total No. of Questions : 8]

SEAT No. : ____

P519

[Total No. of Pages : 2

[4335] - 204
M.Sc. (Semester - II)
ENVIRONMENTAL SCIENCE
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) ***All questions carry equal marks.***
4) ***All questions are compulsory.***

SECTION - I

Q1) Answer any two of the following :

a) Discuss the important multinational agreements carried out to protect global environment.

b) What are the salient features of motor vehicle act?

c) Explain the umbrella nature of the environment protection act.

Q2) Answer any two of the following :

a) Give an account on outcome of stockholm conference.

b) What are the statutary provisions to protect environment in India?

c) Explain the drawbacks involved in successful implementation of environmental laws.

Q3) Answer any two of the following :

a) What are the salient features of air act, 1981.

b) Discuss the role of various authorities created under antipollution acts.

c) Give an account on the outcome of Nairobi declaration.

P.T.O.

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

a) Hazardous wastes management rules.

b) Fundamental rights

c) Indian penal code

SECTION - II

Q5) Answer any two of the following :

a) Differentiate between exploitation and safe guards for conservation.

b) What are the drawbacks involved in traditional evaluation of development?

c) Discuss the requirements for environmental audit under EPA, 1986.

Q6) Answer any two of the following :

a) Discuss the issues involved in environmental equity versus development.

b) What is meant by carrying capacity? Explain in relation with developmental activities.

c) Write an account on sustainable developmental activites.

Q7) Answer any two of the following :

a) What are the important aspects of municipal solid waste management rules?

b) Discuss the organisational structure and functions of regulatory bodies under EIA.

c) What are the important steps involved in cost benefit analysis.

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

a) Natural and manmade growth.

b) Survival need of mankind and environmental protection.

c) National environmental policy.

Total No. of Questions : 8]

SEAT No. : ____

P520

[Total No. of Pages : 2

[4335] - 301
M.Sc. (Semester - III)
ENVIRONMENTAL SCIENCE
ENV - 301 : Air Pollution and Climate Change
(2008 Pattern)

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) ***Answers to the two sections should be written in separate answer books.***

SECTION - I

Q1) Attempt any two from the following :

a) Describe in detail reaction in the atmosphere.

b) What are the primary and secondary air pollutant? Discuss with examples.

c) What are the major factors contributing to the air pollution?

Q2) Answer any two from the following :

a) Define air pollution and add a note on their effect on animal.

b) Write a note on vehicular pollution.

c) Write a note on environmental problems of plastic industry.

Q3) Attempt any two from the following :

a) What are the sources of aerosole? Discuss its effect on human health.

b) What is globle warming? Write its effect in detail.

c) What are principle causes of industrial air pollution?

P.T.O.

Q4) Write short notes on any two :

a) Monitoring of SO_2.

b) Effect of ozone depletion.

c) Effect of SPM on human.

SECTION - II

Q5) Attempt any two from the following :

a) Enlist in detail methods for air pollution control.

b) Describe the structure and working of cyclones collection.

c) What is ESP? Discuss its working in detail.

Q6) Answer any two from the following :

a) What are the steps involved in adsorption of gases?

b) What is fabric filter? Write its working in detail.

c) Describe different types of scrubber in detail.

Q7) Attempt any two from the following :

a) What is IPCC? Write its role in climate study.

b) What is carbon trading? How it helps to control the emission.

c) How gases pollutants are removed? Enlist the equipments.

Q8) Write short notes on any two :

a) Advantage and disadvantage of scrubbers.

b) Effect of air pollutant on properties.

c) UNFCCC.

Total No. of Questions : 8]

SEAT No. :

P521

[Total No. of Pages : 2

[4335] - 302
M.Sc. (Semester - III)
ENVIRONMENTAL SCIENCE
ENV - 302 : EIA and Environmental Auditing
(2008 Pattern)

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) Describe general objectives of an EIA study.

b) Explain the parameters studied under meteorological environment while conducting an EIA study.

c) Write a note on principles of 'National Environment Policy 2006'.

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

a) Recommend and Environment management plan (EMP) for a housing complex/township project.

b) Explain the procedure of public hearing as per EIA notification 2006.

c) According to EIA notification 2006 - explain the procedure for constitution of 'State Environment impact Assessment Authority'.

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

Write a note on

a) Ad hoc & checklist method of impact assessment.

b) Screening process.

c) Socio-Economic study of an EIA.

P.T.O.

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

a) 'Additional studies' suggested in genetic structure of EIA report.

b) Evolution in the process of EIA in India.

c) Importance of biological environment for baseline study of EIA.

SECTION - II

Q5) Attempt any two from the following : **[10]**

a) With reference to environmental audit, describe the process of consumption and pollution audit.

b) Explain the environmental by social issues involved with development of a river valley (dam project).

c) Prepare a check list of an impact due to mining activities.

Q6) Answer any two from the following : **[10]**

a) Why audits are important? and describe the elements of environment audit statement.

b) Describe important features/clauses of an ISO-14000.

c) Impact of highway on environment & social aspects.

Q7) Attempt any two from the following : **[10]**

a) Describe the process of primary data collection to establish a baseline for an EIA study.

b) Explain the advantages & disadvantages of public hearing.

c) Which aspects are considered important for describing the project processes in any EIA report?

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

a) Pre and post audit activities.

b) Disposal audit.

c) Preventive, control & mitigation measures for pollution with suitable example.

Total No. of Questions : 8]

SEAT No. : ____

P522

[Total No. of Pages : 2

[4335] - 303
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) ***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) Describe process of data acquisition in Remote Sensing.

b) Explain the electromagnetic signals useful for Remote Sensing.

c) Discuss the early history of space imaging.

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

a) Describe the photographic elements for visual interpretation.

b) Explain the Radar Remote Sensing from space.

c) Explain the image transmission and compression process.

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

a) Briefly explain the landsat satellite program.

b) Describe the basic geometric characteristics of aerial photographs.

c) Describe the use of GPS in mapping.

P.T.O.

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

a) Geometric corrections and Radiometric corrections.

b) Lidar sensing

c) Meteorological satellites.

SECTION - II

Q5) Attempt any two from the following : **[10]**

a) Describe levels and scales of measurements in GIS.

b) Describe the process of rasterization and georeferencing.

c) Discuss the role of RS-GIS in forestry.

Q6) Answer any two from the following : **[10]**

a) Discuss the synergy between RS and GIS.

b) Discuss the brief history of GIS.

c) Describe briefly the object based vector data model.

Q7) Attempt any two from the following : **[10]**

a) Describe various categories of GIS.

b) Describe the process of DTM generation.

c) Discuss the various data reduction and generalisation methods.

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

a) TIN - Triangulated Irregular Network.

b) Raster data model.

c) Data analysis in GIS.

Total No. of Questions : 8]

SEAT No. :

P523

[Total No. of Pages : 2

[4335] - 304
M.Sc. (Semester - III)
ENVIRONMENTAL SCIENCE
ENV - 311 : Restoration Ecology
(2008 Pattern) (Optional)

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) ***Answers to the two sections should be written in separate anwer books.***

SECTION - I

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

a) Explain the importance of biotic interaction in restoration practices.

b) Write the principle involved in phyto remediation.

c) Write the importance of rhizosphere flora in degradation.

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

a) How the microflora detoxify the toxic compound?

b) What is biofiltration? Add note on root zone technology.

c) What are steps involved in wetland restoration?

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

a) Explain the role of mangroove in coastal environment.

b) Write the importance of organic farming in agro-environment.

c) Explain the practices used for saline soil restoration.

P.T.O.

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

a) Ecological Sucession.

b) Bioleaching of metal compounds.

c) Bioagumentation.

SECTION - II

Q5) Attempt any two from the following : **[10]**

a) What are the advantages of farmer managed lift-irrigation?

b) Explain the importance of micro watershed programme.

c) How self-help-groups in women strengthen the social environment?

Q6) Answer any two from the following : **[10]**

a) Explain the selection criteria for species in watershed.

b) Write the importance of land use in watershed programme.

c) Briefly explain the disturbances in implementing watershed programme.

Q7) Attempt any two from the following : **[10]**

a) Write the importance of root-top water harvesting in semi-urban area.

b) What is resource appriasal.

c) Briefly explain the silviculture practices used in watershed.

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

a) Organic farming.

b) Area-treatment.

c) Role of Gram Panchyat.

Total No. of Questions : 8]

SEAT No. :

P524

[Total No. of Pages : 2

[4335] - 305
M.Sc. (Semester - III)
ENVIRONMENTAL SCIENCE
ENV - 312 : Biodiversity & Conservation
(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.***
5) ***Figures to the right indicate full marks.***

SECTION - I

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

a) Explain the objectives of biodiversity assessment.

b) What are the levels of biodiversity. Describe briefly.

c) What are biodiversity gradients? Explain the changes in biodiversity along the latitude.

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

a) Describe the environmental factors responsible for biodiversity distribution.

b) Explain the relationship of biodiversity with ecosystem functioning.

c) What are the factors affecting ecosystem degradation and loss?

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

a) Explain the ecological theories of species diversity.

b) What are biodiversity hotspots? Describe the distribution of global biodiversity hotspots.

c) What are the characteristics of biodiversity at taxonomic level?

P.T.O.

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

a) Necessity and scales of inventorying and monitoring of biodiversity.

b) Ecosystem analysis.

c) IUCN.

SECTION - II

Q5) Answer any two from the following : **[10]**

a) Discuss various direct and indirect impact of biotechnology on biodiversity.

b) Explain the role of NGO's in biodiversity conservation with suitable examples.

c) Elaborate on the trade related IPR.

Q6) Write a short note on (Any two) : **[10]**

a) Convention on biological diversity (CBD).

b) Bio-piracy.

c) Seed-bank.

Q7) Justify any two sentences : **[10]**

a) Biodiversity has both direct and indirect utilization.

b) Public participation in biodiversity management.

c) Role of educational institution in biodiversity conservation.

Q8) Attempt any two from the following : **[10]**

a) What do you mean by ownership of traditional knowledge, correlate with IPR.

b) Discuss the legislation for conservation and management in India.

c) Discuss Gene bank and field bank with examples.

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Total No. of Questions : 8]

SEAT No. :

P525

[Total No. of Pages : 2

[4335] - 401
M.Sc. (Semester - IV)
ENVIRONMENTAL SCIENCE
ENV - 401 : Environmental Toxicology, Health & Safety
(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 from the following :

a) What is hazardous waste? Explain hazards related to biomedical waste.

b) What is biomagnification? Add note on DDT toxicity.

c) What is noise pollution? Add note on health effects of it and controls for industrial noise pollution.

Q2) Attempt any two from the following :

a) Explain role of management in health, safety & environment.

b) Write in brief about occupational health issues in textile industy.

c) What is toxicology? Add note on LC 50.

Q3) Answer any two from the following :

a) Write in brief salient features of ISO-18000.

b) What are potential health hazards in construction industry? Add note on personal protective Instruments.

c) Explain importance of Mock drills & safety training in safety programmes.

P.T.O.

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

a) Factories Act 1948.

b) Ergonomics.

c) Safety committee.

SECTION - II

Q5) Answer any two from the following :

a) Explain the methods of safeguarding water resources.

b) Explain various methods of toxicity evaluation.

c) What is short term hazard prepareness plan?

Q6) Attempt any two from the following :

a) Explain in brief the role of WHO in public health program.

b) Explain the importance of eradication of polio from society.

c) What are physiological disorder caused by copper in animals?

Q7) Answer any two from the following :

a) What are sources of zinc contamination in environment.

b) What is bioaccumulation? Add note on detoxification.

c) Enlist at least five organic carcinogenic compounds.

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

a) Flurosis.

b) Biological war.

c) Chronic toxicity.

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Total No. of Questions : 8]

SEAT No. :

P526

[Total No. of Pages : 2

[4335] - 402
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) What are the benefits of watershed programme?

b) Explain the importance of relief aspect in watershed management.

c) What is importance of topographic features of area in watershed management?

Q2) Answer any two of the following :

a) What are the guidelines for watershed resource appraisal?

b) What are the main features of plan formulation in watershed?

c) What are the basic steps considered in water conservation?

Q3) Answer any two of the following :

a) What is importance of public participation in watershed programme?

b) What is significance of participatory rural appraisal?

c) Explain the importance of environmental regeneration due to watershed programme.

P.T.O.

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

a) Evapotranspiration.

b) Groundwater flow.

c) Coding

SECTION - II

Q5) Answer any two of the following :

a) Which are the factor's influencing wind erosion?

b) Explain the role of continuous contour trenches in soil conservation.

c) Briefly explain the tillage practices importance in aerable land.

Q6) Answer any two of the following :

a) Explain the importance of grass cover in soil conservation.

b) Which are temporary structures considered in non-aerable and conservation?

c) What is importance of reclamation of ravine land?

Q7) Answer any two of the following :

a) Briefly explain the national policies of watershed development programme.

b) Explain the importance of target group considered in evaluation of watershed programme.

c) Sketch a neat labelled diagramme of roof top water harvesting.

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

a) Nala bunds.

b) Dry land farming.

c) Energy crops.

Total No. of Questions : 8]

SEAT No. :

P527

[Total No. of Pages : 2

[4335] - 403
M.Sc. (Semester - IV)
ENVIRONMENTAL SCIENCE
ENV - 411 : Forestry and Habital Management
(2008 Pattern) (Optional)

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 from the following :

a) What are the physiological factors influencing vegetation.

b) Explain the role of abiotic factors in forest ecosystem.

c) What are the constraints in social forestry programme.

Q2) Write any two from the following :

a) What are technique used for seed quality improvement.

b) Explain the terrace farming. Add a note on vegetative cover in soil conservation.

c) What are the guideline and standards for silviculture practices.

Q3) Attempt any two from the following :

a) What is ethanobotany? Add a note on traditional customs used for forest conservation.

b) Explain in brief the role of mangrooves in coastal zone ecosystem.

c) What are the conflicts between tribal peoples with government agencies and its impact on management practices.

P.T.O.

Q4) Write short notes on any two :

a) Ex-situ conservation methods.

b) Forest types in India.

c) Objectives of agroforestry.

SECTION - II

Q5) Attempt any two from the following :

a) Explain the various methods used for sampling of vegetation.

b) How GIS and RS techniques are beneficiary in forest resource management.

c) Write the importance of wood seasoning and preservation.

Q6) Write any two from the following :

a) What are the biological methods used for forest conservation?

b) Explain the demerits of shifting cultivation.

c) Explain the buffer zone forest management practices.

Q7) Attempt any two from the following :

a) Briefly narrate the salient features of national forest policy 1988.

b) What are the amendments made in wild life protection act, 1972.

c) Explain the importance of forest inventory in forest economics.

Q8) Write short notes on (any two) :

a) Afforestration programme.

b) Role of corporate financing in forest management.

c) History of forest development.

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Total No. of Questions : 8]

SEAT No. :

P528

[Total No. of Pages : 2

[4335] - 404
M.Sc. (Semester - IV)
ENVIRONMENTAL SCIENCE
ENV - 412 : Environmental Planning and 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) Attempt any two of the following :

a) What is natural resourses? Write their role in development.

b) What is concept of planning? Discuss in short parameters of planning.

c) "Willingness play important role in planning". Justify.

Q2) Answer any two of the following :

a) "Population explosion is obstacle in development". Justify the statement.

b) Write in brief disadvantages of planning.

c) Write in detail importance of Rehabilitation.

Q3) Answer any two of the following :

a) Write in short role of Environmental planning in development.

b) Write in brief parameter required for rural planning.

c) "Industral development depends on natural resourses". Justify.

Q4) Write short notes (any two) :

a) Urban planning.

b) Advantages of Environmental planning.

c) Importance of law in planning.

P.T.O.

SECTION - II

Q5) Answer any two of the following :

a) "Central pollution control board play important role in protection of environment". Justify the statement.

b) Discuss the significance of EIA.

c) Write in brief importance of development and environment.

Q6) Answer any two of the following :

a) What is biomedical waste? Mention the details of its disposal.

b) "Only antipollution acts not sufficient to protect the environment". Comment the statement.

c) Write in brief role of state pollution control board.

Q7) Attempt any two of the following :

a) What is national policy? How policies help for development.

b) Write in detail methods of conservation with suitable examples.

c) Why sustainable development is important?

Q8) Write short notes (any two) :

a) Public participation.

b) Natural resourses & regeneration.

c) Problems of solid waste.

Total No. of Questions : 8]

SEAT No. :

P529

[Total No. of Pages : 2

[4335] - 405

M.Sc. (Semester - IV)

ENVIRONMENTAL SCIENCE

ENV - 413 : Environmental Management Systems (Theory and 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) ***All questions carry equal marks.***
4) ***All questions are compulsory.***

SECTION - I

Q1) Answer any two of the following :

a) What is sustainable development and what are the different approaches to sustainability?

b) Write about the different goals of environmental management.

c) What are the key principles in developing ISO standards? Add a note on ISO 14000 series.

Q2) Attempt any two of the following :

a) Define life cycle Assessment and add a note on its significance.

b) Describe the procedure for conducting LCA.

c) What are the benefits and limitations of LCA?

Q3) Answer any two of the following :

a) What is an Environmental Management System? Write about the core elements of EMS.

b) Explain the importance of documentation in EMS.

c) What are the environmental design tools for products? Add a note on ecolabelling.

P.T.O.

Q4) Write short notes on (any two) :

a) Green building.

b) Cradle to cradle variant of LCA.

c) Process standards in ISO 14000.

SECTION - II

Q5) Answer any two of the following :

a) Explain the various steps involved in pyrolysis.

b) What are the types and characteristics of hazardous wastes?

c) Explain the design structure and benefits of sanitary landfill sites.

Q6) Answer any two of the following :

a) What are the merits and demerits associated with disposal of wastes at sea?

b) Give an account on various health effects caused by solid wastes.

c) Discuss the various processes involved in municipal solid waste management.

Q7) Answer any two of the following :

a) What are the types and characteristics of industrial wastes?

b) Discuss various techniques used in disposal of solid wastes.

c) Which are the issues involved in management of municipal solid wastes?

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

a) Criteria in identification of hazardous waste sites.

b) 3R approach in MSW.

c) Incineration.

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