Total No. of Questions : 8]

SEAT No. :

P769

[Total No. of Pages : 2

[4135] - 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) Discuss the principle and scope of environmental science. Add a note on environmental ethics.

Q2) Describe the composition of atmospheric gases. Explain different theories regarding origin of atmosphere.

Q3) Describe the thermodynamics and dynamics of atmosphere. Add a note on hydrological cycle.

Q4) Write a short note on any two

a) Structure of atmosphere.

b) Ancient agenda for environment as reflected in Sanskrit.

c) Global Warming.

SECTION - II

Q5) What is ecotone? Explain its importance.

Q6) What is Food - Chain and Food web explain with example various types of pyramids.

Q7) What is biogeochemical cycle? Explain nitrogen cycle in brief with diagram.

P.T.O.

Q8) Write short notes on any two of the following

a) Ecological niche

b) Grass land ecosystem.

c) Explain perspectives of nuclear energy resources for sustainable development.

♦♦♦♦

Total No. of Questions : 8] **SEAT No. :**

P770 **[Total No. of Pages : 2**

[4135] - 12
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 103 : Environmental Biology
(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) ***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) What are biomes? Explain "how habitat diversity changes from biome to biome". Enlist the characteristics of desert biome.

Q2) Describe the applications of microbes in environmental science. Explain the association of microbes with man, animals and plants.

Q3) Define "Biodiversity". What are the impacts of climate change on biodiversity of India? Add a note on "India's biogeography".

Q4) Write notes on any two of the following.

a) Characteristics of population.

b) Wetlands of India.

c) Extremophilic micro - organisms.

d) Semi - arid habitats of India.

SECTION - II

Q5) What are threatened species? Describe the threatened species categories of IUCN with suitable examples. Add a note on the reasons for being threatened.

Q6) What is wildlife management? Explain different ways/ methods for conservation of wildlife. Add a note on 'factors influencing wildlife management'.

P.T.O.

Q7) What is marine biology? Explain the distribution of marine life along Indian coasts. Add a note on 'open sea environment'.

Q8) Write notes on any two of the following :

a) National Forest Policy.

b) Role of biotechnology in conservation.

c) Role of local communities in wildlife management.

d) Red data books.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P771

[Total No. of Pages : 2

[4135] - 31

M.Sc.

ENVIRONMENTAL SCIENCE

ENV - 301 : Environmental Planning, Rural & Urban

(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) ***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) Write scope and importance of Environmental planning in urban development with examples.

Q2) "Environment and Development are two side of same coin". Justify the statement with suitable examples.

Q3) What are the basic steps and parameters involved in Environmental planning? Explain in detail.

Q4) Write short notes (Any two)

a) Environmental Acts and Planning.

b) Carrying capacity of environment.

c) Problems associated with waste disposal.

SECTION - II

Q5) What is EIA? Write need and historical prospective of EIA in detail.

Q6) Explain in detail important environmental factors in mega dam project.

Q7) "Public participation is obstacle in development". Comment on the statement with suitable examples.

P.T.O.

Q8) Write short notes (Any Two)

a) National policy and EIA.

b) Sustainable development

c) Disaster management plan.

♦♦♦♦

Total No. of Questions : 8] **SEAT No. :**

P772 **[Total No. of Pages : 2**

[4135] - 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) Explain the interrelationship and interactive safety approach in development project.

Q2) What are the reduction strategies for accidents in construction projects.

Q3) Explain the role of public participation in risk identification and mitigation strategies.

Q4) Write short notes on any two :-

a) Salient features of ISO 18000.

b) Employment state insurance act, 1948.

c) On and Off site risk analysis.

SECTION - II

Q5) Explain the importance of physiological aspects in toxicity studies.

Q6) What is chronic toxicity? Add a note on metabolic effects of Arsenic on fauna.

Q7) What is biological weapon? Explain its hazardous effects. Add a note on protective measures.

P.T.O.

Q8) Write short notes on any two :

a) Epedemic disease - causes and effects.

b) Disperssion of atmospheric gases.

c) Public awareness and sanitation programme.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P773

[Total No. of Pages : 2

[4135] - 42

M.Sc.

ENVIRONMENTAL SCIENCE

ENV - 403 : Information Technology & Bioinformatics for 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.***

SECTION - I

Q1) Define remote sensing? Explain EMR and its interaction with the Earth.

Q2) Explain the various photo recognition element and factors controlling them.

Q3) Write an brief account on Geographical Informational Systems and map data representation.

Q4) Write notes on any two of the following.

a) White and grey bodies.

b) Offlaps and onlaps.

c) Types of aerial photographs.

SECTION - II

Q5) Describe in detail the various components used in networking. Add a note on LAN.

Q6) Discuss the latest standard software used in environmental science for representation of environmental data and graphs. Add a note on MAP INFO.

Q7) Explain the various sub - topic to be included in making an Research proposal on Environmental Impact Assesment.

P.T.O.

Q8) Write notes on <u>any two</u> of the following :

a) Website designing

b) Application of satellite photographs.

c) Environmental science and Internet.

♦♦♦♦

Total No. of Questions : 8] **SEAT No. :**

P774 **[Total No. of Pages : 2**

[4135] - 101
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 101 : Environmental Geoscience
(2008 Pattern) (Sem. - 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) ***All questions are compulsory.***

SECTION - I

Q1) Answer any two of the following : **[10]**

a) Explain the effects of heat budget. Add a note on green house effects.

b) Describe the structure and composition of the atmosphere.

c) Explain the factors affecting wind. Add a note on gradient and local wind.

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

a) Describe the forms of condensation and precipitation.

b) How cyclones are formed? Write a note on the effects of cyclones.

c) Describe inversion of temperature and atmospheric stability.

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

a) Explain solar and terrestrial radiations.

b) Describe the causes of drought.

c) What are geostrophic and gradient wind.

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

a) Evolution of atmosphere.

b) Wind observation and measurements.

c) Lightening.

d) Jet stream.

P.T.O.

SECTION - II

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

a) Describe major, trace and rare earth elements.

b) Define chemical weathering. Add a note on the soil classification.

c) Explain the importance of water resources. Add a note on types of water resources.

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

a) Explain the diseases induced by human use of land.

b) Name the kinds of rocks found on the surface of the Earth. Write a note on sedimentary rocks.

c) Explain origin and composition of sea water.

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

a) What do you mean by trace elements and health.

b) What are the causes of landslides.

c) Describe the following physical properties of minerals :

i) Cleavage.

ii) Hardness.

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

a) Volcanic hazards.

b) Geochemical cycles.

c) Fluctuations of sea levels.

d) Crust of the earth.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. : ____

P775

[Total No. of Pages : 2

[4135] - 102

M.Sc.

ENVIRONMENTAL SCIENCE

ENV - 102 : Environmental Chemistry

(Semester - I) (2008 Pattern)

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

Instructions to the candidates:-

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

SECTION - I

Q1) Answer any two of the following : **[10]**

a) Explain the various layers of atmosphere. Give composition of troposphere.

b) What are different segments of environment. Explain Lithosphere in detail.

c) Explain the biotic factors of the environment with their significance.

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

a) Explain role of water as prime supporter of life.

b) What is embryogenesis. Explain mutation & gene control during embryogenesis.

c) Explain the role of RNA & DNA.

Q3) Solve any two : **[10]**

a) State the effects of organophosphorus & organohalides.

b) Explain the structure & action of polycyclic aromatic hydrocarbons on human body.

c) Write a note on photochemical smog.

P.T.O.

Q4) Attempt any two : **[10]**

a) Classify various pesticides & explain the effect of pesticides on human life.

b) What are cationic, anionic and nonionic detergents & how they pollute river water.

c) How Lead & its compounds make pollution.

SECTION - II

Q5) Solve any two : **[10]**

a) Explain in short various instrumental methods of analysis of environmental pollutants.

b) How colorimeter and atomic absorption spectroscope are useful in analysis of various pollutants.

c) Write the merits and demerits of X - ray fluorescence and X - ray diffraction methods.

Q6) Attempt any two **[10]**

a) How CO, NOx and SOx are analyzed from autoexhaust.

b) Explain the principle of two methods of analysis viz. Neutron activation analysis and Isotope dilution analysis.

c) Explain the polarography technique in detail.

Q7) Solve any two : **[10]**

a) What are hazardous materials & how they are analyzed?

b) Explain the principle of working of HPLC with figure.

c) How Biomedical waste is disposed?

Q8) Attempt any two : **[10]**

a) Explain the working of Gas Chromatography.

b) What is solubility product? Explain with suitable examples.

c) Write a short note on solubility of gases in water.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. : ____

P776

[Total No. of Pages : 2

[4135] - 103

M.Sc.

ENVIRONMENTAL SCIENCE

ENV - 103 : Environmental Biology

(Semester - I) (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 of the following :

a) What is endemism? Discuss its types and importance.

b) Provide a broad outline of classification of biomas.

c) Discuss the stability of ecosystem.

Q2) Justify any two of the following :

a) Tropical biome exhibits great habital diversity.

b) India is known as megabiodiversity country.

c) Subclimax community is more productive.

Q3) Answer any two of the following :

a) Explain the positive association of microorganism and plants.

b) Mention the steps in the evolution of ecosystem.

c) Explain the scheme for classification of microorganism.

Q4) Write notes on any two of the following :

a) Faunal Biodiversity in India.

b) Niche Specialization.

c) Viable Population.

P.T.O.

SECTION - II

Q5) Answer any two of the following :

a) Comment on the status of wetlands in India.

b) Explain the conservation issues of forest in India.

c) What are the threatened species categories of IUCN. Define each category.

Q6) Attempt any two from the following :

a) What is in - situ conservation? Explain any one method in detail.

b) Describe the factors influencing wildlife management.

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

Q7) Answer any two of the following :

a) Describe the characteristics of coastal environment.

b) Explain the role of wildlife protection act in biodiversity conservation.

c) Discuss the quarantine regulations.

Q8) Write notes on any two :

a) National forest policy.

b) Wildlife of coastal environment.

c) Project Tiger

d) Strategies for planning and management of forests.

♦♦♦♦

Total No. of Questions : 4]

SEAT No. : ____

P777

[Total No. of Pages : 2

[4135] - 104
M.Sc. (Sem. - 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 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 : **[20]**

a) Define mean, mode, median of a frequency distribution and discuss their advantages and limitations.

b) The mean of 100 values is computed as 78. It was then realized that 2 numbers were reported incorrectly as 37 and 89 instead of 137 and 19 respectively. Find the correct mean and justify if there is any change.

c) Compute quartiles and standard deviation for the following data.

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of villages	1	9	28	22	15	12	10

Q2) Solve any two **[20]**

a) Define linear regression & describe the method of fitting of regression line of y on x axis.

b) What do you understand by the term "Level of Significance". Explain its relation with critical region.

c) Calculate the mean and coefficient of variation for the following frequency distribution.

Class interval	Frequency	Class interval	Frequency
0-10	03	50-60	26
10-20	08	60-70	13
20-30	17	70-80	09
30-40	29	80-90	06
40-50	45	90-100	04

P.T.O.

SECTION - II

Q3) Attempt any two **[20]**

a) Describe the F test as applied in two way analysis of variance (ANOVA). How do you determine the degree's of freedom of sources in ANOVA table? Explain.

b) Define time serises? Explain the method of moving average.

c) i) Explain in detail the procedure of one way analysis of variance.

ii) Explain the Chi^2 test for goodness of fit.

Q4) Write notes on **[20]**

a) i) Histogram

ii) Type I & Type II errors.

iii) Skewness and Kurtosis

iv) Equally likely outcome.

b) Describe in detail the statistical model used to study air pollution.

c) i) What is the meaning of goodness of fit? Explain its relation with independence of attributes with suitable examples.

ii) Explain the difference between level of significance and p - value.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P779

[Total No. of Pages : 2

[4135] - 202
M.Sc. (Sem. - II)
ENVIRONMENTAL SCIENCE
ENV - 202 : Water & Waste Water Engineering
(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 books.***

SECTION - I

Q1) Answer any two of the following :

a) What is water demand? What is meant by the variations in water demand?

b) Write about the different methods of population forecasting. Elaborate the logistic curve method.

c) What is the need for standards for quality of water for domestic and industrial use.

Q2) Attempt any two of the following :

a) Give the principle of sedimentation. Add a note on vertical sedimentation with neat labelled diagram.

b) Write about the methods for dewatering of sludge.

c) Describe in detail the mechanism of coagulation and flocculation.

Q3) Answer any two of the following :

a) Design a coagulation cum sedimentation tank with continuous flow for a population of 60,000 with 120LPD. Make suitable assumptions where needed.

b) Draw a neat labelled sketch of slow sand filter. Add a note on its cleaning.

c) Differentiate between chlorination and ozonisation.

P.T.O.

Q4) Write short notes on any two :

a) Nano filtration.

b) PACT

c) Iron removal

SECTION - II

Q5) Answer any two of the following :

a) Why is it necessary to treat wastewater before its disposal? What standards are in vogue for disposal?

b) Draw a flow diagram for sewage treatment plant and neatly label all the units.

c) Explain the process of dissolved air floatation.

Q6) Attempt any two of the following :

a) What is the significance of oil and grease removal?

b) Explain the different types of aeration with suitable diagram.

c) Why is sludge recirculation necessary in activated sludge process?

Q7) Answer any two of the following :

a) Explain the significance of bioremediation. Write a note on root zone technology for bioremediation.

b) Write a note on the merits and demerits of trickling filter. Explain the process with diagram.

c) What is anaerobic digestion? What are the loading criteria for this process.

Q8) Write short notes on any two :

a) Benefits of Anaerobic digestion.

b) Rotating biological contactor.

c) Sewage pumping chamber.

♦♦♦♦

Total No. of Questions : 8] **SEAT No. :**

P780 **[Total No. of Pages : 2**

[4135] - 203

M.Sc.

ENVIRONMENTAL SCIENCE

ENV - 203 : Environmental Pollution : Water & Soil

(2008 Pattern) (Sem. - 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) Attempt any two of the following : **[10]**

a) Write in brief sources of surface and ground water pollution.

b) Differentiate between fresh and marrine water pollution.

c) "Human activity significantly affect the quality of water". Justify the statement.

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

a) What is soil profile? Discuss the effect of inorganic pollutant on soil.

b) Explain different methods used for soil sampling.

c) How organic pollutant affect the water? Explain.

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

a) What are the sources of marrine water pollution? Discuss.

b) What are the specification prescribed for disposal of industrial effluent on soil?

c) What are the effect of pollutant on flora and fauna.

Q4) Write short notes on (any two) of the following : **[10]**

a) Characteristic of Industrial waste.

b) Organic Pollutant.

c) Types of soil pollution.

P.T.O.

SECTION - II

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

a) Explain "radioactive waste generated by nuclear power plant".

b) Discuss effects of radiations on plants.

c) Explain working of semiconductor detector.

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

a) Explain in brief "Impact of disposal of hazardous solid waste on soil".

b) Give the effects of ore extraction on soil.

c) What is restoration? Explain restoration of soil.

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

a) What is solid waste? Explain sources of solid waste in rural area.

b) Explain in brief the methods used for solid waste pollution control.

c) What is composting? Explain various methods used for composting of solid waste.

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

a) Effects of mining.

b) Effects of solid waste pollution.

c) Short term effects of radiations.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P781

[Total No. of Pages : 2

[4135] - 204
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 204 : Environmental Law, Ethics & Policy
(2008 Pattern) (Sem. - 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) Attempt any two of the following :

a) Explain in brief the importance of Stockholm conference in International Environmental law.

b) Write a note on the International legal efforts to control ozone depletion.

c) Write short notes on :

i) Salient features of Nairobi Declaration.

ii) International law as to prevention and control of Acid rain.

Q2) Answer any two of the following :

a) Write in brief about the Directive Principles of Indian. Constitution for protection of environment.

b) Explain the provisions of the Factories Act towards environment protection.

c) Write short notes on :

i) Provision of the motor vehicles Act about air pollution control.

ii) Hazardous waste legislation for pollution abatement.

Q3) Describe any two of the following :

a) What is the role of the Central Board for the prevention and control of Air pollution.

b) Elucidate the role played by the supreme court of India in the protection of environment with the help of suitable case law.

c) Write short notes on :

i) Legal rules as to disposal of Biomedical waste.

ii) Integration of economics, social and environmental sustainability.

P.T.O.

Q4) Answer any two of the following :

a) Explain how sustainable development has been the objective of the Environment legislation in India.

b) Comment on the effect upon the environment due to natural as against manmade growth.

c) Describe the future of Environmental laws as regards pollution control.

SECTION - II

Q5) Attempt any two of the following :

a) Trace the development of International Environmental law.

b) What are the provisions of Indian Penal Code for prevention and control of pollution?

c) Write short notes on :

i) Legal protection of endangered species.

ii) Criminal liability under the water Act.

Q6) Answer any two of the following :

a) Explain the powers of the central government under the Environment Protection Act.

b) Write about India's international obligations relating to environmental issues.

c) Write short notes on :

i) Provisions of water Act on offences by companies.

ii) State water laboratory.

Q7) Explain any two of the following :

a) State the rules on Import and Export of Hazardous waste.

b) What fundamental rights do we have in connection with environment protection?

c) Write short notes on :

i) Environment Equity V/S developmental needs.

ii) Fundamental Duties for environment protections.

Q8) Answer any two of the following :

a) Explain the features of united Nations Framework Convention on climate change.

b) Write in brief about the United Nations Convention on Law of Sea.

c) Write short notes on :

i) Bhopal Gas Disaster.

ii) M.C. Mehta V/S Kamalnath (Span Motel's Case)

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P782

[Total No. of Pages : 2

[4135] - 301
M.Sc. (Sem. - III)
ENVIRONMENTAL SCIENCE
ENV - 301 : Air Pollution & 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 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 are the sources of air pollution?

b) Discuss the reactions in the stratosphere.

c) What are primary and secondary air pollutant?

Q2) Attempt any two of the following :

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

b) Describe in brief methods for control of air pollution.

c) How dispersion of pollutant take place in vehicles?

Q3) Attempt any two of the following :

a) What are the sources of green house gases? Discuss their effect on climate.

b) What are the sources of aerosls? Discuss their effect on human health.

c) What are the principle causes of air pollution in cement industry

Q4) Write short notes (Any two) of the following

a) Monitoring methods of NO_2

b) Earth Umbrella.

c) Effect of SO_2 on plants.

P.T.O.

SECTION - II

Q5) Answer any two of the following :

a) Describe the different strategies for control of air pollution.

b) Write about the principle and different types of inertial separators.

c) What are the operational problems associated with fabric filters.

Q6) Attempt any two of the following :

a) Describe the use of adsorption in removal of gases. List the advantages and disadvantages.

b) What are the factors to be considered in the design of an incinerator.

c) What are the different mechanisms involved in the working of wet scrubbers. List the types of scrubbers.

Q7) Answer any two :

a) What is the role of UNFCCC in mitigating climate change?

b) Write about the three flexibility mechanisms under the Kyoto Protocol.

c) Explain the different methods of carbon sequestration.

Q8) Write short notes on any two :

a) Characteristics of filter medium.

b) Vapour incineration.

c) IPCC.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P783

[Total No. of Pages : 2

[4135] - 302
M.Sc. (Sem. - III)
ENVIRONMENTAL SCIENCE
ENV - 302 : EIA & 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 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) Briefly explain the legestive aspect in EIA studies.

b) Explain the importance of objectives in EIA studies.

c) What are the steps involved in the evaluation of risk.

Q2) Attempt any two from the following :

a) Explain the levels of citizen participation in EIA studies.

b) What is the significance of meterological studies in EIA studies.

c) In EIA report, how 'analysis of alternatives' is explained.

Q3) Solve any two from the following :

a) What are the criteria for identifying an initial list of potential relevance to a proposed project.

b) What are the common writing - related errors in EIA reports.

c) Explain the check list methodology in EIA studies.

Q4) Write short notes on (any 2) :

a) Appraisal.

b) Hazard identification.

c) Impact prediction.

P.T.O.

SECTION - II

Q5) Attempt any two from the following :

a) Explain the mass balance approach in impact prediction of air environment.

b) Explain environmental management plan for water environment considering any suitable industrial project.

c) In an environmental audit which are the treatment and disposal options usually consider.

Q6) Solve any two from the following :

a) Explain in briefly the conceptual approach for the biological environmental assessment.

b) What are the steps involved in EIA studies of Fertilizer industry.

c) Differentiate between objective - based and client - driven type environmental audit.

Q7) Attempt any two from the following :

a) Briefly explain the salient features of ISO 14000.

b) Briefly narrate the salient features of Environmental protection Act. 1986.

c) Explain the practical consideration while preparing EIS.

Q8) Write short notes on (any - 2) :

a) Cost Benefit analysis.

b) Consumption Audit.

c) Exposure assessment.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P784

[Total No. of Pages : 2

[4135] - 303
M.Sc. (Sem. - III)
ENVIRONMENTAL SCIENCE
ENV - 303 : Remote Sensing & 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) ***Answers to the two sections should be written in separate books.***

SECTION - I

Q1) Attempt any two of the following.

a) What is Remote Sensing? Write its application

b) What is aerial photograph? Describe any one method of scale of determination.

c) Discuss the role and importance of GIS in environmental study.

Q2) Attempt any two of the following :

a) Differentiate between aerial photograph and satellite image. Write which one is more advantages than other.

b) Discuss the application of RS in urban planning.

c) What is principle of RS? Write in detail passive RS.

Q3) Attempt any two of the following :

a) What are the problems associated with aerial photograph?

b) An aerial photograph has taken from aerial camera having focal length (F) 5 inch and height (H) of camera 7000 feet. Calculate the scale of photograph.

c) What is photography? How aerial photograph helps to study the urban problems.

P.T.O.

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

a) Application of RS in marrine study.

b) Types of aerial photograph.

c) Relief displacement.

SECTION - II

Q5) Attempt any two of the following :

a) "GIS is scientific tool to gather the information" Comment on the statement.

b) What is GIS? Give its different component.

c) "GIS is more informative than RS". Justify the statement.

Q6) Attempt any two of the following :

a) What is EMR? Write in detail its role in RS.

b) "Satellite is the third eye of human to study the earth". Comment on the statement.

c) "GIS and RS play important role in environmental study". Justify the statement.

Q7) Attempt any two of the following :

a) Write in brief history of Indian Satellite Series.

b) What are the steps required for data management in GIS?

c) "GIS, RS and aerial photography are integrated tools". Discuss in brief.

Q8) Write short notes on (any two) of the following.

a) Terminology of GIS.

b) Photographic scale.

c) Disadvantages of Remote Sensing.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P785

[Total No. of Pages : 2

[4135] - 304
M.Sc. (Sem. - III)
ENVIRONMENTAL SCIENCE
ENV - 311 : Restoration Ecology
(Optional) (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) Explain the role of basic principles of ecology in restoration technology.

b) What are the selection criteria and environmental consideration for selection of species in restoration management?

c) Classify the phyto remediation. Explain any one with suitable example.

Q2) Solve any two from the following :

a) What are the problems associated with leachates from dumping site.

b) Explain the steps involved in the river conservation programme.

c) Explain the importance of organic farming in restoration of agro ecosystem.

Q3) Attempt any two from the following :

a) Justify 'Sucession plays important role in restoration'.

b) Briefly explain with suitable example of bioscurbber.

c) Differentiate between phytoaccumulation and phyto absorption.

Q4) Write short notes on any two :

a) Mangrooves in coastal areas.

b) Bioremediation.

c) Zeolite application in saline soil.

P.T.O.

SECTION - II

Q5) Attempt any two of the following :

a) Describe the concept and significant of watershed.

b) Discuss hydrological characteristic of water.

c) Explain the land - cover classification in watershed management.

Q6) Justify any two of the following statements :

a) Selection of plant species in necessary in watershed.

b) Drain - line treatment is a necessity in water conservation and soil conservation.

c) Organic farming is letter option for soil conservation.

Q7) Explain any two of the following :

a) What are the problems of scaling up the watershed approach.

b) Explain the rok of self - help group for women in watershed management.

c) Roof - top water harvesting is a need of urban area.

Q8) Write notes on any two of the following :

a) Ethnosilvicultural refugia.

b) Watershed as unit of sustainable development.

c) Farmer Managed Small scale irrigation system.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. : ____

P786

[Total No. of Pages : 2

[4135] - 305
M.Sc. (Sem. - III)
ENVIRONMENTAL SCIENCE
ENV - 312 : Biodiversity & Conservation
(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 books.***

SECTION - I

Q1) Attempt any two of the following. **[10]**

a) Describe the relationship of biodiversity with ecosystem functioning. Explain the hypothesis describing the relation ship.

b) What are various threats to biodiversity? Explain each briefly.

c) What do you mean by inventorying and monitoring the biodiversity? Explain its necessity.

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

a) Explain the process of diversification at species level.

b) Describe the environmental factors responsible for distribution of biodiversity. Add a note on environmental gradients.

c) Why categorisation of species is important.

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

a) What is endemism? Explain the concept with endemic species of maharashtra.

b) What is ecosystem analysis? Explain the approaches and methods of ecosystem analysis.

c) Describe the drivers and dynamics of changes in biodiversity.

P.T.O.

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

a) Demographic bottleneck.

b) Distribution of biodiversity.

c) Scope of biodiversity science.

SECTION - II

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

a) What are biodiversity hot spots? Enlist the global and national biodiversity hotspots with their exceptional characteristics.

b) Explain the role of UNEP, UNESCO, WWF and ICSU in biodiversity conservation.

c) What is convention on Biological Diversity? Explain its role in biodiversity conservation and management.

Q6) Attempt any two of the following : **[10]**

a) Describe the biodiversity rules and regulations.

b) Explain the nature and uses of biodiversity data and information management.

c) What are the direct and indirect impacts of biotechnology on biodiversity.

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

a) Ethical and aesthetic values of biodiversity.

b) Traditional practices in biodiversity conservation.

c) Bio - piracy.

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

a) Describe the importance of ecological restoration. Add a note on methods of ecological restoration.

b) What is IPR? Explain about ownership of traditional knowledge.

c) Describe the methods of conservation for genetic & species diversity.

♦♦♦♦

Total No. of Questions : 8] **SEAT No. :**

P787 **[Total No. of Pages : 2**

[4135] - 401
M.Sc. (Sem. - 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 : **[10]**

a) Explain the salient features of employee state insurance Act.

b) What are on - site health and safety measure consider in construction industries.

c) Explain the salient features of ISO -18000.

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

a) What are basic parameters considers in toxicity evaluation of as laboratory scale.

b) Explain the role of worker and tradeunion in safety programme.

c) Explain the importance of physical and chemical parameters in occupational environment.

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

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

b) What are the metabolic effect of bend poisioning.

c) Explain in detail the hazards associated with biomedical waste.

Q4) Write short notes on any 2 **[10]**

a) Safety committee.

b) Risk identification.

c) LC 50. / EC.

P.T.O.

SECTION - II

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

a) Discuss impact of development on urban sector.

b) Write in short about risk assessment.

c) Explain in brief salient features of Environment protection Act, 1986.

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

a) Explain potential health risk involved in industrial process.

b) Discuss preventive measures for waterborne diseases.

c) What are basic factors for short term and long term disaster management?

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

a) Discuss psychological impacts of viral rulnerability in rural sector.

b) Explain in brief concept of Ecovillage.

c) Discuss current water and sanitation situation in Rural India.

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

a) Risk identification.

b) Swine flu.

c) Biological warfare.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P788

[Total No. of Pages : 2

[4135] - 402
M.Sc. (Sem. - 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) Attempt any two from the following :

a) Explain about identification of problems in watershed management.

b) Write a note on linear aspect, aerial aspect and relief aspect.

c) What is the role of soil characteristics in land capability classification?

Q2) Answer any two of the following :

a) Write on the data requirement for watershed resource appraisal.

b) Describe the stages of planning for watershed protection.

c) "Environmental impact assessment is prerequisite for watershed development". Discuss.

Q3) Attempt any two from the following :

a) Explain the need of mobilisation of peoples for participation in watershed development and management.

b) Explain the concepts of evaporation, evapotranspiration, surface runoff, ground water flow as a hydrological process in watershed.

c) Discuss the role of people organisation in watershed management with suitable example.

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

a) Principle of watershed management.

b) Environmental regeneration.

c) Role of women in watershed management.

P.T.O.

SECTION - II

Q5) Attempt any two of the following :

a) Discuss in brief contour farming used as a measures for aerable land.

b) Explain mechanical measures for water erosion control for aerable land.

c) Which are the various methods in continuous gully control measures for non - aerable lands.

Q6) Justify any two statements of the following :

a) Tillage practices is one of the best method used in conservation for aerable land.

b) Do you agree that contour farming or trenches is a better conservation measure.

c) Staggered method is applicable for non - aerable lands.

Q7) Answer any two of the following :

a) Explain the various achievement of watershed development programmes executed in south India.

b) Discuss the various traditional method applicable in water harvesting.

c) Describe the benefits of agro - forestry in watershed.

Q8) Write notes on any two of the following :

a) Harmfull effect of watershed management.

b) Ecosystem management challenges.

c) Rehabitation of mined lands.

d) Diversion drains for aerable land.

♦♦♦♦

Total No. of Questions : 8] **SEAT No. :**

P789 **[Total No. of Pages : 2**

[4135] - 403
M.Sc. (Sem. - IV)
ENVIRONMENTAL SCIENCE
ENV - 411 : Optional Forestry & Habitat 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 : **[10]**

a) What is habitat management? Explain the scope of forestry and Habitat management.

b) Describe the biotic and abiotic components of forest ecosystem.

c) Explain the conservation initiatives taken up by government of maharashtra for forest conservation.

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

a) Describe the traditional and advanced methods of silviculture.

b) What is social forestry? Explain the economic benefits of social forestry.

c) Describe the role of forest survey of India & Forest development corporations.

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

a) Explain the ecological factors that influences the vegetation.

b) Describe the silvicultural practices in specialized ecosystems like - cold deserts.

c) What is Tribology? Explain the stages of tribal economy and education.

Q4) Write a note on any two **[10]**

a) Joint forest management.

b) Forest Genetic Resources and Gene Conservation.

c) Seed Technology.

P.T.O.

SECTION - II

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

a) Mention the objectives on forest inventory.

b) What are different measurements involved in the process of mensuration?

c) Discuss various biological control measures against forest damage.

Q6) Justify the statement (Any Two) : **[10]**

a) GIS is an important tool in forest management.

b) Co - operative finance can play significant role in forest economy.

c) 'Volume estimation of stand' is necessary in forest management.

Q7) Attempt the following questions (Any two) **[10]**

a) What is socio - economic analysis of forest productivity.Explain with suitable example.

b) Discuss the merits and demerits of shifting cultivation.

c) Establish the co-relation of industrial and forest policies.

Q8) Write notes on (Any two) **[10]**

a) Wildlife protection act.

b) Role of afforestation.

c) Forest Engineering.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P790

[Total No. of Pages : 2

[4135] - 404
M.Sc. (Sem. - IV)
ENVIRONMENTAL SCIENCE
ENV - 412 : Optional 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 ncessary.***
3) ***All questions carry equal marks.***
4) ***All questions are compulsory.***

SECTION - I

Q1) Answer any two of the following :

a) What is natural resources? How they helps for any development discuss in brief.

b) "Development is not possible without exploitation of natural resources". Comment the statement.

c) "Political willingness play important role in development and planning for environment". Justify the statement.

Q2) Attempt any two of the following.

a) Write important concept and parameters of planning in brief.

b) What is rural planning? Discuss in brief parameters required for rural planning.

c) "Any development required study of population". Comment.

Q3) Answer any two of the following :

a) "Social willingness play important role in planning". Comment.

b) What is planning? Discuss parameters required for national planning.

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

a) Problems associated with planning.

b) Socio - economic issues in planning.

c) Rehabilitation problems.

P.T.O.

SECTION - II

Q5) Answer any two of the following :

a) What is solid waste? How you can plan for its disposal.

b) "Environment and development are two side of same coin". Justify the statement.

c) "State pollution control boards play important role in protection of environment". Comment.

Q6) Attempt any two of the following :

a) Enlist the national & International law for protection of environment.

b) Write an essay on importance of planning in development.

c) What is EIA? Write in brief methods of EIA.

Q7) Answer any two of the following :

a) How rules and regulation play important role in protection of environment.

b) "Only Antipollution acts not protect environment", Comment.

c) "Environmental policies are important for any development". Justify the statement.

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

a) Role of sustainable development.

b) Carrying capacity of environment.

c) Resettlement issues.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P791

[Total No. of Pages : 2

[4135] - 405
M.Sc. (Sem. - IV)
ENVIRONMENTAL SCIENCE
ENV - 413 : Optional Environmental Management Systems (Theory & Job Licensing)
(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 the need for Environmental Management? Write about the different goals of environmental management.

b) What is the role of international standards in maintaining quality of environment?

c) Explain sustainability and sustainable development with its significance.

Q2) Attempt any two of the following :

a) Define Environmental Management system. Explain through Plan Docheck Act model.

b) What are the goals and purposes of EMS?

c) Which ISO 14000 standard is applicable for EMS? What are its advantages?

Q3) Answer any two of the following :

a) Explain with examples the different variants of LCA.

b) Write about the significance of functional unit and system boundaries in LCA.

c) What are the environmental design considerations in product life stages.

P.T.O.

Q4) Write short notes on any two :

a) Energy efficiency in buildings.

b) Resource conservation.

c) Examples of environmental design.

SECTION - II

Q5) Answer any two of the following :

a) What are solid wastes? Give the type based classification of solid wastes.

b) What are the health effects of solid waste?

c) What are the factors affecting the generation and composition of municipal solid waste.

Q6) Attempt any two of the following :

a) What are transfer stations? Discuss their role in solid waste management system.

b) Discuss the significance of source reduction and product recovery in solid waste management.

c) What are the constraints in municipal solid waste management in India.

Q7) Answer any two of the following :

a) Discuss the environmental concerns associated with incineration. Add a note on energy recovery.

b) Write about the physical and chemical treatment of hazardous waste.

c) What are the different types of composting.

Q8) Write short notes on any two :

a) Disposal at sea.

b) Refuse derived fuel.

c) Compaction of solid waste.

♦♦♦♦

Total No. of Questions : 8]

SEAT No. : ____

P1499

[Total No. of Pages : 2

[4135] - 43

M.Sc.

ENVIRONMENTAL SCIENCE

ENV - 401 : Advanced in Pollution Control Technology

(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 answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Describe the process involved in dairy industry and add a note on methods of treatment and disposal.

b) Elaborate the methods used in treatment of tannary waste-Add a note on cromium separation.

Q2) a) Enlist the sources, quantity and characteristics of pulp and paper mill with environmental effects.

b) Write in detail methods of interpretation of BOD and COD.

Q3) a) Enlist and explain in brief primary, secondary and tertiary treatment in waste water treatments.

b) What is dewatering of sludge? Write in detail methods of sludge dewatering in petrochemical industries.

Q4) Write short note on (any two) :

a) 3R principle in treatment.

b) Anaerobic biological treatment.

c) Treatability studies.

P.T.O.

SECTION - II

Q5) a) What is composting? Discuss different methods of composting.

b) Write a note on 'ideal landfill' of MSW.

Q6) a) What is 3R principle? Explain with suitable example for zero discharge of waste.

b) "Better sanitation is the mirror of city". Justify the statement.

Q7) a) 'Waste is wealth' comment on statement.

b) Briefly discuss the quality of water require for irrigation after treatment.

Q8) Write short notes (any two) :

a) Sludge thickening.

b) Oil and grease removal.

c) Adsorption.

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