Total No. of Questions : 8] **[Total No. of Pages : 2**

P1203

[3828]-21
M.Sc.
ENVIRONMENTAL SCIENCE
ENP-201 : Statistical Methods and Computer Base Modelling in Environmental Science

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

Instructions to the candidates :

1) ***Attempt not more than five questions of which at least two 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) What are types of data? Explain classification of environmental data. Discuss how class boundaries are decided with appropriate examples.

Q2) a) Explain significance of mean and standard deviation in environmental studies.

b) Compute the parameters of central tendency for the following data.

Plant Diversity Index	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5
Number of Quadrants	18	22	16	14	10

Q3) Calculate product moment coefficient of correlation for the following paired observations of percentage area under evergreen trees (X) and satisfaction index in ecotourism (Y).

X : 12.2, 6.8, 41.2, 6.0, 8.9, 2.4, 22.3, 15.5, 16.9, 18.2.

Y : 4, 2, 9, 3, 4, 1, 7, 6, 7, 8.

Q4) Write notes on :

a) Ogive curve

b) Poisson distribution

c) Coefficient of regression.

d) Advantages of statistical techniques.

P.T.O.

SECTION - II

Q5) a) Explain the principle of local control.

b) What is analysis of variance? Describe the procedure of one way analysis of variance.

Q6) a) Explain in brief paired t-test.

b) Explain in brief the features of MS Power point.

Q7) a) Write a short note on binomial distribution. Illustrate two real life situations.

b) Explain any four statistical functions used in MS-EXCEL.

Q8) Describe a statistical model used to study air pollution. How many variables are involved in this model. Identify the 'cause' and 'effect' variables? Explain the relations between the cause variables and effect variables.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P1204

[3828]-22
M.Sc.
ENVIRONMENTAL SCIENCE
ENP-202 : Water and Waste Water Engineering

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

Instructions to the candidates :

1) ***Attempt not more than five questions of which at least two 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 question carry equal marks.***

SECTION - I

Q1) a) Give impact of solids on water quality.

b) Discuss the quality of water required for industrial purposes.

Q2) a) Explain necessity of disinfection. Explain ozonization process in detail.

b) Compare slow sand and rapid sand filters on following points :

Role of filtration, size of bed, coagulation, land area occupied, depth of base material, washing, efficiency and economy.

Q3) a) Draw a flowsheet of water works and comment on each unit.

b) Explain theory of equilization.

Q4) Write note on (any two).

a) Break point chlorination.

b) Demineralization.

c) Theory of sedimentation.

P.T.O.

SECTION - II

Q5) Write in detail impact of development and life style on quality of sewage. Add a note on it's recycling.

Q6) Draw a neat sketch of stabilization pond and explain the complete secondary treatment process in domestic sewage. In what way it differ from trikling filter.

Q7) ''Microbs and techniques helps in sewage treatment process'', comment the statement.

Q8) Write note on (any two).

a) Trikling filter.

b) Screening.

c) Grit chamber.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P1205

[3828]-23
M.Sc.
ENVIRONMENTAL SCIENCE
ENP-203 : Introduction to Environmental Pollution

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

Instructions to the candidates :

1) ***Attempt not more than five questions of which at least two 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) Describe the impact of noise pollution on environmental segments.

Q2) What is radiation absorption? Write linear, mass, atomic and electronic absorption coefficient with examples.

Q3) Classify the solid waste in different categories and give different disposal methods for safe disposal.

Q4) Write short notes on (any two).

a) Semiconductor detector.

b) Units for measurement of radiation energy.

c) Effects of solid waste.

SECTION - II

Q5) Classify the air pollutants and add a note on effects of particulate matter on human health.

Q6) What is surface water pollution? Classify the water pollution and give its effects on environment.

P.T.O.

Q7) Write an essay on Historical perspectives of air pollution.

Q8) Write short notes on (any two).

a) Automobile pollution.

b) Biological methods of water pollution studies.

c) Recycling and Reuse of solid waste.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P1206

[3828]-24
M.Sc.
ENVIRONMENTAL SCIENCE
ENP-204 : Watershed Management

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

Instructions to the candidates :

1) ***Attempt not more than five questions of which at least two 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 and describe Watershed Management with special reference to selection of plant species for plantation in a watershed area.

Q2) Describe the meterological, physical and hydrological characteristic of ''Rain water Harvesting'' in semi urban areas.

Q3) What is Agroforestry? Outline the significance and methods used in Agroforestry.

Q4) Write notes on any three of the following.

a) Micro watershed.

b) Water Conservation structures.

c) Ground water seepage.

d) Süvopastoral system.

SECTION - II

Q5) Describe in brief the role of Gram-Panchayat in Watershed Management programme.

Q6) Which factors are responsible in water and soil conservation measures undertaken in Area-treatment.

Q7) Write concept and significance of watershed with suitable examples.

P.T.O.

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

a) Self-help Groups for women.

b) Recent development in watershed management

c) Cooperative Lift Irrigation.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P1012

[3828]-41

M. Sc.

ENVIRONMENTAL SCIENCE

ENP - 401 Advances in Pollution Control Technology

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 principle and techniques of colour removal from waste water. Add a note on adsorption.

Q2) a) Explain the characteristics of primary and Secondary sludge of ETP.

b) Describe various methods of sludge disposal.

Q3) Explain the various standards for discharge of waste water to receiving bodies, Land and agricultural by pollution control board.

Q4) Write short note on any two.

a) Oxidation pond.

b) Reverse osmosis.

c) In plant control for waste reduction.

P.T.O.

SECTION - II

Q5) Explain the different methods of 3R principles use in sugar industry to convert waste into wealth. Add a note on Prohibitive factor for implementing 3 R techniques.

Q6) a) Briefly explain the standards of waste water used for irrigation.

b) Explain the characteristics and treatment to solid waste generating in dairy waste.

Q7) Explain the manufacturing process in textile industry. Add a note on bleaching.

Q8) Write short notes on any two:

a) Sedimentation.

b) Ammonia recovery in fertilizer industry.

c) Composing of wet waste in M.S.W.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P1013

[3828]-42

M.Sc.

ENVIRONMENTAL SCIENCE

ENP - 402 : Environmental Healthy & Safety

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 approach of safety, health and environment.

Q2) Discuss the industrial health safeguard implementation mechanism and add a note on ISO - 18000.

Q3) Explain the local and national policies, public awareness and participation in prevention and safety for risk management.

Q4) Write short notes on (any two).

a) Toxicity classification.

b) Effects of noise pollution on health.

c) Environmental management system and ISO.

P.T.O.

SECTION - II

Q5) Explain the disaster management with respect to epidemic diseases and its protective measures.

Q6) Write in detail role of WHO in health programme. Add a note on public awareness and sanitation in rural area.

Q7) Describe the global issues and their effects on environment.

Q8) Write short notes on (any two):

a) Carcinogenic compounds.

b) Disease eradication programme and its efficiency.

c) Atmospheric gases and their effects on ionosphere.

Total No. of Questions : 8] **[Total No. of Pages : 2**

P1014

[3828]-43

M.Sc.

ENVIRONMENTAL SCIENCE

ENP - 403 Information Technology and Bioinformatics for Environmental Science

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) Define aerial photograph. Add a note on overlap, scale and releif displacement.

Q2) What are the principle involved in microwave image interpretation.

Q3) Explain the contribution of LANDSAT and IRS to enhancement in environmental assessment of the earth.

Q4) Write short note on any two.

a) Photo recognition elements.

b) EMR sepectrum.

c) Atmospheric window.

P.T.O.

SECTION - II

Q5) What is meant by information highway? Illustrate how to procure crucial information regarding environmental issues using appropriate sites.

Q6) Illustrate how to prepare the webpage. Explain how it is to be updated.

Q7) Write a short report on field work that you have carried out during the present semester. Discuss the problems regarding data collection and analysis.

Q8) Write notes on:

a) Use of worksheet for documentation and analysis of data.

b) Scope of Bioinformatics.

Total No. of Questions : 8] **[Total No. of Pages : 2**

P471

[3828]-101
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 101 : Environmental Geoscience
(New)

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) Describe the effects of solar radiation on earth's atmosphere.

b) Write in brief about atmospheric stability.

c) Discuss in brief the heat budget of earth.

Q2) Answer any two of the following :

a) Give various factors responsible for inversion of temperature.

b) Describe various forms of condensation.

c) Differentiate between floods and drought.

Q3) Explain any two of the following :

a) Atmospheric disturbance are responsible for cyclone origin. Explain.

b) Explain how does dry and wet adiabatic lapse rate exist in atmosphere.

c) Explain various factors affecting geostrophic winds.

Q4) Write notes on any two of the following :

a) Soils of India.

b) Jet stream.

c) Lightening.

P.T.O.

SECTION - II

Q5) Attempt any two of the following :

a) Describe the Igneous rocks classification.

b) Discuss the various factors involved in biological weathering of rocks.

c) Give the different parameters which effects or influencing the surface water.

Q6) Answer any two of the following :

a) Give the various concepts of trace element in environmental chemistry.

b) Describe in brief Global Water Balance.

c) Discuss the possible effects of imbalance of some trace elements.

Q7) Explain any two of the following :

a) Explain the origin of Tsunami and add a note on mitigation measures taken to redicue Tsunamic hazards.

b) Explain "Geochemical Cycles" in brief.

c) Explain the geological evolution of rocks on the earth.

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

a) Landslides.

b) Major and REE elements.

c) Composition of seawaters.

Total No. of Questions : 8] **[Total No. of Pages : 2**

P472

[3828]-102
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 102 : Environmental Chemistry
(New)

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

Instructions to the candidates:

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

SECTION - I

Q1) Attempt any two from the following :

a) How RNA is synthesis in biological life.

b) What are factors influencing mutation.

c) Sketch a neat labelled diagram of nitrogen cycle in environment.

Q2) Solve any two from the following :

a) What is carcinogencity. Explain the carcinogenic effect of organic compounds.

b) How the plastic biodegrade in environment.

c) What are the properties of modified detergents.

Q3) Answer any two from the following :

a) Explain the hydrogen bonding in biological system.

b) How DDT biomagnified in environment? Explain in brief.

c) What are the effect of head on flora?

Q4) Write short notes on any two :

a) Properties of water.

b) Primary structure of protein.

c) Structure of DNA.

P.T.O.

SECTION - II

Q5) Attempt any two from the following :

a) What are the merits and demerits of atomic absorption spectroscopy?

b) Sketch a neat and labelled diagramme of HPLC.

c) What are the limitation of Ion exchange chromatography.

Q6) Solve any two from the following :

a) Explain the carcinogenic effect of aflatoxin.

b) What are the methods used for destruction of halogenated carbon compounds.

c) Explain the principle of isotope dilution a analysis.

Q7) Write answer of any two :

a) Sketch a neat and labelled diagramme of gas chromatography.

b) Explain the principle of Gibb's energy with suitable example.

c) What is viscosity? Explain the measurement of viscosity.

Q8) Write short note on any two :

a) Acid-base reaction.

b) Structure of aflatoxin B_1.

c) Radionucleids.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P473

[3828]-103
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 103 : Environmental Biology
(New)

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 concept of food web and food chain with suitable example.

b) Enlist importance of wetlands.

c) What are criteria for selection of Hotspot of biodiversity?

Q2) Answer any two of the following :

a) What is biome? Add a note on Tundra biome with refrance to biotic element.

b) How microbes are acting as anti microbial agents?

c) Briefly explain structure of lake ecosystem.

Q3) Justify any two of the following :

a) Primary succession.

b) Cake model of ecology.

c) Role of microorganisms in solid waste management.

Q4) Write short note on any two :

a) Edge effect.

b) Climax community.

c) Extremophiles.

P.T.O.

SECTION - II

Q5) Attempt any two of the following :

a) What is in-situ conservation? Explain it with suitable example.

b) What are elements to be considered in strategic planning of wildlife management?

c) Write any 5 principles declired as per convention on Biological Diversity (CBD).

Q6) Answer any two of the following :

a) What are the factors influencing coastal ecosystem.

b) Importance of Project Tiger.

c) Briefly explain biological resources in marine ecosystem.

Q7) Justify any two of the following :

a) Write salient features of Wildlife Protection Act 1972.

b) Biogeographic zones of India. Add note on florastic regions of India.

c) Biotechnological applications in waste water treatment.

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

a) Importance of mangrooves conservation.

b) Endangered species.

c) Convention on Biodiversity (CBD).

Total No. of Questions : 8] **[Total No. of Pages : 4**

P474

[3828]-104
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 104 : Statistical and Research Methods
(New) (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) Following data relate to number of flowers per plant.
12, 13, 14, 12, 14, 15, 12, 14, 13, 14, 14, 15, 12, 11, 16
calculate arithmatic mean, median and mode.

b) Explain the following terms :

i) Class-interval.
ii) Class limits.
iii) Frequency.
iv) Less than cumulative frequency.
v) More than cumulative frequency.

c) For the following data draw less than ogive curve and hence locate Q_1 and Q_3.

Class :	14-16	16-18	18-20	20-22	22-24	24-26
Frequency :	12	30	55	40	35	38

Q2) Answer any two of the following :

a) The following data are on serum lipid peroxide (SLP) levels on a sample of 10 adult subjects undergoing treatment for diabetes mellitus :
5.85, 6.17, 6.09, 7.70, 3.17, 3.83, 5.17, 4.31, 3.09, 5.24.
Find coefficient of variation.

P.T.O.

b) Four cards are drawn at random from a well shuffled pack of 52 cards. Find the probability that two cards are red and two are black.

c) Explain the terms Skewness and Kurtosis. State Bowley's coefficient of Skewness.

Q3) Answer any two of the following :

a) Find the coefficient of correlation between x and y, given that n = 25, $\Sigma x = 75$, $\Sigma y = 100$, $\Sigma x^2 = 250$, $\Sigma y^2 = 500$ $\Sigma xy = 325$.

b) Define the following terms :

i) Event.
ii) Equally likely events.
iii) Mutually exclusive events.
iv) Ehaustive events.
v) Independent events.

c) State probability mass function of Poisson distribution. Also state its mean and variance.

Q4) Answer any two of the following :

a) The data given below is salinity (%) x and dissolved oxygen (mg/l) y. Find the regression line y on x. Estimate the value of dissolved oxygen when salinity of water is 15.55%.

Salinity (%) :	5	7	9	3	16	14
Dissolved oxygen (mg/l) :	7	5	5	9	3	2

b) Assuming that 50% of the population of a town takes tea and assuming that 100 investigators each take 10 individuals to find out if they take tea, how many investigators would you expect to report that three people or less take tea?

c) Discuss the properties of regression coefficients.

SECTION - II

Q5) Attempt any two of the following :

a) Define the following with illustration.

i) Null hypothesis.
ii) Alternative hypothesis.
iii) Type I error
iv) Type II error
v) Critical region.

b) It is known from past experience that in a certain plant there are on the average 4 industrial accidents per year. Assuming that number of accidents follows Poisson distribution, find the probability that in a given year there will be less than 4 accidents.

c) Describe the procedure of one way analysis of variance.

Q6) Answer any two of the following :

a) From the following data find 3-yearly moving averages.

Year :	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Variable :	2	4	7	11	16	22	29	37	46	56	67

b) Assume the height of soldiers is normally distributed with mean 68.22 inches and variance 10.8 inches. How many soldiers in a regiment of 1000 would you expect to be over six fit tall?

c) Explain what do you mean by correlation? Also explain types of correlation.

Q7) Answer any two of the following :

a) In an experiment a random sample 15 fishes were obtained from a fish pond and their body weights (in gm.) were measured, given in the following table. Calculate the arithmatic mean of weight.

Body Wt. :	5-5.9	6-6.9	7-7.9	8-8.9	9-9.9	10-10.9
No. of Fishes :	1	2	4	3	3	2

b) Explain the Chi-square test for independence of two attributes, in case of 2×2 contigency table.

c) A manufacturer claims that each box of mixed nuts he sells contains an average of 10 cashew nuts. A sample of 15 boxes of these mixed nuts had an average of 8 cashew nuts with SD of 3-should we reject the manufacturer's claim? Use 5% l.o.s.

Q8) Answer any two of the following :

a) Explain the term 'Regression'. State the equation of two lines of regression, hence give the formula for correlation coefficient interms of regression coefficients.

b) State the components of time series. Explain any two of them.

c) Describe in brief the importance of statistical modeling of environmental data.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P475

[3828]-201
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 201 : Environmental Economic

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) What are the external factors influencing the non-renewable energy programme. **[10]**

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

a) Environmental protection is necessary in development programme.

b) Role of subsidies in protection and conservation of environmental programme.

c) Importance of micro environmental management in bioresources.

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

a) Explain the rate of natural resource exploitation and its impact on economic development.

b) Which are the environmental services considered in environmental economics.

c) What are the methods for economics growth measurement.

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

a) Effectiveness of environmental laws.

b) Social cost and its importance.

c) Theory of public goods.

P.T.O.

SECTION - II

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

a) What are the long term impacts of climate change?

b) Discuss the components of strategic planning.

c) Explain the limitations to environmental Kuznet's curve.

Q6) Justify the statement (any two) : **[10]**

a) Environmental problems are solved by sustainable development.

b) Environment Kuznet curve is significant indicator of resource utilization.

c) Stringent environmental policies encourage foreign direct investment.

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

a) Mention the limitations to sustainable mode of development.

b) Elaborate on adaptation option as a tool to combat climate change.

c) What are positive short term impacts of climate change in India?

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

a) Environmental Quality.

b) Regional vulnerability in relation to climate change.

c) Foreign Direct Investment.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P476

[3828]-202
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 202 : Water and Wastewater Engineering

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 Arthematic Progression Method for population forecasting.

b) Explain the term 'water demand'. Discuss the factors affecting the rate of water demand.

c) Draw a flow sheet showing various treatment of ground water resources.

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

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

b) Explain the principle and mechanism of ultrafiltration.

c) Briefly explain the merits and demerits of surface aeration.

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

a) Explain the principle and mechanism of reverse osmosis.

b) Draw a neat and labelled diagramme showing various components of sand filter.

c) Describe the physical properties of safe drinking water.

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

a) Water softening.

b) Residual chlorine.

c) Odour removal.

P.T.O.

SECTION - II

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

a) Distinguish between river standards and effluent standards and state with reasons which one of the two is suitable under Indian conditions.

b) What is the importance of primary treatment of wastewater? Describe any one unit in primary treatment.

c) Estimate the screen requirement for a plant treating a peak flow of 50MLD sewage.

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

a) What is the importance of aeration in biological treatment of wastewater? Give the different types of aeration.

b) Why is it necessary to determine DO, BOD and COD in wastewater treatment? How is COD estimated?

c) Distinguish between aerobic and anaerobic processes in wastewater treatment. Compare their advantages and limitations.

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

a) What are the characteristics of wastewater from dairy? Draw flowsheet of dairy ETP.

b) What is the significance of anaerobic digestion? What are the different models of anaerobic reactors?

c) What are the different types of microorganisms in oxidation pond? Describe their role.

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

a) Velocity control in grit chamber.

b) Treatability studies.

c) Sey purification capacity.

Total No. of Questions : 8] **[Total No. of Pages : 2**

P477

[3828]-203
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 203 : Environmental Pollution - I : Water & Soil

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 : **[10]**

a) Elaborate on various types of water pollution.

b) Differentiate between freshwater and marine water pollution.

c) Discuss the utility of various instruments in the sampling of water.

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

a) Industrial discharge significantly contribute to river water pollution.

b) Temporal and spatial sampling is necessary for water quality analysis.

c) Human activities are responsible for oil pollution in marine waters.

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

a) Elaborate on the sources and impacts of radioactive pollution.

b) What are the specifications prescribed for the disposal of wastewater in marine system?

c) Mention various standards for drinking water.

P.T.O.

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

a) Domestic wastewater.

b) Grab sampling.

c) Effluent standards.

SECTION - II

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

a) What is 3R principle? Explain with suitable examples.

b) Write in details sanitary land fill and leachet control.

c) Explain in details the role of ICRP in radiation pollution.

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

a) Give in details sources of hazardous waste and its effect on soil.

b) What is mining? How it deteriorate land? Explain in details.

c) Draw schematic diagram of scintillation counter. Explain its working in details.

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

a) What is composting? Explain solid waste composting.

b) Explain in brief 'use of wastewater for irrigation'.

c) Write in brief biological effect of radiation.

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

a) Industrial solid waste.

b) Tailing waste in mining.

c) G.M. counter.

Total No. of Questions : 8] **[Total No. of Pages : 2**

P478

[3828]-204

M.Sc.

ENVIRONMENTAL SCIENCE

ENV - 204 : Environmental Law, Ethics and Policy

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) Explain the important provision about Nairobi Declaration.

b) What are the legal measures to control Acid Rains?

c) Explain the significance of Rio +5 and Rio +10.

Q2) Answer any two of the following :

a) Under the constitution of India do we have a fundamental right to pollution free environment? Explain.

b) Write in brief about Hazardous Waste Management Rules.

c) Examine the judicial trends about Motor Vehicle Pollution.

Q3) Answer any two of the following :

a) Survival need of mankind and protection of environment are mutually incompatible. Comment.

b) Comment upon the National Environmental Policy.

c) Explain the guidelines related to Water Cess Act 1974.

P.T.O.

Q4) Write notes on <u>any two</u> of the following :

a) Pollution Control Board.

b) Biodiversity Protection Law in India.

c) Ozone Deplection and role of Law.

SECTION - II

Q5) Answer <u>any two</u> of the following :

a) The Stockholm conference thrusted upon the impact of human activities on the global environment. Comment.

b) Explain the international efforts to control Global Warming.

c) What are the provision of Indian Penal Code as regards protection of Environment.

Q6) Answer <u>any two</u> of the following :

a) Explain the procedure for analysis of samples under the Water Act 1974.

b) Compare between rate of utilization and regeneration.

c) Explain the legal provision as to Environmental Audit.

Q7) Answer <u>any two</u> of the following :

a) What are the rules for disposal of bio-medical waste?

b) What are the Directive Principles of State Policy that relate to protection of environment?

c) Write the legal provisions about pollution of air by noise.

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

a) Montreal Protocol.

b) Cost Benefit Analysis.

c) CITES.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P479

[3828]-301
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 301 : Air Pollution and Climate Change
(New)

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 major factors contributing to air pollution?

b) Discuss the thermochemical and photochemical reactions in the troposphere.

c) How does the dispersion of vehicular pollutants take place?

Q2) Answer any two of the following :

a) How do oceans regulate the atmospheric CO_2 level?

b) Write about the different sources of greenhouse gases and the effect of green house gases on human health.

c) What is the role of aerosols in cloud seeding?

Q3) Attempt any two of the following :

a) What are the principle causes of industrial pollution?

b) Write a note on air pollution due to thermal power plants.

c) How does the ozone layer act as a protective umbrella for the earth?

P.T.O.

Q4) Write short notes on (any two) :

a) Bhopal gas disaster.

b) UV-B radiation.

c) Monitoring methods for SO_X.

SECTION - II

Q5) Answer any two of the following :

a) Describe the structure and working of an air pollution control equipment working on the principle of centrifugal seperation.

b) Give the principle of electrostatic precipitation. What are the components of electrostatic precipitator?

c) What are the different strategies of air pollution control?

Q6) Attempt any two of the following :

a) What are the steps involved in the removal of gases by adsorption? List some commonly used adsorbents.

b) What are the different mechanisms involved in the working of wet scrubber? List the different types of scrubbers.

c) Which pollutants are suitable for removal by incineration? What factors should be considered in the design of an incinerator?

Q7) Answer any two of the following :

a) Write about the background and working of UNFCCC?

b) What are the different flexibility mechanisms under the Kyoto Protocol? Elaborate any one of them.

c) How does carbon sequestration help control climate change.

Q8) Write short notes on (any two) :

a) Advantages and disadvantages of fabric filters.

b) Zoning of air pollution.

c) Types of inertial separators.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P480

[3828]-302
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 302 : EIA & Environmental Auditing
(New)

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 objectives of conducting EIA study?

b) Describe the EIA process in India wrt to EIA notification sept 2006.

c) What is the importance of biological environment in EIA study?

Q2) Attempt any two of the following :

a) Explain the significance of meterological data for prediction of impacts.

b) What are the different elements studied under ecological survey?

c) Write about the overlays method of EIA analysis.

Q3) Answer any two of the following :

a) What is the importance of public participation in EIA? At what stage should the public be consulted.

b) Give the generic structure of an EIA report.

c) Write about the impacts of mining on environment.

P.T.O.

Q4) Write short notes on (any two) :

a) Screening.

b) Terminology of EIA.

c) Socioeconomic study.

SECTION - II

Q5) Predict the impact of any two of the following on air, water, soil and biological environment.

a) Iron and steel industry.

b) Fertilizer industry.

c) Roadways project.

Q6) Answer any two of the following :

a) Comment on socio economic point of 'Sugar industry is the backbone of rural development in India, especially Maharashtra. Explain with a case study.

b) Prepare the environmental inventory for a chemical industry.

c) How does environmental budgeting help minimize environmental impact?

Q7) Attempt any two of the following :

a) What is the basic structure of environmental audit and its methodology?

b) Compare the different parameters in financial and environmental audits.

c) How does environmental audit benefit the industry?

Q8) Write short notes on (any two) :

a) Pollution audit.

b) ISO 14000.

c) Significance of energy audit.

Total No. of Questions : 8] **[Total No. of Pages : 2**

P481

[3828]-303
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 303 : Remote Sensing and GIS
(New)

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

Instructions to the candidates:

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

SECTION - I

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

a) Define remote sensing and write its scope in environmental study.

b) What is aerial photography? Discuss basic elements of photography.

c) What is GIS? Write in brief components required for GIS.

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

a) Write in brief difference between aerial photograph and satellite image.

b) Discuss the application of RS in forest management.

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

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

a) Write in detail important characteristic in aerial photography.

b) An aerial photograph has taken from aerial camera having focal length (F) 5 inch and having average height of camera (H) 8,000 feet. Calculate the scale of photograph.

c) Write in brief advantage and drawback of aerial photography.

P.T.O.

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

a) Application of RS.

b) Types of photograph.

c) Multispectral scanner.

SECTION - II

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

a) Discuss the role of GIS in environmental study.

b) Write in brief different component required for GIS.

c) Differentiate between GIS and RS. Which one is more information? Justify your answer.

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

a) Describe EMR and draw its spectrum.

b) "Satellite is third eye to view the earth". Justify the statement.

c) "GIS and RS are integrated tools of study". Comment.

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

a) Write a note on Indian Satellite Series.

b) Describe in brief steps involved in GIS data management.

c) How GIS, RS and aerial photography are integrated to each other. Discuss.

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

a) Application of GIS.

b) Scanners in RS.

c) Problems associated in aerial photography.

Total No. of Questions : 8] **[Total No. of Pages : 2**

P482

[3828]-304
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 311 : Restoration Ecology
(Optional) (New)

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 : **[10]**

a) Describe the role of restoration ecology in wetland conservation.

b) What is ecological succession? Explain various stages of it.

c) Explain the significance of rhizosphere flora in soil decontamination.

Q2) Answer the following (Any 2) : **[10]**

a) Describe the control measures of the leachets from solid waste dumping site.

b) Write the role of soil microflora in the restoration of degraded area.

c) Explain the bioremediation of mine soil dumps.

Q3) Attempt the following questions (Any 2) : **[10]**

a) Elaborate on the methods of ecological restoration of degraded forest system.

b) What are wastelands? How can they be restored?

c) Describe the impact of peoples movement for conservation and restoration of forest.

P.T.O.

Q4) Write notes on (Any 2) : **[10]**

a) Solid waste dumping area.

b) Restoration of coastal ecosystem.

c) Plants in remediation.

SECTION - II

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

a) Discuss the significant physical characters in development of the watershed.

b) What is the need of agrosilvipastural systems?

c) Explain the role of watershed development committees.

Q6) Justify the statement (any 2) : **[10]**

a) Gram panchayat plays significant role in watershed development.

b) Silvopastoral system is an ecofriendly alternative.

c) Selection becomes key issue in plantation program.

Q7) Write notes on (any 2) : **[10]**

a) Land cover mapping.

b) Pastorelands.

c) Organic fertilizers.

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

a) How the self help groups can contribute in watershed development?

b) Explain the process of drain line treatment.

c) Correlate the concept of watershed development under the sustainable development.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P483

[3828]-305
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 312 : Biodiversity and Conservation
(Optional) (New)

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

a) What is biodiversity assessment? Explain concept of biodiversity assessment.

b) Explain the need for characterization of biodiversity.

c) Define species diversity. Explain the ecological theories of species diversity.

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

a) Describe the various levels of biodiversity.

b) Explain the methods of monitoring the species diversity.

c) What are the major ecosystem types of the world?

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

a) Describe the factors responsible for loss of species diversity.

b) Explain the integrated approach for monitoring of biodiversity.

c) What are the organizations involved in framing the policies for biodiversity management?

P.T.O.

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

a) Capacity building.

b) CAB International.

c) Role of GEE in financing biodiversity management.

SECTION - II

Q5) Attempt any 2 from the following : **[10]**

a) Elaborate on the role of international organizations in biodiversity management.

b) Mention the adverse impacts of biotechnology on biodiversity.

c) What are biodiversity values?

Q6) Justify the statement (any 2) : **[10]**

a) Traditional knowledge contributes significantly in Bioprospecting.

b) Data collection is important for bioinformatics.

c) Environment Protection Act is known as Umbrella act.

Q7) Write notes on : **[10]**

a) Bio Piracy.

b) DNA banks.

c) Role of IVCN.

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

a) What is participatory forest management?

b) How biotechnology is used in biodiversity assessment.

c) Mention the significance of CBD.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P484

[3828]-401
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 401 : Environmental Toxicology Health & Safety

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) Describe the interactive approach of safety, health and environment.

b) Comment on the 'reduction strategies'.

c) Explain the national and international perspective of safety and health.

Q2) Answer any two of the following :

a) Explain the public participation in offsite safety measurement program.

b) Describe various emission standards for agrobase industries.

c) Explain the potential hazards in construction projects.

Q3) Justify any two of the following :

a) The role of directors of an industry in occupational environment.

b) Physical factors and its role in occupational environment.

c) Mitigation measures in safety risk management program.

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

a) ISO : 18000.

b) Potential of health risks in industrial processes.

c) Safety standards.

P.T.O.

SECTION - II

Q5) Attempt any two of the following :

a) Explain various methods for hazardous waste disposal.

b) Describe the importance of toxicity study in forensic science.

c) Comment on physiological disorders caused by Mercury on fauna.

Q6) Answer any two of the following :

a) Explain the public health project for the eradication of communicable diseases.

b) What are the psychological impacts and its effects on community?

c) Describe the short term hazard preparedness plan for waterborne diseases.

Q7) Justify any two of the following :

a) Effect of micronutrients on flora.

b) Potential hazards of airborne diseases and its vulnerability to human beings.

c) The importance of sanitation program in rural areas.

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

a) Swine flue.

b) Safeguarding techniques for water resources.

c) Primary health centres.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P485

[3828]-402
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 402 : Watershed Management

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 principles of watershed management?

b) What are geomorphological characteristics of watershed?

c) Write a note on watershed survey.

Q2) Justify any two of the following :

a) Capacity building of women is essential for watershed development programme.

b) Success of watershed management depends upon continuous monitoring.

c) Collection of data is significant for watershed planning.

Q3) Answer any two of the following :

a) What are environmental impacts of watershed projects?

b) Explain various techniques for promotion peoples participation.

c) What is Integrated Watershed Development?

Q4) Write note on any two of the following :

a) Aerial aspect.

b) Land use.

c) Participatory Rural Appraisal.

P.T.O.

SECTION - II

Q5) Attempt any two of the following :

a) Explain various factors involved in hydrological considerations of watershed.

b) State the role of contour farming in controlling soil & water erosion.

c) Mention various methods of estimation of water erosion.

Q6) Justify the following statement (Any two) :

a) Watershed development is a target based activity.

b) Biological controls are superior to mechanical controls in watershed planning.

c) Conservation of natural resources is hidden agenda of watershed management.

Q7) Answer any two from the following :

a) What is livestock production? How it can be included in watershed management?

b) Write about traditional methods of water harvesting.

c) How improved agricultural practices are helpful for watershed planning?

Q8) Write notes on (Any two) :

a) Conservation horticulture.

b) Evaluation of self help groups.

c) Benefits of agro-forestry.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P486

[3828]-403
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 411 : Forestry and Habitat Management
(New 2008 Course)

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.***

SECTION - I

Q1) Attempt any two of the following :

a) Define the term habitat management Discuss its scope.

b) Elaborate on various methods of tree improvement.

c) How forest fire affects the forest resources?

Q2) Justify any two of the following statement :

a) Participatory approach is significant in agroforestry.

b) Consideration of biotic and abiotic factors are essential in forestry.

c) Seed is treated as promising genetic resource for forestry.

Q3) Answer any two of the following :

a) Mention the silvicultural practice adopted in mangrove forests.

b) Discuss different custos and ethos associated with the forest.

c) Discuss the physiological factors associated with the silviculture.

Q4) Write notes on any two of the following :

a) In situe gene conservation.

b) Ethanobotany.

c) Forest conservation initiatives in India.

P.T.O.

SECTION - II

Q5) Attempt any two of the following :

a) What are different methods of forest surveying?

b) Mention the significance of transportation and storage of forest produce.

c) Discuss the role of private and co-operatives in forestry.

Q6) Justify any two of the following statement :

a) Application of remote sensing and GIS is essential in forest management.

b) Traditional shifting cultivation is sustainable activity.

c) Demand and supply principle is a great threat to forest resource.

Q7) Answer any two of the following :

a) Explain various methods of mensuration.

b) Discuss the merits of Wildlife Protection Act, 1972.

c) Elaborate the structure of Indian Forest Service.

Q8) Write notes on any two of the following :

a) NTFP.

b) Stand Structure.

c) Timber produce from Indian Forest.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P487

[3828]-404
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 412 : Environmental Management

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) How historical background of planning helps in any development project?

b) What is concept of planning? Discuss in brief parameter of planning.

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

Q2) Attempt any two of the following :

a) Define environment planning and add a note on advantages of planning in development.

b) Write important issues in brief for environmental planning.

c) What is rural planning? Write in brief parameters of rural planning.

Q3) Solve any two of the following :

a) Write in brief parameters required for urban planning.

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

c) "Political willingness play important role in planning". Justify the statement.

Q4) Write notes on any two of the following :

a) Developmental indices.

b) Advantage of environmental planning.

c) Socio-economic issues in planning.

P.T.O.

SECTION - II

Q5) Attempt any two of the following :

a) "EIA is essential tool of planning for development". Comment on the statement.

b) "State pollution control board play important role for protection of environment". Comment on the statement.

c) Write in brief about socio-economic issues and demographic factors in planning.

Q6) Solve any two of the following :

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

b) Enlist the national laws for protection of environment in India.

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

Q7) Answer any two of the following :

a) What is development? How you can sustain development? Explain with suitable examples.

b) What is conservation? Write methods of conservation with suitable examples.

c) "Indian laws play important role in protection and conservation of environment". Comment on the statement.

Q8) Write notes on any two of the following :

a) National policies for environment.

b) Natural resources and their rate of regeneration.

c) Carrying Capacity of Environment.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P488

[3828]-405
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 413 : Environmental Management Systems
(Theory & Job Licensing)

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

Instructions to the candidates:

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

SECTION - I

Q1) Answer any two of the following :

a) What is environmental management? What are the different characteristics of EM?

b) Define sustainable development? What are the different approaches in environmental management to achieve sustainability?

c) What is the role of international standards in improvement of environmental quality?

Q2) Attempt any two of the following :

a) Define Environmental management system. What are the core elements of EMS?

b) What are the two subcategories of ISO 14000 standards? List the standards in these categories.

c) What are the goals and purposes of EMS?

Q3) Answer any two of the following :

a) What are the variants of LCA? Explain with examples.

b) What are the principles of green building?

c) What is the significance of Environmental Design?

P.T.O.

Q4) Write short notes on any two :

a) Environmental Audit.

b) Cost benefit analysis.

c) Benefits of environmental design.

SECTION - II

Q5) Answer any two of the following :

a) What is solid waste? Give the type based classification of solid waste.

b) Write a note on generation of municipal solid waste in India.

c) Give the various health impacts of solid waste.

Q6) Attempt any two of the following :

a) Give the importance of 3 R principle in solid waste management.

b) What are the properties of agricultural wastes?

c) What are the possible areas for improvement of municipal solid waste management in India?

Q7) Answer any two of the following :

a) What are the different technologies used in incineration.

b) Describe the process of composting with its advantages and limitations.

c) What are the different types of hazardous wastes.

Q8) Write short notes on any two :

a) Disposal at sea.

b) Transportation of solid waste.

c) Sanitary landfall.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P489

[3828]-31
M.Sc.
ENVIRONMENTAL SCIENCE
ENP - 301 : Environmental Planning : Rural & Urban
(Old Course)

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) Briefly explain the importance of willingness to pay principle in development project.

Q2) Explain the socio-economic aspect in urban planning.

Q3) Justify Exploitation of the resource will the key issue in sustainable development programme

Q4) Write short notes on any two :

a) Solid waste audit.

b) Development indices.

c) Pre audit activities.

SECTION - II

Q5) What are the rules and regulation of Environmental Protection Act 1986.

Q6) Briefly explain the Biomedical Waste Management Rule 1999

Q7) What is E.A. Explain the importance and demerits of checklist method.

P.T.O.

Q8) Write short notes on - any two :

a) Delphi method.

b) Risk analysis.

c) Disadvantage of public participation.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P490

[3828]-32
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 302 : Environmental Management Legislation & Policy
(Old Course)

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) What is ISO? Discuss importance of ISO series in development.

Q2) What is management? How environment management plan helps to protect the environment?

Q3) Write in detail importance and scope of international standards of environment.

Q4) Write notes on any two of the following :

a) Stockholm conference.

b) Ozon depletion.

c) Hazardous waste.

SECTION - II

Q5) Enlist the Indian laws environment and write importance of laws in protection of environment.

Q6) What are the right and duties of Panchayat Raj in the protection of environment?

Q7) Discuss, how Environment Protection Act 1986 helps to protect environment.

P.T.O.

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

a) Environmental Laws in India.

b) Role of Court in control of pollution.

c) Factory Act.

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Total No. of Questions : 8] **[Total No. of Pages : 2**

P491

[3828]-33
M.Sc.
ENVIRONMENTAL SCIENCE
ENP - 303 : Effect of Pollutants on Biota
(Old Course)

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) What is freshwater pollution? Describe the types, sources and consequences of surface water pollution.

Q2) Explain in detail how sewage and effluents can be used for irrigation and ground water recharge.

Q3) What are the drinking water standards? Describe the characteristics of sewage and industrial effluents.

Q4) Write notes on any two of the following :

a) BOD and COD.

b) Effects of water pollution on health, biosphere and economy.

c) Disposal of industrial solid waste.

SECTION - II

Q5) What is hazardous waste? Explain the methods for disposal of hazardous solid waste. Add a note on impact of heavy metal on soil.

Q6) Describe the role of mangroves in marine ecosystem. Explain the impact of pollution on mangroves.

P.T.O.

Q7) What are the specification for disposal of sewage and industrial waste into sea? Add a note on disposal of wash water from MV Cargo and ship.

Q8) Write notes on any two of the following :

a) Disposal of toxic organic compound.

b) Sampling methods for marine water pollution.

c) Bioacumulation and Biomagnification.

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