Total No. of Questions : 8]

SEAT No. :

P3095

[Total No. of Pages : 2

[5537]-101
M.Sc. - I
ENVIRONMENTAL SCIENCE
EVSC-101 : Environmental Biology
(2013 Pattern) (New) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Solve any five questions from the following.***
2) ***Neat and labelled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer the following : **[10]**

a) Discuss the role of various biological processes in relation with terrestrial ecosystem maintenance.

b) Explain the process of energy flow in an ecosystem with suitable diagram.

Q2) Answer the following : **[10]**

a) Explain how environmental factor's influence on organisms and their adaptations.

b) What are the functional attributes of an ecosystem?

Q3) Answer the following : **[10]**

a) Discuss the characteristics of K selected species population and their ecological significance.

b) What are keystone species? Discuss their role in ecosystem maintenance with suitable examples.

Q4) Answer the following : **[10]**

a) What is ecological succession? Discuss important stages involved in succession.

b) What is interspecific competition? How it affects a population?

P.T.O.

Q5) Answer the following : **[10]**

a) What are Wetlands? Explain various ecological services provided by them.

b) Discuss importance of environmental microbiology in ecological restoration.

Q6) Answer the following : **[10]**

a) Write an account on adaptations of life in marine biomes.

b) What are terrestrial biomes? Discuss the diversity of vegetation types in India.

Q7) Answer the following : **[10]**

a) What is circadian rhythm? Discuss its significance in organisms with suitable examples.

b) What is meant by ethology? Write an account on various modes of animal communication.

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

a) Reproductive Behavior in Animals.

b) Ecological significance of Freshwater Biomes.

Total No. of Questions :8]

SEAT No. :

P3096

[Total No. of Pages : 2

[5537]-102
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC-102: Environmental Chemistry
(2013 Pattern)(Semester-I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Solve any five questions from the following.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer the following. **[10]**

a) Explain the factors affecting soil formation.

b) Write principle and application of HPLC.

Q2) Explain in brief. **[10]**

a) Importance of organic matter in soil.

b) Types of mutation.

Q3) Answer the following. **[10]**

a) Write the principle and application of polarography.

b) What are the limitation of colorimetric analysis.

Q4) Write the answer of following. **[10]**

a) Write a note on microbial distruction of polymer.

b) Sketch a neat labelled diagram of ion exchange chromatography.

Q5) Answer the following. **[10]**

a) What are the destruction methods of alkali metals.

b) What is primary and secondary amino acids.

P.T.O.

Q6) Write a note on. **[10]**

a) Classification of Hazoardous compounds.

b) Physical properties of lead. (pb).

Q7) Answer the following. **[10]**

a) What are the carcinogenic effects of aflatoxins.

b) Explain the hydrogen bonding in biological system.

Q8) write short notes on. **[10]**

a) Cationic, anionic and nonionic detergents

b) Biotransformation of DDT and its effects.

Total No. of Questions :8]

SEAT No. :

P3097

[Total No. of Pages :2

[5537]-103
M.Sc.
ENVIRONMENTAL SCIENCES
EVSC-103: Environmental Geosciences
(2013 Pattern) (Semester -I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Neat and labeled diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Solve any 5 questions.***

Q1) Attempt the following. **[10]**

a) Describe the cycle of erosion with the help of penck's model.

b) What are igneous rocks? Enumerate the basic of their classification.

Q2) Answer the following: **[10]**

a) Explain with the help of labelled diagrams, the hydrological cycle and budget.

b) Draw and label a typical soil profile. Describe its composition.

Q3) Answer in brief **[10]**

a) What is a tsunami & how is it generated? Enlist the after effects of a tsunami.

b) What are the environmental impacts of open cast mining?

Q4) Short notes- **[10]**

a) El-Nino & southernscillations.

b) Water logging & salinization of soils.

P.T.O.

Q5) Attempt the following. **[10]**

a) With the help of diagram, describe the physical structure of the ocean floor.

b) Describe the different geomorphological features in a karst terrain.

Q6) Answer the following- **[10]**

a) Explain the functional classification of soil.

b) Describe the internal structure & composition of the earth.

Q7) Explain: **[10]**

a) Exfoliation & frost weathering.

b) Uniformitarianism and its role in climate studies.

Q8) Answer with help of neat, labelled diagram- **[10]**

a) What are rock pedestals and how are they formed?

b) What are divergent boundaries & how do they function.

Total No. of Questions :8]

SEAT No. :

P3098

[Total No. of Pages :2

[5537]-104
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC-104: Environmental Statistics
(2013 Pattern) (Credit System) (Semester -I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Figures to the right indicate full marks of the respective questions.***
4) ***Use of non-scientific calculator is allowed.***
5) ***Statistical tables and graph paper will be provided on request.***

Q1) Define the following terms. **[5×2=10]**

a) Open end classes

b) Population

c) Random variable

d) Probability density function.

e) quartiles

Q2) a) Define skewness. State the formulae to determine the coefficient of skewness. **[4]**

b) What is classification? Explain the type of classification. **[4]**

c) If frequency distribution is negatively skewed then what is relationship between mean median & mode. **[2]**

Q3) a) What is meant by measures of central tendency? State various measures of central tendency? Write doum requirements of ideal measures of central tendency. **[5]**

b) How to draw histogram in case of unequal class intervals? Present the following data. by means of histogram. **[5]**

No. of pods	No. of Plants
10-20	16
20-30	24
30-40	39
40-50	25
50-70	20
70-110	20
110-150	12

P.T.O.

Q4) a) What are the different measures of dispersion? Explain any one with numerical example. **[5]**

b) For a distribution of 100 observations the sum of the deviations form 4 is -11 and the sum of squares of these deviations is 257 Find the mean and standard deviation. **[5]**

Q5) a) State the difference between correlation analysis and regression analysis. **[4]**

b) What is ogive curve? How it is drawn? How it is useful to calculate measure of central tendency? **[4]**

c) Write down the equation of normal distribution with mean 20 and standard deviation 4. **[2]**

Q6) a) State the equation of two lines of regression state any two properties of regression coefficients write down the relation between correlation and regression. **[5]**

b) Pearson's measures of skewness of a distribution is 0.50- Its median and mode are respectively 42and 36. Find the coefficient of variation. **[5]**

Q7) a) Explain chi square test for goodness of fit. **[5]**

b) The weekly wages of 1,000 workers are normally distributed with mean of Rs.70 and with standard deviation of Rs.5 Estimate the number of workers whose weekly wages will be . **[5]**

i) between Rs.70 and Rs.72

ii) More than Rs. 80.

Q8) a) You are given $\bar{X}$ =40, $\bar{Y}$ =50, σ_x=2.5, σ_y=3.5 and γ=0.80 obtain the equation of two regression lines. Also obtain the best estimate of X when Y= 45 and that of Y when X= 55. **[5]**

b) Write a short note on cohort projection. **[5]**

Total No. of Questions : 8]

SEAT No. :

P3099

[Total No. of Pages : 2

[5537]-201
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 201 : Environmental Pollution & Control - I : Soil & Water
(2013 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following. **[10]**

a) Enlist the sources of freshwater & groundwater pollution. Describe the consequences of water pollution of human, environment ecosystem & economy.

b) Name minimum five groundwater pollutants and their entry pathway into subsurface aquifers.

Q2) Attempt the following. **[10]**

a) Define 'Eutrophication' and describe the process of eutrophication of lakes, ponds along with their environmental impacts.

b) Explain the below terms:

i) Hydraulic conductivity

ii) Hydraulic Gradient

iii) Drawdown

iv) Cone of depression

v) Piezometer

Q3) Explain the following. **[10]**

a) 'Darcy's Law' with equation & it's significance in groundwater monitoring & modelling.

b) Methods involved in estimation of parameters for freshwater pollution levels.

P.T.O.

Q4) Answer the following. **[10]**

a) Enlist 'Ex-Situ' & 'In-Situ' groundwater remediation methods & explain their merits & demerits.

b) Describe the preliminary factors that needs to be considered for successful implementation of groundwater remediation projects.

Q5) Write a note on the following: **[10]**

a) Sources of marine water pollution, their consequences on marine ecosystems.

b) 'Physical, Chemical & biological control measures for marine oil spillage'.

Q6) Answer the following. **[10]**

a) Describe 'preventative' & 'control' measures of fresh surface water pollution with suitable examples.

b) How 'laws & regulations' can play significant role in controlling water pollution? Elaborate.

Q7) Illustrate the restoration techniques for: **[10]**

a) Soil pollution due to fly ash disposal.

b) Soil/land pollution due to disposal of hazardous solid wastes.

Q8) Write a descriptive note on the following: **[10]**

a) 'Types, sources & consequences of soil pollution'.

b) 'Methodologies of wastewater disposal on land in India'.

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Total No. of Questions : 8]

SEAT No. :

P3101

[Total No. of Pages : 2

[5537]-203
M.Sc.
ENVIRONMENTAL SCIENCES
EVSC-203 : Atmospheric Sciences
(2013 Pattern) (Semester-II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Neat and labeled diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Answer any 5 questions.***

Q1) Attempt the following: **[10]**

a) Explain the evolution of atmosphere with the help of chemical equations.

b) What is meant by long term and short term climatic effects?

Q2) Explain: **[10]**

a) Temperature inversion.

b) Green House Effect.

Q3) Answer in brief: **[10]**

a) What are geostrophic & gradient winds? Distinguish between the two with examples.

b) Describe the various factors that affect distribution of solar insolation.

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

a) Indian Monsoon System.

b) Walker Circulation.

P.T.O.

Q5) Attempt the following: **[10]**

a) Give an account of the classification of air masses.

b) What are the applications of Air Mass trajectory analysis?

Q6) Explain: **[10]**

a) Atmospheric stability.

b) Ozone depletion.

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

a) Mechanisms of precipitation.

b) National air quality standards.

Q8) Answer the following: **[10]**

a) Give a brief account of how aerosols are collected & analysed.

b) Describe the role of temperature and humidity in the dispersion of pollutants.

Total No. of Questions : 8]

SEAT No. :

P3102

[Total No. of Pages : 2

[5537]-204

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-204 : Remote Sensing, Image Processing & GIS

(2013 Pattern) (Semester-II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Neat and labeled diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Answer any 5.***

Q1) Attempt the following: **[10]**

a) What is thermal IR remote sensing? Add a note on it's applications.

b) Describe the different types of resolutions defined for remote sensing systems.

Q2) Explain: **[10]**

a) Atmospheric windows.

b) Digital Image Processing.

Q3) Differentiate between: **[10]**

a) Aerial photography and satellite imaging.

n) Optical & Microwave remote sensing.

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

a) Georeferencing and digitization of maps.

b) Image classification.

P.T.O.

Q5) Attempt the following: **[10]**

a) Describe the concept of black body and its relevance to Remote sensing.

b) What is image correction and enhancement? Explain image enhancement techniques in brief.

Q6) Differentiate between: **[10]**

a) Azimuthal & Cylindrical projections.

b) Active and passive remote sensing.

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

a) Limitations of GIS.

b) LANDSAT.

Q8) Answer in brief: **[10]**

a) "GIS is a decision support system" - Explain.

b) How can remote sensing be used in the management of natural disasters.

Total No. of Questions : 8]

SEAT No. :

P3103

[Total No. of Pages : 2

[5537]-301
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC-301 : Environmental Impact Analysis and Environmental Audit
(2013 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Solve any five questions.***
2) ***Neat and labelled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following : **[10]**

a) Discuss how E/A is an effective tool for decision makers.

b) Write a note on the concept, history and evolution of E/A.

Q2) Answer the following : **[10]**

a) Describe the E/A process in India wrt the E/A notification of Sept. 2006.

b) What are the benefits of Accreditation of E/A consultants? Enlist the 12 functional areas for experts in the accreditation scheme.

Q3) Answer the following : **[10]**

a) What is the significance of meteorological data in prediction of impacts? What is the data to be collected?

b) Explain environmental risk assessment and its significance.

Q4) Answer the following : **[10]**

a) Discuss the methodology for collection of water quality data in E/A.

b) Write about the significance of noise monitoring in the study area of a project in E/A.

Q5) Attempt the following : **[10]**

a) What should be included in Chapters 2, 3 and 4 of an E/A report?

b) What is the procedure for conducting public hearing in India? Explain the advantages and limitations of Public consultation.

P.T.O.

Q6) Predict the impact of following on air & socio economic environment **[10]**

a) Sugar industry.

b) Roadway / Highway project.

Q7) Answer the following : **[10]**

a) What is the significance of environmental cell wrt EMP? Who should be included in it?

b) Explain the role of occupational safety and health assessment in E/A.

Q8) Answer the following : **[10]**

a) Explain the significance of consumption and pollution audit.

b) Explain the concept of ISO14000. Add a note on environment audits as per ISO14000.

Total No. of Questions :8]

SEAT No. :

P3104

[Total No. of Pages :2

[5537]-302

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC - 302 : Environmental Pollution II : Air, Noise And Radiation

(2013 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Solve any Five questions from the following.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer the following: **[10]**

a) Explain the contribution of air pollution to greenhouse effect and climate change.

b) Classify air pollutants based on their characteristics add a note on economic effects of air pollution.

Q2) Answer the following. **[10]**

a) What should be included in the strategy to control vehicular emissions?

b) Write a note on the carcinogenic potential of automobile emissions.

Q3) Answer the following. **[10]**

a) Explain the difference between point and non-point sources of industrial air pollutants.

b) Write about the air pollutants from thermal power plants and the preventive/control measures for them.

Q4) Answer the following. **[10]**

a) Give NAAQS (24 hr) for following criteria pollutants P_{10} Pm 2.5 NO_x, SO_x. Add a note on fine dust sampler .

b) Write a note on control of air pollution through process change 4 zoning.

P.T.O.

Q5) Answer the following. **[10]**

a) What are the different equipments used in control of particulate pollutants? Write their principle of working.

b) Explain the working of incinerator. What is the role of incinerator in air pollution control?

Q6) Answer the following. **[10]**

a) What are the different effects of noise? Write in detail about auditory 4 psychological effects.

b) Explain about noise control by design and its advantages.

Q7) Answer the following. **[10]**

a) What are the biological effects of ionizing radiations?

b) Write a note on ICRP recommendations.

Q8) Write short notes on the following. **[10]**

a) AERB classification

b) Source Path-receiver concept

Total No. of Questions :8]

SEAT No. :

P3105

[Total No. of Pages :2

[5537]-303
M.Sc.
ENVIRONMENTAL SCIENCES
EVSC-303: Water and Waste Water Technology
(2013 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Solve any five questions.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following: **[10]**

a) What are the objectives of water treatment? What are the different units in treatment of water?

b) Explain the importance of population forecasting during design, of water treatment plant.

Q2) Answer the following: **[10]**

a) Explain the term of water treatment. Discuss the factors affecting on water demand.

b) Explain the quality of water required for domestic and fire fighting.

Q3) Answer the following: **[10]**

a) What are the advance treatment methods for water treatment? Why are they necessary, Elaborate on any two methods.

b) Write a note on (any-2)

i) Collection & pumping

ii) Aeration

iii) Filtration

Q4) Answer the following: **[10]**

a) Explain the mechanism of chlorination in details, write down its importance in water treatment.

P.T.O.

b) Write a note on (any 2):

i) Demineralization

ii) Sedimentation

iii) Filtration

Q5) Attempt the following: **[10]**

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

b) Explain the impact of future growth & development on and change in quality of life on sewage quality and quantity.

Q6) Answer the following. **[10]**

a) Write down importance of preliminary & primary treatment in wastewater treatment plant.

b) What are the characteristics of dairy wastewater? Draw a flow sheet for ETP of dairy industry.

Q7) Answer the following: **[10]**

a) Write a note on (any 2)

i) Spent wash & whey

ii) Primary & secondary sludge

iii) Cyanide removal

b) Explain the importance of anaerobic treatment in wastewater treatment plant & brief note on VASB.

Q8) Answer the following: **[10]**

a) Write a note on pulp & paper manufacturing process & characteristics of its effluents.

b) Explain importance of chlorination in wastewater treatment.

Total No. of Questions :8]

SEAT No. :

P3106

[Total No. of Pages :2

[5537]-304
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC-304: Environmental Law, Ethics and Policy
(2013 Pattern) (Semester - III)

Time : 3Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following. **[10]**

a) Write in detail about outcome of 1972's stockholm conference.

b) Discuss the need of environment (Protection) act - 1986.

Q2) Answer the following. **[10]**

a) Why Rio conference is very important in modern human history.

b) Discuss important provisions of motor vehicles rules.

Q3) Answer the following. **[10]**

a) Discuss the objective of kyoto protocol; also explain its implementation mechanism.

b) Comment on provision of sampling and consent, according to air (p&cp) act 1981.

Q4) Write a note on following. **[10]**

a) Article 48A & 51A (g).

b) National forest policy.

P.T.O.

Q5) Attempt the following. **[10]**

a) Why bio-medical waste is managed separately from domestic waste? Also explain the mechanism for implementation of the rules related to Bio-medical waste.

b) Discuss important provisions of wildlife (Protection) act-1972.

Q6) Answer the following. **[10]**

a) Why environmental tribunal was constituted? Also discuss important Provisions of NET act 1995.

b) State objectives of national environmental policy-2006.

Q7) Write a note on following. **[10]**

a) Theories related to environmental ethics.

b) Economic and social component of sustainability.

Q8) Answer the following. **[10]**

a) Discuss the programmes and activities/actions implemented by UN for protection of environment.

b) Explain the linkages of sustainability with biodiversity and natural resources.

Total No. of Questions :8]

SEAT No. :

P3107

[Total No. of Pages : 2

[5537]-305
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 307: Man and Environment
(2013 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Solve any five questions from the following***
2) ***Neat and labeled diagrams must be drawn wherever necessary***
3) ***Figures to the right indicate full marks.***

Q1) Answer the following :- **[10]**

a) Explain the relation between biomes and climate.

b) How social organization structure have importance in resource monitoring.

Q2) Answer the following :- **[10]**

a) What is biotic potential of population. Add a note on environmental resistance.

b) Which are the environmental factors influencing population growth.

Q3) Answer the following :- **[10]**

a) What are the primary important factors for human settlements in smart cities.

b) Explain the biological growth curve with suitable examples.

Q4) Answer the following :- **[10]**

a) Briefly explain the evolution theory of human ecology

b) How technological application influences resource management practices.

P.T.O.

Q5) Answer the following :- **[10]**

a) Explain the types of land use pattern and its impact on environment

b) How population density influence on resource distribution and development

Q6) Answer the following :- **[10]**

a) Briefly explain the Lie big's law of limiting factors

b) Briefly explain the effects of pesticides on non-target organisms.

Q7) Answer the following :- **[10]**

a) What are the guidelines for local and regional planning

b) Briefly explain the rural organization and function

Q8) Write short notes on the following :- **[10]**

a) Laws of minimum and tolerance

b) Agenda 21.

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Total No. of Questions :8]

SEAT No. :

P3108

[Total No. of Pages : 2

[5537]-306
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC 308 : Environmental Education
(2013 Pattern) (Semester- III) - (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions***
2) ***Neat and labeled diagrams must be drawn wherever necessary***
3) ***Figures to the right indicate full marks.***

Q1) Answer the following **[10]**

a) Discuss briefly role and use of traditional and new media.

b) Explain in detail teaching learning processess & Techniques used in environmental education.

Q2) Answer the following **[10]**

a) Express the views on role of environmental educatior in sustainable development.

b) Write a brief account on outcomes of UNESCO conference on EE.

Q3) Answer the following **[10]**

a) Discuss briefly community based approach to teach environmental education.

b) Explain in detail status or EE & ESD in Indian school.

Q4) Answer the following **[10]**

a) Express views about need of orientation program for preservice & in-service teachers.

b) Write a note on project based learning.

P.T.O.

Q5) Answer the following **[10]**

a) Discuss in brief collaborative approaches used to address wicked problem

b) Explain briefly public awarness programs in natural resource management.

Q6) Answer the following **[10]**

a) Explain the role of mass media in EE & ESD.

b) Write a note on Indias national policy on education.

Q7) Answer the following **[10]**

a) Explain the role of civil society in waste redution and management.

b) Write a note on Agenda 21.

Q8) Answer the following **[10]**

a) Explain briefly role of ECO clubs in EE

b) Add a note on elements of multilateral environmental agreements.

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Total No. of Questions :8]

SEAT No. :

P3110

[Total No. of Pages : 2

[5537]-308
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 310 : Environmental Resource monitoring
(2013 Pattern) (Semester-III) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Solve any five questions***
2) ***Neat and labeled diagrams must be drawn wherever necessary***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following - **[10]**

a) What are the criteria for site and parameter selection in ambient air sampling.

b) What are the OSHA limits for particulate matters and gases.

Q2) Answer the following - **[10]**

a) Briefly write the stack gas monitoring techniques.

b) Briefly write the investigation and assesment of impact of noise

Q3) Attempt the following - **[10]**

a) What are the preservation, handling and storage techniques for water samples.

b) Briefly write the site selection and in field sampling techniques for soil.

Q4) Answer the following - **[10]**

a) Explain the terms- SAR, CEC and Kelly's ratio.

b) Briefly write the guidelines for handling and storage of soil samples.

P.T.O.

Q5) Attempt the following - **[10]**

a) Explain the various methods used for tree girth and canopy.

b) Briefly write the importance of inventory of trees in forest resource monitoring.

Q6) Answer the following - **[10]**

a) Explain the objectives of forest mensuration

b) Explain the importance of weather data in disperssion of air pollutants in atmosphere

Q7) Answer the following :- **[10]**

a) How is the remote sensing used in monitoring forest resources.

b) Briefly write the mitigation policy for noise control

Q8) Write short notes on - **[10]**

a) Is 10500 and WHO standards for drinking water.

b) Salient features of National forest policy 1988.

Total No. of Questions : 8]

SEAT No. :

P3111

[Total No. of Pages : 2

[5537]-401
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 401 : Environmental Toxicology, Health and Safety
(2013 Pattern) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt Any five qustions.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following. **[10]**

a) Define health and HS importance with appropriate example.

b) Explain a various aspect of safety health and environment is developmental project.

Q2) Attempt the following. **[10]**

a) Explain mechanical hazard with appropriate example.

b) Write a short note on : (any two)

i) Safety hazard

ii) Biological hazard

iii) Chemical hazard

Q3) Attempt the following. **[10]**

a) Explain different personal protective equipments (PPE) and its importance.

b) What are preventive measure to avoid work place hazards.

Q4) Attempt the following. **[10]**

a) Write down role of management per ISO - 18000.

b) Importance of toxicology in environmental science.

P.T.O.

Q5) Attempt the following. **[10]**

a) Write down various hazard in automobile industry, and its mitigation measures.

b) Write a note on : (any two)

i) Carcinogenesis

ii) Acute toxicity

iii) Chromosomal aberration

Q6) Attempt the following. **[10]**

a) Explain biomonitoring means.

b) Potential of health risks in industrial processes.

Q7) Attempt the following. **[10]**

a) Explain various methods of hazardous waste disposal.

b) Write a note on fate of toxicants in individual organism.

Q8) Attempt the following. **[10]**

a) Roll of NGOS in handling of hygiene issues and public awareness.

b) Explain effects of industrial development on human health.

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Total No. of Questions : 8]

SEAT No. :

P3113

[Total No. of Pages : 2

[5537]-403

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-403 : Waste and Hazardous Waste Management

(2013 Pattern) (Semester-IV)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Solve any five Questions from following.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following: **[10]**

a) What is Hazardous waste? Explain in detail.

b) Comment on methods of Solid Waste Management.

Q2) Answer the following: **[10]**

a) Comment on solid waste management in Pulp & Paper Industry.

b) Explain the Resource conservation & recovery mechanism.

Q3) Answer the following: **[10]**

a) Comment on treatment & disposal mechanism of Hazardous Solid Waste.

b) What is Solid Waste? Comment on its type.

Q4) Answer the following: **[10]**

a) What is biomedical waste? Explain its classification.

b) What is Radio active waste? Explain its impact on health of living organism.

P.T.O.

Q5) Attempt the following: **[10]**

a) Discuss the growing problem of E-Waste.

b) What is risk? Explain details risk assessment cycle.

Q6) Answer the following: **[10]**

a) Illustrate pyrolysis & plasma gastification.

b) What is muncipal solid waste? Explain in details its collection mechanism in India.

Q7) Answer the following: **[10]**

a) Comment on solid waste generation in Pulp & Paper Industry.

b) Explain the role of NGO in solid waste management.

Q8) Write a note on: **[10]**

a) Environmental Health Impacts due to solid waste disposal.

b) Comment on legal provisions for Hazardous Waste disposal.

Total No. of Questions : 8]

SEAT No. :

P3114

[Total No. of Pages : 2

[5537]-404

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-404 : Renewable and Non-Renewable Energy

(2013 Pattern) (Semester-IV)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Solve any Five Questions from the following.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer the following: **[10]**

a) Write about the energy consumption pattern in India.

b) 'Sun-as a source of energy'. Explain.

Q2) Answer the following: **[10]**

a) State and explain the factors affecting anaerobic digestion.

b) Write an essay on 'energy from solid waste'.

Q3) Answer the following: **[10]**

a) What are the advantages and limitations of hydroelectric power.

b) Describe the different types of turbines used for hydroelectric power plants.

Q4) Answer the following: **[10]**

a) What do you understand by geothermal energy? Give it's major applications.

b) What are the potential sites of tidal energy in India?

P.T.O.

Q5) Answer the following: **[10]**

a) Give a detailed account on problem's associated with radioactive energy.

b) Explain nuclear fuels in detail.

Q6) Answer the following: **[10]**

a) Give a brief account on solar thermal energy.

b) Discuss the construction and working of solar collector's and concentrator's.

Q7) Answer the following: **[10]**

a) What are the basic principles of wind energy conversion?

b) What is wind power? Explain wind characteristics in detail.

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

a) Types and uses of coal.

b) Petroleum and natural gas.

Total No. of Questions : 8]

SEAT No. :

P3115

[Total No. of Pages : 2

[5537] - 405

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC - 407 : Environmental Economics

(2013 Course) (Semester - IV)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following : **[10]**

a) Briefly explain the consequences of exploitation of bioresources on development.

b) Why incentives and subsides are essential in development programme.

Q2) Justify the following : **[10]**

a) Environmental management policy will play important role in conservation.

b) Strategic planning for renewable resources will support-sustainable development.

Q3) Answer the following : **[10]**

a) Briefly explain the causes of market failure.

b) How environmental parameters influences the economic growth.

Q4) Attempt the following : **[10]**

a) Briefly write the objectives of regional planning program.

b) What are the standard methods for economic growth measurement.

P.T.O.

Q5) Attempt the following : **[10]**

a) Briefly explain the longterm impact of global warming on development.

b) What are the merits of public participation in development programme.

Q6) Briefly explain the following : **[10]**

a) Impact of foreign direct investment (FDI) in conservation programme.

b) Economic model of demand and supply of price determination.

Q7) Answer the following : **[10]**

a) How climate change influences the rainfall pattern in India.

b) Briefly write the methods of valuation for renewable resources.

Q8) Write a short notes on : **[10]**

a) Design parameters for Environmental policies.

b) Objectives for national planning.

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Total No. of Questions : 8]

SEAT No. :

P3116

[Total No. of Pages : 2

[5537] - 406

M. Sc.

ENVIRONMENTAL SCIENCE

EVSC - 406 : Forestry And Habitat Management

(2013 Course) (Semester - IV)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Solve any five questions.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following. **[10]**

a) Define and explain the concept of habitat management.

b) Which ecological factors influences silviculture? And explain how?

Q2) Answer the following. **[10]**

a) Define ethnobotany and discuss its role.

b) What is forest mensuration? State its objectives.

Q3) Answer the following. **[10]**

a) How forestry is helpful in water conservation?

b) Why diameter at breast height (DBH) is important? Also explain standard rules of DBH.

Q4) Write a note on following. **[10]**

a) Role of women in forest management.

b) Major forest types in India.

P.T.O.

Q5) Attempt the following. **[10]**

a) What is form? Enlist methods of studying form.

b) Write in detail about forest working plan.

Q6) Answer the following. **[10]**

a) Discuss the concept of tree improvement and its techniques.

b) Give a detailed account on forest based industries.

Q7) Write a note on following. **[10]**

a) Afforestation.

b) Applications of Indian penal code in forestry.

Q8) Answer the following. **[10]**

a) Write in detail about measuring height of trees and instrument used for it.

b) Discuss in detail, direct and in direct utilization of forest resources.

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Total No. of Questions : 8]

SEAT No. :

P3117

[Total No. of Pages : 2

[5537] - 407

M. Sc. (Environmental Science)

EvSc-409: WILDLIFE MANAGEMENT AND CONSERVATION

(2013 Course) (Semester - IV)

Time : 3.00 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following. **[10]**

a) Give a detailed account on zoogeographical regions of the world.

b) Discuss about wild flora and fauna of India in detail.

Q2) Attempt the following. **[10]**

a) Comment on Himalaya as a conservation zone for wildlife in India.

b) Write an essay on River's of India.

Q3) Attempt the following. **[10]**

a) What is wildlife management? Discuss wildlife management act in detail.

b) Discuss the significance of national parks and wild life sancturies.

Q4) Attempt the following. **[10]**

a) Give the salient features of Tadoba national Park.

b) Discuss in brief, the major threats to wildlife sancturies in India.

P.T.O.

Q5) Attempt the following. **[10]**

a) Explain the role of modern genetics and bioscience in captive breeding of endangered species.

b) Differentiate between insitu and exsitu conservation with suitable examples.

Q6) Attempt the following. **[10]**

a) Write a note on Indian Forest Service.

b) Discuss, the deserts and semi aid regions in India.

Q7) Answer the following. **[10]**

a) Explain convergence of zoogeographical regions in Indian subcontinent.

b) Comment on wild flora and fauna of India.

Q8) Write a short notes on: **[10]**

a) ornithology.

b) Entomology.

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Total No. of Questions : 8]

SEAT No. :

P3118

[Total No. of Pages : 2

[5537] - 408

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC - 408 : Sustainable Agriculture And Organic Farming

(2013 Course) (Semester - IV)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Solve any five questions from following.***
2) ***Neat and labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following : **[10]**

a) What is role of grazing herbivores is suistainable system?

b) What are the difference between vermiculture and composting?

Q2) Answer the following : **[10]**

a) What are the requirements for organic production?

b) What are the traditional cultivation practices?

Q3) Answer the following : **[10]**

a) What is the role of societal traders and institution in sustainable agriculture?

b) Explain the concept of sustainability with respect to agriculture and livestock?

Q4) Write in brief. **[10]**

a) Crop rotation

b) Bio fertiliser

P.T.O.

Q5) Attempt the following : **[10]**

a) What is the significance of low - input suistainable agriculture farming?

b) What are the preparations of cropping scheme for dry land situation?

Q6) Write the significance of : **[10]**

a) Integrated disease and pert management.

b) Weed management.

Q7) Answer the following. : **[10]**

a) Briefly write about domestic livestock ecosystem.

b) What is the role of horticulture practices in agriculture?

Q8) Write a short notes on : **[10]**

a) Macro quality analysis.

b) Birds perches.

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