Total No. of Questions : 8]

SEAT No. :

P1677

[Total No. of Pages : 2

[5130]-101
M.Sc. - I
ENVIRONMENTAL SCIENCE
EVSC- 101 : Environmental Biology
(New) (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) What is Biosphere? How it can be viewed as an ecosystem?

b) Define the term 'ecosystem'. What are the functional aspects of ecosystem?

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

a) What is meant by energy fixation? Explain the energy flow through ecosystem.

b) Explain the importance of biological processes in maintenance of ecological balance?

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

a) Explain the concept of ecological efficiency in relation with trophic levels.

b) Define the term 'succession'.How it results to form stable ecosystem?

P.T.O.

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

a) What is symbiosis? Enumerate the definition with suitable examples.

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

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

a) Define 'ecological population'. Describe the phases of population growth curve.

b) Discuss the various modes of communication observed in animals.

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

a) What are the challenges and adaptations of life in terreotrial biomes?

b) Discuss the applications of environmental microbiology in ecological restoration.

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

a) What are wetlands? Explain the ecological services provided by them.

b) Which are the environmental factors that influence microbial growth?

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

a) Mountain Biome.

b) Importance of Sociobiology.

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Total No. of Questions : 8]

SEAT No. :

P1678

[Total No. of Pages : 2

[5130]-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) Enumerate the sample prepartion methods of gas chromatography.

b) What are the merits and demerits of NAA.

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

a) What is detergents? Give classification with suitable examples.

b) Explain the hydrogen bonding in biological system.

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

a) Write the principle and function of XRD.

b) Explain the function of DNA and RNA in living cells.

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

a) Role of micronutrient in plants.

b) Biomagnification of DDT in ecosystem.

P.T.O.

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

a) Explain the components of HPLC and their significance.

b) What is embryogenesis? Add a note on gene mutation.

Q6) Write the answer of following: **[10]**

a) Explain the role of micro organisms in soil. Add a note on soil organic matter.

b) Explain the biological function of enzyme. Add a note on Luck Key model.

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

a) Classify the pesticide. Add a note of biomagnification of DDT.

b) What are the merits and demerits of X-ray diffraction methods.

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

a) Photo multiplier tubes.

b) Modified detergents.

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Total No. of Questions : 8]

SEAT No :

P1679

[Total No. of Pages :2

[5130] - 103
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC-103: Essentials of Geosciences
(2013 Pattern) (Credit System) (Semester - I)

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

Instructions to the candidates:

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

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

a) Describe the characteristic features of sedimentary rocks.

b) Explain the concept of continentol drift,giving examples.

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

a) Tectonic earthquakes

b) Central type of volcano.

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

a) Explain the factors affecting weathering

b) What is karst topography,enumerate it's typical features.

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

a) Residual and Transported soils.

b) Processes of Glacial erosion

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

a) Explain hydrological cycle

b) Describe Unconfined and confined aquifers.

P.T.O.

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

a) Describe physical structure of the Ocean floor.

b) Differentiate between waves,tides and Ocean currents.

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

a) Landslides and slope failures.

b) properties of sea water.

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

a) Mining hazards.

b) Desertification

Total No. of Questions :8]

SEAT No :

P1680

[Total No. of Pages :2

[5130] - 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) ***Solve any five Questions.***
2) ***Figures to right indicates full marks.***
3) ***Use log, statistics, calculator is allowed.***

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

a) Population
b) Range
c) Skewness
d) Parameter
e) Sampling unit

Q2) a) Explain the following with illustration: **[2×3=6]**

i) Simple random sampling
ii) Histogram

b) Find the mean and variance of N ($\mu\ \delta^2$). **[4]**

Q3) a) Compute S.D. and C.V. of marks scored by 10(ten) candidates given below:
54, 61, 64, 69, 58, 56, 49, 57, 55, 50 **[5]**

b) What are measures of control tendancy? Discuss median and mode. **[5]**

P.T.O.

Q4) a) following is a frequency distribution of height in cm. **[5]**

Classes	150–154	155–159	160–164	165–169	170–174
Frequency	02	17	29	21	01

Obtain class boundaries of each of the classes and class width.

b) Describe scatter diagram and explain how it is used to measure correlation. **[5]**

Q5) a) Calculate arthimetic mean and mode for the following **[5]**

Daily salary(in Rs)	No.of workers.
Below 400	00
Below 600	04
Below 800	14
Below 1000	33
Below 1200	45
Below 1400	49
Below 1600	50

b) Explain the Chi-square test for goodness of fit. **[5]**

Q6) a) State the term Skewness and measures of Skewness.Also mention how to interprete them? **[5]**

b) What are merits and demerits of mode and median as a measures of central tendancy. **[5]**

Q7) a) i) Find correlation coefficient between X & Y. Given: n = 25, $\Sigma x = 75$ $\Sigma y = 100$ $\Sigma x^2 = 250$, $\Sigma y^2 = 500$ $\Sigma xy = 325$. **[4]**

ii) Explain the difference between SRSWOR and SRSWR. **[2]**

b) If X2N (10,64) compute the probabilities P[X>12] and P[–12<X < 12]. **[4]**

Q8) a) Discuss in brief population growth model. **[5]**

b) Discuss in brief cohort projection. **[5]**

Total No. of Questions : 8]

SEAT No. :

P1681

[Total No. of Pages : 2

[5130]-201
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 201 : Environmental Pollution & Control - I , Water and Soil
(2013 Pattern) (Semester - II) (Credit System)

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

Instructions to the candidates:

1) ***Attempt any FIVE questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***USe of Calculator, Lograithmic table and Statistical Table is allowed.***

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

a) Explain types & sources of fresh water pollution.

b) Describe effect of Eutrophication.

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

a) How sewage & industrial waste disposed in sea?

b) Explain the process of ecosystem stabilization.

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

a) Explain concept & significance of artificial recharge.

b) What is Ballast water? Explain in detail.

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

a) How biological pollutant affect water quality?

b) What are the effect of toxic organic compound?

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

a) What are types and composition of MSW?

b) Discuss degradation of soil due to mining activity.

P.T.O.

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

a) How oil extraction causes marrine pollution?

b) Explain in brief recycling of waste water.

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

a) Explain the role of microbe in metal transformation.

b) Discuss in brief sea water intrusion.

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

a) Water pollution and economony.

b) Water sampling methods.

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Total No. of Questions : 8]

SEAT No. :

P1682

[Total No. of Pages : 2

[5130]-202
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC:202:Biodiversity, Forestry and Natural Resources
(2013 Pattern) (Semester - II)

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 in brief forest diversity of Oriental region.

b) Describe skills and resources needed for the rapid assessment of biodiversity.

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

a) Explain establishment of National Biodiversity Authority.

b) Describe terms and purpose of Montreal protocol.

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

a) Explain with examples role of plants in modern medicine.

b) Explain value of microbes in medicinal research.

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

a) Explain objectives of convention on Biodiversity.

b) Explain in situ approaches to conservation of plants.

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

a) Explain importance of traditional cultivars and wild species in agriculture.

b) Explain traditional knowledge system and its protection under IPR.

P.T.O.

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

a) Evaluate nature, scale and intensity of the threats to biodiversity.

b) Explain current status of exploitation of wild species.

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

a) Describe strategy for constructive involvement of communities in conservation of biological resources.

b) Explain mission of IPCC in climate change.

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

a) Social forestry.

b) Joint Forest Management.

Total No. of Questions : 8]

SEAT No. :

P1683

[Total No. of Pages : 2

[5130]-203
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC-203: Atmospheric Science
(2013 Pattern) (Semester - II)

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) Enlist the element of weather and climate.

b) Write in brief structure of atmosphere with height.

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

a) What is insolation? Sketch the EMR.

b) Write in brief Green House Effect.

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

a) What is inversion? Discuss radiation inversion.

b) What is temperature gradient?

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

a) What is atmospheric pressure? How it is measured?

b) What is Wind? Explain in detail geostropic wind.

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

a) Explain in brief ITCZ.

b) Write a note on Hydrological cycle.

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

a) Write in detail classification of air masses.

b) What is tropical cyclone? Explain with examples.

P.T.O.

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

a) What is plume? Explain different plume behavior.

b) Write short note on ozone depletion.

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

a) Thunderstorm.

b) Urban heat island.

Total No. of Questions : 8]

SEAT No. :

P1684

[Total No. of Pages : 2

[5130]-204
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 204 : Remote Sensing and GIS
(2013 Pattern) (Semester - II)

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) Draw a neat labelled diagram of EMR with reference to wavelength bands used in remote sensing.

b) Explain particle theory giving its significance in remote sensing.

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

a) Explain the mechanism of Rayleigh scatter giving its implication in remote sensing.

b) What is atmospheric windows.

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

a) Describe Geo stationary orbit and sun-synchronous polar orbit, giving examples.

b) Discuss the characteristic features of LISS IV.

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

a) Explain the factors controlling scale of aerial photograph.

b) Discuss how stereo-photography of an area is accomplished.

P.T.O.

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

a) Discuss the components of GIS.

b) Discuss the characteristic features of cylindrical projection.

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

a) Explain the spatial and non-spatial data with suitable examples.

b) Discuss the nature and characteristics of Rastar data with suitable examples.

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

a) Explain the process georeferencing.

b) Discuss the application of Buffering analysis with suitable examples.

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

a) Application of GIS in water resource monitoring.

b) Active Remote sensing.

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Total No. of Questions : 8]

SEAT No. :

P1685

[Total No. of Pages : 2

[5130]-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 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) Write a brief note on the history and evolution of EIA.

b) What is prior environmental clearance? Which projects require such clearance.

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

a) Discuss the requirements of the accreditation of EIA consultants by Quality council of India.

b) What is the role of EIA in sustainable development.

Q3) Explain the significance of **[10]**

a) Biological environment for baseline studies.

b) Disaster management plan in EMP.

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

a) Describe in detail the matrix method of impact analysis with advantages and limitations.

b) Write about the importance of screening & scoping in EIA studies.

P.T.O.

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

a) Explain the regulatory requirement and procedure for public hearing in the EIA process.

b) Discuss the role of resource recovery and reuse in EMP.

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

a) Discuss the impact of sugar industries on the socio-economic environment in rural Maharashtra.

b) Write an environmental management plan for a petrochemical industry.

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

a) Define Environmental Audit. Give its importance in industries.

b) Discuss the requirements of rule 14 for environmental audit under EPA.

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

a) Drawbacks of EIA process.

b) Environmental compliance audit.

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Total No. of Questions : 8]

SEAT No. :

P1686

[Total No. of Pages : 2

[5130]-302
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 302: Environmental Pollution II: Air, Noise and Radiation
(2013 Pattern) (Semester - III) (Credit System)

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) What are the sources of air pollution?

b) What are primary and secondary air pollutants?

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

a) What are the effect of air pollution on human?

b) How air pollution is controlled in vehical?

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

a) Explain in brief determination of So_2 in air.

b) Enlist the equipments for air pollution control with principles.

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

a) What are the sources of noise pollution?

b) Write in brief effects of noise pollution.

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

a) What is noise? Explain the methods of noise pollution control.

b) What is radiation? Enlist the sources of radiation.

P.T.O.

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

a) Write a note on somatic effect of radiation.

b) Discuss the ICRP recommendation for radiation protection.

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

a) Explain any three units of radiation measurement.

b) Explain mechanism of hearing with suitable diagrame.

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

a) Scrubbers.

b) Semiconductor detectors.

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Total No. of Questions : 8]

SEAT No :

P1687

[Total No. of Pages :2

[5130]-303
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC-303:Water and Waste Water Technology
(2013 Pattern) (Credit System) (Semester-III)

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) Explain the term water demand.Discuss the factors affecting water demand.

b) Discuss the logistic method for population forecasting.

Q2) a) What are the different types of solids present in water? Discuss their impact on water quality.

b) Discuss the physical,chemical and biological properties of water.

[10]

Q3) a) What is meant by hardness of water? Elaborate any one method of water softening.

b) Explain the mechanism of chlorination in detail.

[10]

Q4) a) Explain the process of reverse osmosis and its significance in water treatment.

b) Draw a neatly labelled flow chart of a water treatment plant.

[10]

P.T.O.

Q5) a) Why is it necessary to treat wastewater prior to disposal? Give the disposal standards.

b) What is the position of screen chamber in a wastewater treatment plant and why? Discuss its role.

[10]

Q6) a) Discuss the importance of aeration in biological treatment.Give the different types of aeration processes.

b) Explain the activated sludge process in detail.

[10]

Q7) a) Draw a flowchart of sulfate pulping process with chemical recovery system

b) Describe the process of anaerobic digestion. What are the different models of anaerobic reactors?

[10]

Q8) a) Biotechnology in waste water treatment.

b) Significance of oil & grease removal.

[10]

Total No. of Questions :8]

SEAT No :

P1688

[Total No. of Pages 2

[5130] - 304
M.Sc.
ENVIRONMENTAL SCIENCES
EVSC-304: Environmental Law, Ethics & Policy
(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 right indicates full marks.***

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

a) Highlight the important sections of Water Act-1974.

b) Discuss the salient features of Environment (Protection) Act-1986

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

a) Discuss the provisions under air act-1981, in case of its violation.

b) Comment on effectiveness of wildlife (protection) act-1972, in conservation of wildlife & habitat.

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

a) Discuss the salient features of national forest policy

b) Explain the biomedical waste management with the help of related rules.

Q4) Write a short note on following: **[10]**

a) Law and Policy–Importance and basic difference.

b) Need of biological diversity act-2002.

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

a) Discuss in detail the issues on the agenda of the earth summit held at Rio in 1992.

b) Explain in detail the millenium development goals set by United Nations (UN).

P.T.O.

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

a) Discuss in detail the outcome of conference on human environment held at stockholm.

b) How the rules for handling and management of hazardous waste are effective in protection of environment.

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

a) Define and discuss the concepts of environmental ethics.

b) Which are the issues/factors important for sustainable development?

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

a) Challenges of world environmental ethics.

b) UNFCCC.

Total No. of Questions : 8]

SEAT No. :

P1689

[Total No. of Pages : 2

[5130]-305
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 307 : Man and Environment
(2013 Pattern) (Semester - III) (Credit System)

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 concept of carrying capacity with example.

b) Explain the impact of fishing industry on environment.

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

a) Explain the factors of population regulation.

b) What are the causes of environmental degradation?

Q3) Write note on- **[10]**

a) Comment on Land use during historical times.

b) Explain the concept of limiting factor.

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

a) Population dynamics.

b) Settlement hierarchy.

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

a) What are national planning parameter for urban areas?

b) Enlist and comment on biological factors in environment.

P.T.O.

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

a) Explain the role of stake holders in environmental planning.

b) What are remedies to environmental degradation?

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

a) Explain the role of wild life areas in rural suatainability.

b) What is importance of human ecology.

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

a) Energy flow.

b) Laws of limiting factors.

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Total No. of Questions : 8]

SEAT No. :

P1690

[Total No. of Pages : 2

[5130]-306
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 308 : Environmental Education
(2013 Pattern) (Semester - III) (New)

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) What is the concept of education for sustainable development?

b) Why environmental education is important for sustainable development?

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

a) Write an account on traditional and community based approaches of teaching and learning environmental education.

b) What are the guiding principles of environmental education?

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

a) What are the policies about education for sustainable development in Indian school systems?

b) What are the advances in environmental education of European countries?

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

a) What are the salient features of India's national policy on education?

b) Discuss importance of extra-curricular approaches in education for sustainable development.

P.T.O.

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

a) What are the objectives of Sarva Shiksha Abhiyan?

b) How eco-clubs are helpful in environmental education?

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

a) Which are various techniques used to enhance thinking?

b) What are the basis for evaluation of EE and ESD programmes?

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

a) Why public awareness is necessary in natural resource management?

b) Explain the role of educator in education for sustainable development.

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

a) Importance of Collaborative Approaches in Education.

b) Role of Media in Environment Education.

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Total No. of Questions : 8]

SEAT No. :

P1691

[Total No. of Pages : 2

[5130]-307
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 309: Environmental Biotechnology
(2013 Pattern) (Credit System)(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 role of microorganisms in waste treatment.

b) Discuss applications of Biotechnology in Biocomposting.

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

a) Write in brief about microbial classification system.

b) Discuss nutritional requirements for bacterial growth.

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

a) Discuss how biotechnology can be used in Forestry management.

b) What are bioindicators? Explain with any one suitable example.

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

a) Write a note on Integrated Pest Management.

b) Explain methods used for Phytoremediation.

P.T.O.

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

a) Discuss effects and microbial adaptation at temperature variation.

b) Briefly explain 'numerical taxonomy'.

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

a) Discuss types of Biosensors.

b) Explain process of bio-methanation.

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

a) Discuss air pollution indicators with suitable example.

b) Discuss concept of bio-leaching.

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

a) Genetically modified organisms.

b) Benefits of Biofertilizers

Total No. of Questions : 8]

SEAT No. :

P1692

[Total No. of Pages : 2

[5130]-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 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) What is wind? How it measured?

b) Differentiate between weather and climate.

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

a) What is air quality? Give the standards of OSHA.

b) What is stack? How its height is determined?

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

a) Differentiate between sound and noise..

b) What are the methods are for control of noise?

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

a) What is TON? How it is measured?

b) Why water quality is important?

P.T.O.

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

a) Explain the stages in water quality monitoring.

b) Why quality of water is important?

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

a) How one can control river pollution? Explain.

b) Explain in brief soil profile.

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

a) How forest helps to clean the environment?

b) How wildlife is help to protect the forest?

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

a) Aereal photography

b) Importance of wetlands.

Total No. of Questions : 8]

SEAT No. :

P1693

[Total No. of Pages : 2

[5130]-401
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 401 : Environmental Toxicology, Health & Safety
(2013 Pattern) (Semester - IV) (Credit System)

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) What is toxicology? Explain the toxic effect of Arsenic (As) on human health.

b) Define epidemic discuss? Discuss any one Air born epidemic disease.

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

a) Discuss in details problems Associated with Biological warfare.

b) What is health & safety? Comment on safety measures & its benefit in industry.

Q3) Comment & Explain following- **[10]**

a) Comment on ISO 18000. Explain its importance.

b) Explain benefits & loses of Development project with references to man & Environment.

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

a) Discuss the need for Industrial health & safeguard.

b) Elaborate in detail Risk Management cycle.

P.T.O.

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

a) Explain the safety management for noise pollution control in Industry.

b) Explain the various methods used to study toxicity.

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

a) What are organic solvents? Explain the physiological & metabolic effect of any one organic solvent.

b) What is carcinogenic? Enlist & explain carcinogenic Agents produced from industrial activities.

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

a) What is LD_{50}? Comment on its use for bioassay.

b) Explain various steps involved in disaster management.

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

a) Hazards waste management.

b) Mutagenic Agents & their effects.

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Total No. of Questions : 8]

SEAT No. :

P1694

[Total No. of Pages : 2

[5130]-402
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC:402-Restoration Ecology & Watershed Management
(Semester - IV) (2013 Pattern)

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

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***All questions carry equal marks.***
3) ***Your are advised to attempt not more than 5 questions.***

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

a) What is the principle of ecological restoration and add a note on its significance.

b) What are the Standard methods for restoration of protected areas.

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

a) Explain in detail how one can preserve the aquatic habitat in Urban area?

b) Explain how the protection of endangered species helps in ecological restoration?

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

a) Botanical garden, Plant nurseries and public garden is important in Urban areas.

b) Recharging of groundwater is a necessity in Urban area.

Q4) Write notes on the following: **[10]**

a) Mangroves.

b) Restoration of streams.

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

a) Define watershed management? Discuss the principles associated with watershed management.

b) Discuss the Engineering surveys involved in watershed development.

P.T.O.

Q6) Distinguish between the following: **[10]**

a) Size of a watershed and shape of a watershed.

b) Drainage line survey in watershed and contour survey in watershed.

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

a) Describe in brief with a suitable example about water balance and hydrological equation.

b) Describe in brief check dam and gully plugs in water harvesting in stream.

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

a) Factors associated with watershed management.

b) Water harvesting project in Maharashtra.

Total No. of Questions : 8]

SEAT No. :

P1695

[Total No. of Pages : 2

[5130]-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 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) Define solid waste. What are the environmental and health impacts of solid waste.

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

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

a) Discuss the role of transfer stations in municipal solid waste management system.

b) Write a note on disposal of municipal solid wastes in India.

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

a) Explain about the management of different types of agricultural wastes.

b) Write a note on solid waste management in mining industry.

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

a) What is meant by recycling ? Explain the role of recycling in resource conservation.

b) Explain the significance of 3R in solid waste management.

P.T.O.

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

a) Discuss the various aspects of e-waste management.

b) Define biomedical waste. What are the hazards associated with this waste?

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

a) Give the different sources of hazardous wastes. Write a note on collection & segregation of these wastes.

b) Write about the different components of e-waste and their recovery.

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

a) Write about the role of different authorities in solid waste management.

b) Enlist the different types of incineration technologies. Explain any one in detail.

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

a) Color coding for biomedical waste.

b) Hierarchy for solid waste management.

Total No. of Questions : 8]

SEAT No :

P1696

[Total No. of Pages :2

[5130]-404
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC-404 : Renewable and Non-renewable Energy
(2013 Pattern) (Semester-IV) (Credit System)

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) Describe solar spectrum with diagram.

b) What are fossil fuels? Add a note on formation of fossil fuels.

Q2) a) Discuss various environmental problems associated with fossil fuels. **[10]**

b) What is energy plantation? Explain its role in energy generation.

Q3) a) Explain how solidwaste is useful for energy generation. **[10]**

b) Explain physicochemical characteristics and energy content of different fossil fuels.

Q4) a) Describe methods used for radioactive waste disposal. **[10]**

b) Explain principle and working of solar collectors and concontrators.

P.T.O.

Q5) a) What is photovottaics? How do photovaltaics work? **[10]**

b) Explain energy generation from nuclear fission process.

Q6) a) Explain principle and working of hydroelectric power generation. **[10]**

b) Discuss environmental impact of wind energy generation.

Q7) a) Describe with suitable diagram working of wind mill with main components. **[10]**

b) Describe environmental impact of hydro energy generation.

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

a) Harnessing of geothermal energy.

b) Problems and prospects of Tidal and wave energy.

Total No. of Questions : 8]

SEAT No. :

P1697

[Total No. of Pages : 2

[5130]-405
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 407 : Environmental Economics
(2013 Pattern) (Semester - IV) (Credit System)

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 theory of Public Goods.

b) Explain Vulneribility of Indian regions to climate change.

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

a) What is Social Cost? Explain with suitable example.

b) What are the impacts of Non-renewable resource exploitation.

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

a) What are economic instruments for environmental protection.

b) What are causes of Market failure?

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

a) Foreign Direct Investment.

b) Economics of Forest Resource exploitation.

P.T.O.

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

a) Explain any two methods for valuation of environmental cost and benefits.

b) What is negative externality? Explain with suitable example.

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

a) What is strategic planning for sustainable development?

b) Explain the impacts of Economic growth on environment.

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

a) Explain the interlinkage between Environment and Economics.

b) What are issues in sustainable development?

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

a) Total Economic Value (TEV).

b) Need of Environmental Economics.

Total No. of Questions :8]

SEAT No. :

P1698

[Total No. of Pages :2

[5130] - 406

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-406:Forestry and Habitat Management (Optional)

(2013 Pattern) (Semester - IV) (Credit System)

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) Define forest management and discuss objectives of it.

b) Describe the major forest types of India with suitable examples.

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

a) Describe forest ecosystem and elaborate on nutrient cycling in the same.

b) How forestry is helpful in conservation of soil?

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

a) What is forest working plan? Discuss with the help of definition, concept and objectives.

b) Explain social forestry in brief & discuss its limitations.

Q4) Write a short note on following: **[10]**

a) Joint forest management and role of native communities.

b) In situ and ex situ conservation of forest genetic resources.

P.T.O.

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

a) Discuss the principles and techniques of forest management system.

b) Explain the general concepts of tree improvement along with suitable methods.

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

a) Discuss different provisions under Indian Penal Code focused on protection of forest /wildlife.

b) Explain the importance of participation of tribals/locals and women in forest management.

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

a) How GIS and remote sensing is helpful in forest management? Explain in detail.

b) Describe different modes of transport of timber and explain the criteria for selection of such mode.

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

a) Yield table.

b) Forest fires: Causes and control.

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Total No. of Questions :8]

SEAT No. :

P1699

[Total No. of Pages :2

[5130] - 407

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-409:Wildlife Management and Conservation

(2013 Pattern) (Semester - IV) (Credit System)

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) Give an account on wildlife Flora and Fauna of India.

b) Describe zoogeographical regions of the world.

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

a) Explain the science of ornithology in detail.

b) How does habitat destruction causes extinction of wildlife?

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

a) Give an brief account on Biodiversity Registers.

b) Explain wildlife protection act,1972.

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

a) Write an essay on wildlife management and its significance.

b) What do you mean by captive breeding. Explain with suitable example.

P.T.O.

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

a) What are the major zoological parks in India.

b) Write a note on, Rive's of India.

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

a) What are the major in-situ strategies of conservation of wildlife?

b) Give details about salent features of Corbett national park.

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

a) Write a detailed note on the role of Indian forest services in wildlife management and conservation.

b) Give detailed account on western Ghats as a major wildlife habitat and conservation area.

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

a) Buffer zone management practices.

b) Mammalogy & it's significance.

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Total No. of Questions : 8]

SEAT No. :

P1700

[Total No. of Pages : 2

[5130]-408
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 408 : Sustainable Agriculture and Organic Farming
(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) What are the benefits of crop rotation in agriculture practices?

b) Explain the biodiversity issues associated with Sustainable Agriculture.

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

a) What is the importance of agri ecology in sustainable practices.

b) Write the significance of Vermicompositing.

Q3) Explain in breif: **[10]**

a) Integrated pest management.

b) Agro pastoralism.

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

a) Explain the importance of extensive live Stock Keeping.

b) Problems in domestic live stock keeping and marketing.

P.T.O.

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

a) What are the reasons for disturbing nutrient balance in soil.

b) Explain the importance of macro quality analysis in organic farming.

Q6) Write in brief: **[10]**

a) Geen manuring.

b) Post harvest Management.

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

a) Write the significance of Weed Management.

b) What is significance of preparation of cropping scheme for dry land.

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

a) Role of bird perches is pest management.

b) Micro irrigation practices.