Total No. of Questions :8]

SEAT No. :

P1742

[Total No. of Pages :2

[5230] - 101

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC - 101 : Environmental Biology

(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) How environmental factors such as light, moisture / rain and soil affects the vegetation and animal life.

b) Define an 'ecosystem', explain its components and flow of energy.

Q2) **Answer the following with the help of example explain following:** **[10]**

a) How different anthropogenic activities affects the functioning of eco-systems?

b) How nutrient cycling takes place.

Q3) **Comment on following:** **[10]**

a) Use of different tools by animals and migration behaviour of birds.

b) Breeding behaviour and parental care.

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

a) Soil, Climate and Vegetation observed in dessert biome.

b) Zonation / stratification of lakes or ponds.

P.T.O.

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

a) Write in detail about the adaptations of plants and animals observed in marine eco-system.

b) Which environmental factors are responsible for abundance and distribution of a species / population?

Q6) **Describe in detail** **[10]**

a) Ecotone and edge effect.

b) Primary and Secondary succession.

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

a) Classify micro-organisms and discuss their association with man.

b) Explain, how micro - organisms are helpful in the process of ecological restoration?

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

a) Ecological functions of wetlands.

b) Ethology, socio-biology and learning behaviour.

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Total No. of Questions :8]

SEAT No. :

P1743

[Total No. of Pages : 2

[5230] - 102
M.Sc.
ENVIRONMENTAL SCEINCE
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) What are the corcinogenic effects of afla toxins.

b) Write a brief note on DNA structure.

Q2) Write a short note on: **[10]**

a) Detecter in NAA.

b) Applications of isotope dilution method.

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

a) Process of destruction of alkali metals.

b) Merits and demerits of X R F.

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

a) What is embryogenesis? Explain mutation and gene control during embryogenesis.

b) Explain the hydrogen bonding in biological system.

P.T.O.

Q5) Explain the principle and application of **[10]**

a) Polorography.

b) Gas chromatography.

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

a) Explain the various components and its role in HPLC.

b) Explain the physical and chemical properties of head.

Q7) Draw a neat labelled diagram of- **[10]**

a) Atomic absorption spectroscopy.

b) Flame photometery.

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

a) Modified detergents.

b) Micro and macro plant micronutrients.

EEE

Total No. of Questions : 8]

SEAT No. :

P1744

[Total No. of Pages : 2

[5230] - 103
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC : 103 - Essentials of Geosciences
(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 labelled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

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

a) Explain the structure and composition of the Earth's crust.

b) Describe the characteristics features of Igneous rocks.

Q2) Write a note on: **[10]**

a) Agents of weathering.

b) Impacts of karst topogrophy on the environment.

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

a) Cycle of erosion.

b) Types of plate margins.

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

a) Draw a neat labelled diagram of soil profile.

b) Discuss the land capability classification.

P.T.O.

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

a) Hydrological cycle.

b) Artensian aquifer.

Q6) Discuss the causes and effects of: **[10]**

a) Water logging.

b) Sea - level change.

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

a) Draw a neat labelled diagram showing physical structure of the ocean floor.

b) Discuss the effects of river and coastal erosion on the environment.

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

a) Cyclones.

b) Causes and effects of landslides.

Total No. of Questions : 8]

SEAT No. :

P1745

[Total No. of Pages : 3

[5230]-104

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC 104 : Environmental Statistics

(2013 Pattern)(Semester-I)

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

Instructions to the candidates:

1) ***Solve any Five Questions from the following.***
2) ***Figures to the right indicate full marks.***
3) ***Use of statistical tables / Electronic pocket calculator is allowed.***
4) ***All questions carry equal marks.***

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

a) Discrete random variable.

b) Population.

c) Range.

d) Simple random sampling.

e) Coefficient of determination.

Q2) a) Define skewness and Kurtosis. State the two methods to measure skewness with notations when the frequency distribution is said to be positively skewed . **[5]**

b) The following table shows the area in million Sq. km of oceans of the world.

Ocean	Pacific	Atlantic	Indian	Antartic	Architic
Area (million km^2)	70.80	41.20	28.50	7.60	4.80

Draw a pie - diagram to represent the data **[5]**

P.T.O.

Q3) a) State the formula of Karl Pearson's coefficient of correlation. Prove that correlation coefficient is independent of change of origin and scale. **[5]**

b) The mean and variance of three observations *a*, *b* and 2 and 3 and 1 respectively. What is the product of two observations *a* and *b*? **[5]**

Q4) a) Write down probability density function of X, if $X \sim N(\mu, \sigma)$. If normal distribution is given by $f(x) = K.e^{-\frac{1}{50}(x^2-20x+100)}$ $-\infty < x < +\infty$

write down the values of K, mean and standard deviation. **[5]**

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

Q5) a) Discuss how to calculate arithmetic mean for grouped frequency distribution? State three properties of arithmetic mean. **[5]**

b) In normal distribution 31% of the items are under 45 and 8% are over 64. Find mean and standard deviation of the distribution. **[5]**

Q6) a) What is regression? Describe least square method to find linear equation of regression lines. **[5]**

b) Draw Ogive curve and hence find quartile deviation. **[5]**

Marks less than	10	20	30	40	50
No. of students	20	47	101	145	160

Q7) a) What is dispersion? Distinguish between the absolute and relative measures of dispersion? State the relation between Q. D, M.D and S. D. **[5]**

b) For 30 students of class, the regression equation of marks in History (X) an the marks in Geography (Y) is 3Y– 5X+100 = 0. The mean marks in Geography is 40 and the S. D of marks in History is $\frac{2}{3}$ of S. D of marks in Geography. **[5]**

Find

i) The mean marks in History

ii) The coefficient of correlation

Q8) a) Explain chisquare test for goodness of fit. **[5]**

b) Mean and S.D of 100 items are calculated as 60 and 7 respectively. Two of the items were found to be incorrect at the time of checking . 35 and 47 were wrongly copied as 74 and 53.
Find the correct mean and S. D. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P1746

[Total No. of Pages : 2

[5230]-201

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-201 : Environmental Pollution & Control - I : Water & 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, Logarithmic table and Statistical Table is allowed.***

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

a) How biological pollutants causes water pollution?

b) Explain role of artificial recharge.

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

a) Discuss consequences of entrophication.

b) Explain how palast water causes biological hazards.

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

a) Explain methods used for disposal of solid waste.

b) Discuss effect of toxic compound with examples.

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

a) Write in brief process of ecosystem stabilization.

b) How hazardous waste are disposed? Explain.

P.T.O.

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

a) Write the criteria for waste water reuse in irrigation.

b) What is role of microbe in metel transformation?

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

a) What are the sources of marrine water pollution?

b) Sketch & discuss the ideal landfill.

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

a) What are the effect of water pollution on economy?

b) Explain why pizometer test is carriout.

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

a) Radioactive pollutant.

b) Soil degradation.

Total No. of Questions :8]

SEAT No. :

P1747

[Total No. of Pages :2

[5230] - 202

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC - 202 : Biodiversity, Forestry and Natural Resources

(2013 Pattern)

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 Indian Scenario of current status of exploitation of terrestrial wild life species.

b) Enlist any two biological resources and comment on potential threat to biological resources.

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

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

b) Explain role of plants in freshwater ecosystem.

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

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

b) Explain in brief value of plants in technological inventions.

P.T.O.

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

a) Describe how animals influence economy in modern society.

b) What is population explosion? Explain causes and consequences of growth of human population.

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

a) Describe action oriented role of youth in conservation education.

b) Explain role of NGO's in conservation of bio-resources.

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

a) Explain a role model of ecotourism in protected area.

b) Describe in brief current status of marine resources.

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

a) Explain government policies for conservation of forests.

b) Explain methodology for rapid assessment of biodiversity.

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

a) Joint Forest Management.

b) Ramsar Convention.

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Total No. of Questions : 8]

SEAT No. :

P1765

[Total No. of Pages :2

[5230] - 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) Describe the chemical composition of atmosphere.

b) Explain in detail need of atmospheric studies in environmental science.

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

a) What is radiation? Explain laws of radiation.

b) Explain briefly neat budget of earth.

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

a) What is temperature? How dry and wet temperature is measured?

b) What is inversion? How it occure? Explain in detail.

P.T.O.

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

a) Explain the brief factors affecting wind.

b) Write a note on local winds.

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

a) What is precipitation? How it occure? Explain.

b) Write a note on EI-Nino.

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

a) What is atmospheric stability?

b) Classify the air masses and add a note on fronts.

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

a) What is global warning? Write its effect.

b) Write causes and effect of lightning.

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

a) Air quality standards.

b) Plume behaviour.

Total No. of Questions : 8]

SEAT No. :

P1748

[Total No. of Pages : 2

[5230]-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 fullmarks.***

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

a) Explain the elements of microwave remote sensing, giving its advantages.

b) What is meant by spectral resolution?

Q2) Write the answer in brief. **[10]**

a) Explain the interaction of EMR with earth surface.

b) Draw a neat diagram of spectral reflectance curve.

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

a) Explain the working of push - broom scanner, giving its advantages.

b) What is meant by sun- synchronous orbit? Give an example.

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

a) Explain the geometric characteristics of an aerial photograph.

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

Q5) Discuss the characteristics of. **[10]**

a) Discuss the characteristic features of Azimuthal projection.

b) Describe the basic entities in GIS with suitable examples.

P.T.O.

Q6) Write the answer. **[10]**

a) Discuss the nature and characteristics of vector data with suitable example.

b) Give atleast two merits and demerits of Rastor data models.

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

a) Explain the concept of layring in GIS.

b) Discuss the application of network analysis with suitable example.

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

a) Rayleigh scattering.

b) Geo stationary orbit.

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Total No. of Questions :8]

SEAT No. :

P1749

[Total No. of Pages :2

[5230] - 301

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-301: Environmental Impact Analysis & 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 labeled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

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

a) What is Environmental Impact Assessment? How did the concept of EIA originate and evolve?

b) Describe the steps in the environmental clearance process as per EIA notification 2006.

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

a) What are the requirements for accrediation of EIA consultants by the Quality council of India?

b) Enlist the advantages and drawbacks of EIA process.

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

a) Explain the significance of Baseline data in EIA report.

b) Public participation in environmental decision making.

P.T.O.

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

a) Give the different methods of impact analysis. Explain any one in detail with its advantages.

b) What are the sources of data for socio - economic environment?

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

a) What are the components of an EIA report? Explain in detail.

b) Describe the role of environmental budget in EMP.

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

a) Explain the pollution aspects of petrochemical industry.

b) Describe an environmental management plan for sugar industry.

Q7) Attempt the Following : **[10]**

a) Define Environmental Audit. Describe the elements of an environmental audit and its importance.

b) Explain the concept of ISO14000. What are the different standards under ISO14000.

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

a) Hazardous waste audit.

b) Impact of noise and vibration.

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Total No. of Questions :8]

SEAT No. :

P1750

[Total No. of Pages :2

[5230] - 302

M.Sc.

ENVIRONMENTAL SCIENCE

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

(2013 Pattern) (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 primary and secondary air pollutant?

b) Write a note on ozon depletion.

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

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

b) Write in detail sources of air pollution in vehicle.

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

a) Explain in detail determination of particulate matter in air.

b) Write principle and working of cyclones in air pollution control.

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

a) What is difference between sound and noise?

b) How noise pollution affect the human?

P.T.O.

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

a) How noise pollution controlled at path?

b) What is radiation? Enlist different types of radiation.

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

a) What are the biological effects of radiation?

b) Give standard recommendation for radiation protection.

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

a) How radiation is measured? Give its units.

b) How noise is measured?

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

a) Scintillation counter.

b) Setteling chamber.

EEE

Total No. of Questions :8]

SEAT No. :

P1751

[Total No. of Pages : 2

[5230]-303
M.Sc.
ENVIRONMENTAL SCIENCE
EVSC - 303 : Water and Waste Water Technology.
(2013 Pattern) (Semester - III)

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

Instructions to the candidates:

1) ***All questions carry equal marks.***
2) ***Attempt any five questions.***
3) ***Draw neat labelled diagrams wherever necessary.***
4) ***Figures to the right indicate full marks.***

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

a) What is water demand and how is it calculated?

b) Enlist different methods of population forecasting. Explain any one in detail.

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

a) What are the various sources of water? Add a note on quality and use of ground water.

b) Explain the significance of water quality standards.

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

a) Write a note on collection and pumping of water.

b) Discuss the role of disinfection in drinking water treatment. Enlist the methods used in disinfection.

P.T.O.

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

a) What is meant by advanced treatment of water? Why is it necessary Enlist the method used.

b) Draw a neatly labelled diagram of slow sand filter. Add a note on backwashing.

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

a) Discuss the impact of growth and development on sewage quality and quantity.

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

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

a) Discuss the role of micro organisms in wastewater treatment.

b) Distinguish between aerobic and anaerobic processes. Compare their advantages and disadvantages.

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

a) What are the sources of effluent in dairy processing units? Write a note on dairy effluent treatment.

b) How is cyanide and chromium removed from effluent of electroplating (galvanizing) effluent?

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

a) Dissolved air floatation.

b) UASB reactor

Total No. of Questions : 8]

SEAT No. :

P1752

[Total No. of Pages : 2

[5230]-304

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC 304 : Environmental Law, Ethics and Policy

(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) Why sections 25 and 26 of water Act - 1974 are very important? In addition, explain any other two sections of this act.

b) Explain the role of constitution in environment protection.

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

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

b) Discuss the Air act - 1981 by describing any three sections / Provisions of the act.

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

a) How wildlife (Protection) act - 1972 is helpful for conservation of wildlife and wild habitat?

b) Discuss the objectives and important provisions of biological diversity act - 2002.

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

a) Public liability insurance act - 1991.

b) UNFCCC.

P.T.O.

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

a) Write in detail about the agenda discussed in the Earth summit held at Rio in 1992.

b) Explain the important issues discussed in stockholm conference and its out come.

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

a) With the help of rules, explain the handling & management of bio-medical waste.

b) Discuss the rules of municipal solid waste handling and management.

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

a) Describe the salient features of national forest policy.

b) Discuss in detail the concept of environmental ethics.

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

a) Integration of environmental sustainability with social and economic development.

b) Principles of national environment policy - 2006

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Total No. of Questions : 8]

SEAT No. :

P1753

[Total No. of Pages : 2

[5230] - 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 labelled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

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

a) Explain the combine concept of limiting factors in environment.

b) Why the organic farming having more importance in sustainable agriculture development?

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

a) Explain the guideline for rehabitation programme.

b) Write a note on integrated pest management.

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

a) Explain the factors influences the biological growth in population.

b) How topography impact the structure and forms of houses in human settlement?

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

a) Explain the Y-shape model of energy flow in ecosystem.

b) Write a note on biomagnification of pesticide with suitable example.

P.T.O.

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

a) Explain the importance of demographic factors in national planning.

b) Explain the importance of barter system in rural economy.

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

a) Write the significance of scared groove in rural ecosystem.

b) Explain the guidelines for public participation in rehabitation programme.

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

a) What are the environmental causes for food chain losses?

b) Explain the significance of equitable resource management in Long term planning.

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

a) Agenda - 21.

b) Evolution theory of human ecology.

Total No. of Questions : 8]

SEAT No. :

P1754

[Total No. of Pages : 2

[5230]-306

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-308 : Environmental Education

(New) (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) How environmental education is an essential tool for achieving sustainable development.

b) Write an account on evolution of environmental education at international level.

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

a) How community based approaches are useful in teaching and learning environmental education?

b) What is Nai Taleem? Discuss core areas of environmental education.

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

a) Discuss the current status of environment education in european countries.

b) What is the current status of environment education in Indian school systems?

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

a) How Sarva Shikha Abhiyan is linked with education for sustainable development.

b) Discuss importance to environment in India's national policy on education.

P.T.O.

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

a) Explain the role of school infrastructure and textbooks in environment education.

b) Discuss the importance of project based learning approach in environment education.

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

a) Explain the importance of media in teaching-learning approach of education.

b) Write an account on various techniques used to enhance thinking.

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

a) Discuss on the need of collaborative and action learning in ESD.

b) Explain the role of advance techniques in environment education.

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

a) Need of public Awareness in Environment Education.

b) Framework of competence in ESD.

Total No. of Questions : 8]

SEAT No. :

P1755

[Total No. of Pages : 2

[5230]-307

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-309 : Environmental Biotechnology

(2013 Pattern) (Semester-III)

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

Instructions to the candidates:

1) ***Answer any Five questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***All questions carry equal marks.***

Q1) a) What is environmental biotechnology? Give the scope and application areas.

b) Explain the concept of bioremediation and its role in pollution control.

Q2) a) What is integrated pest management? Explain significance.

b) How do biocomposting and biomethanation help in management of agricultural wastes?

Q3) a) Enlist the five categories of microorganisms and give their characteristics.

b) Write about the nutritional classification of microbes.

Q4) a) What are the different factors affecting microbial growth? Write in detail about any one.

b) Explain the different biotechnology strategies used in forestry and waste land management.

Q5) a) What are bioindicators? Explain their role in detection of pollution.

b) Write a note on GMO's and biosafety.

P.T.O.

Q6) a) What is a biosensor? Write about the different types. Explain any one in detail.

b) Explain the role of biotechnology in biodiversity conservation.

Q7) a) Write a note on alternate fuels.

b) Explain the mechanism of phytoremediation with examples.

Q8) Write short notes on any two:

a) Biopesticide

b) Biomining

c) Indicator organisms

Total No. of Questions : 8]

SEAT No. :

P1756

[Total No. of Pages : 2

[5230]-308

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-310 : Environmental Resource Monitoring

(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) What is weather? Explain significance of it in Env. Sci.

b) Enlist the weather parameter and add a note on wind.

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

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

b) Enlist the stack gases and add a note on stack height determination.

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

a) What is noise? How it is measured?

b) What is dB? Discuss L max in detail.

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

a) What is odour? How you can measure the odour?

b) What is purpose of water quality monitoring?

P.T.O.

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

a) What is water pollution? How one can moniter it.

b) Explain in detail objective of water quality.

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

a) What is river pollution? How river act as self purification?

b) What is soil? Explain the role of nutrients in soil.

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

a) What is forest? How they help to Environment.

b) What is wildlife? Write importance of it in ecosystem.

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

a) Remote sensing.

b) Wet lands.

Total No. of Questions :8]

SEAT No. :

P1757

[Total No. of Pages :2

[5230] - 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 lead on human health.

b) What are epidemic diseases? Explain any one water born epidemic disease.

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

a) What is biological warfare? Explain biological warfare with reference to any one biological weapon.

b) What is occupational health? Explain the possible health hazards in Industrial activities.

Q3) Write a Short Note : **[10]**

a) Explain international & national perspectives of health & safety.

b) What is risk? What are the steps involved in Risk assessment.

P.T.O.

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

a) Explain interelationship between health & safety?

b) Discuss the implementation of safety & health policy in India.

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

a) Discuss the effect of Noise Pollution on health of Industrial worker.

b) Enlist the hazards toxicant produced in Industrial Activities. Explain the hazards effect of any one toxicant.

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

a) What are VOC'S? Explain the physiological & Metabolic effect of any one VOC'S.

b) What is Biomagnification? Explain & draw neat & labelled diagram.

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

a) What is TLM? Explain its significance in Lethality studies.

b) Explain details safe guard measures for water resource to avoid epidimic.

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

a) Measurement of toxicity?

b) Anti cancer drug.

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Total No. of Questions :8]

SEAT No. :

P1758

[Total No. of Pages :2

[5230] - 402

M.Sc.

ENVIRONMENTAL SCIENCES

EVSC - 402 : Restoration Ecology & Water Shed Management

(2013 Pattern) (Semester - IV)

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) Define phytoremation? Give classification of the phytoremation techniques.

b) Describe the concept of habitat restoration.

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

a) Explain various control measures for the leachates treatment for solid waste dumping areas.

b) What is restoration ecology? Explain the role of basic principles of ecology in restoration technology.

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

a) "Microbial degradation is effective and ecofriendly way of restoration". Justify.

b) Restoration ecology "is a need for hour". Justify.

P.T.O.

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

a) Restoration of alkaline soils.

b) Restoration of riverine ecosystem.

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

a) Discuss in detail hydrological characteristics of watershed.

b) Discuss the various techniques of roof water harvesting.

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

a) What is land use classification? Give its importance in watershed management.

b) What are the merits and demerits of co-operative lift irrigation.

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

a) What is the importances of indegenious plant species in soil conservation practices.

b) Describe drain - line treatment. Give its significances in conservation of soil and water.

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

a) Silviculture.

b) Engineering surveys in watershed development.

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Total No. of Questions : 8]

SEAT No. :

P1759

[Total No. of Pages :2

[5230] - 403

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC - 403 : Waste and Hazardous Waste Management

(Semester - IV) (2013 Pattern)

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 the source and type based classification of solid waste.

b) What is solid waste hierarchy? Explain the options.

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

a) Enlist the key issues in waste disposal. Explain any two in detail.

b) What are the factors to be considered for a municipal solid waste management system.

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

a) Explain the importance of segregation in solid waste management.

b) Enlist the factors affecting the composting process. Explain any one in detail.

P.T.O.

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

a) Explain the significance of recycling. Live examples of materials that can be recycled.

b) Explain the process of incineration in detail.

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

a) What are the characteristics of hazardous wastes?

b) Enlist the criteria essential for hazardous waste disposal site.

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

a) Define e-waste. Explain the significance of e-waste management.

b) Write about the colour coding system for biomedical waste.

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

a) Draw a detailed diagram of sanitary landfill.

b) Explain the process of plasma gasification

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

a) Radio active waste management.

b) Role of NGO's in conservation of environment.

Total No. of Questions : 8]

SEAT No. :

P1760

[Total No. of Pages : 2

[5230]-404

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC - 404 : Renewable and Non renewable Energy

(2013 Pattern) (Credit System) (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 fullmarks.*

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

a) Explain various energy use pattern in different parts of world and its inpact an environment.

b) What are fossil fuels? Explain in detail classification of coal.

Q2) a) Explain process of anaerobic digestion of biomass for biogas production.

b) Discuss problems associated with renewable energy resources. **[10]**

Q3) a) Describe different thermal conversion processes for biomass for energy production.

b) Discuss environmental problems associated with mining and use of fossil fuels. **[10]**

Q4) a) Explain the process of nuclear fuel fabrication.

b) What is principle of photovoltaics? How it is useful for harvesting solar energy? **[10]**

Q5) a) Describe mining and processing of uranium.

b) What are different ways of harnessing solar energy? Discuss with suitable examples. **[10]**

P.T.O.

Q6) a) Discuss problems and hazards related to hydro power generation and its distribution.

b) Enlist and explain different criteria used for selection of wind farm site. **[10]**

Q7) a) Discuss principle and process of hydroelectricity generation.

b) What are the advantages and disadvantages of wind energy conversion systems? **[10]**

Q8) a) Problems and prospects of geothermal energy.

b) Tidal and wave energy **[10]**

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Total No. of Questions : 8]

SEAT No. :

P1761

[Total No. of Pages : 2

[5230]-405

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-407 : Environmental Economics

(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 labelled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

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

a) What are the reasons for failure of Market? Explain.

b) Enlist and discuss problems related to social cost.

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

a) Explain in brief how quality of environment is depend on economy.

b) What are the options to decrease the subsidies?

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

a) Explain how economic instrument protect the environment.

b) Valuation of resources is important while making policies. Discuss.

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

a) How cost-benefit analysis help to audit the resources? Explain.

b) What is non-renewable resources? Explain in detail.

P.T.O.

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

a) What is climate change? How it affect economy? Explain.

b) What are methods to study economic growth?

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

a) Environmental problems solved only by sustainable development.

b) Carbon trading is effective tool for environmental management.

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

a) Why developing countries promote non-renewable resources programme?

b) Define sustainable development? Explain concept of sustainable development.

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

a) Environment and economy.

b) Micro level planning.

Total No. of Questions : 8]

SEAT No. :

P1762

[Total No. of Pages : 2

[5230]-406

M.Sc.

ENVIRONMENTAL SCIENCE

EVSC-406 : Forestry & Habitat 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 labelled diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***

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

a) Describe the importance of nutrient cycle in forest.

b) Describe how cultural and traditional practices influence forestry programme.

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

a) Discuss about economics of silvicultural in context of sustainable forest management.

b) Discuss what are the advance methods used in silviculture.

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

a) Explain the importance of in-situ and ex-situ forest resources conversation programme.

b) Explain in brief shelter wood cutting and seed trac method in Silviculture.

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

a) Forest fires and mining Impact on Forest.

b) Cost benefit ratio related to Tree Improvement and Seed Technology.

P.T.O.

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

a) Describe in brief about Sacred Groove with suitable example.

b) Describe the various units of measurement of forest mensuration.

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

a) Discuss various methods of sampling and sample plots in forest management system.

b) Discuss the general principles of Surveying and Forest engineering.

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

a) Explain the importance of forest inventory.

b) Explain various environmentally sound forest harvesting practices.

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

a) Valuation of forest goods and Service.

b) Forestry Policies and issues related to land use.

Total No. of Questions : 8]

SEAT No. :

P1763

[Total No. of Pages : 2

[5230]-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 labelled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

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

a) Describe the zoogeography of the world in detail.

b) What is habitat? Explain wild habitat and wilderness in detail.

Q2) **[10]**

a) Give an account on wild flora and fauna of India.

b) What is population ecology? Explain with suitable example.

Q3) **[10]**

a) Explain central zoo authority & its functions in detail.

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

Q4) **[10]**

a) How does changes in habitat affect the biodiversity, give example.

b) Give detailed account on The Himalayas as major Wildlife Habitat and conservation area.

P.T.O.

Q5) **[10]**

a) What is captive breeding? Add a note on the role of modern genetics and biosciences in captive breeding of endangered species.

b) Write a note on major Rivers in India.

Q6) **[10]**

a) Give an account on protected area network in India.

b) Differentiate between in-situ and Ex-situ conservation with suitable examples.

Q7) **[10]**

a) Explain salient features of wildlife protection act 1972.

b) Explain the role of state forest services in wildlife management.

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

a) Animal Ecology.

b) Importance of butterflies.

Total No. of Questions : 8]

SEAT No. :

P1764

[Total No. of Pages : 2

[5230]-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 labelled diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

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

a) Write in brief the food security and green revolution in India.

b) What are the merits of traditional agriculture farming.

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

a) What are the misconceptions of providing incentives in promotion of sustainable agriculture.

b) Write the significance of low-input Sustainable Agriculture (LISA).

Q3) Explain the importance of: **[10]**

a) Weed control.

b) Crop rotation.

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

a) What are the benefits of intensive livestock keeping.

b) What are the demerits of Agropastoralism.

P.T.O.

Q5) Write in brief: **[10]**

a) Soil Salinity.

b) Agriculture issue associated with wet land.

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

a) Vegetable nursery farms.

b) Integrated pest management.

Q7) Write the procedure for: **[10]**

a) Certification of Agriculture goods for exports.

b) Post harvest management.

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

a) Biofertilizers.

b) Pheromone traps.