M.Sc. (Semester - I)  
ENVIRONMENTAL SCIENCE  
ENV - 101 : Environmental Geoscience  
(2008 Pattern)  

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

SECTION - I  

Q1) Attempt any two from the following :  
   a) What is atmosphere? Explain theory of atmospheric evolution.  
   b) What is Environmental lapse rate? Explain temperature inversion phenomenon.  
   c) Give an account on REE.  

Q2) Attempt any two of the following :  
   a) Explain the electromagnetic spectrum in detail.  
   b) Write a note on Global warming potential.  
   c) Write a brief note on chemical composition of atmosphere.  

Q3) Write any two from the following :  
   a) What is adiabatic lapse rate? Discuss the effects of adiabatic lapse rate on atmospheric stability.  
   b) What is wind? Comment on measurement of wind.  
   c) Give an account on global water balance.  

P.T.O.
Q4) Write short notes on any two:
   a) Factors affecting wind.
   b) Forms of condensation.
   c) Lightening.

SECTION - II

Q5) Attempt any two from the following:
   a) What are minerals? Give detail classification of minerals.
   b) What is soil? Comment on soils of India.
   c) Explain Green house effect in detail.

Q6) Write any two from the following:
   a) Give an account on Geological hazards & mitigation strategies.
   b) What are the uses of trace metals for human being.
   c) Explain soil profile diagram in detail.

Q7) Attempt any two of the following:
   a) Write a detailed note on Geochemical cycle.
   b) Explain internal structure of earth in detail.
   c) Write a note on pressure measurement and distribution.

Q8) Write short notes on any two:
   a) Sea level rise.
   b) Igneous rocks.
   c) Classification of trace elements.
P2743

[5033] - 12
M.Sc. (Semester - I)
ENVIRONMENTAL SCIENCE
ENV - 102 : Environmental Chemistry
(2008 Pattern)

Time : 3 Hours [Max. Marks : 80]

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

SECTION - I

Q1) Attempt any two of the following:
   a) Explain nitrogen cycle with neat labelled diagram.
   b) Explain hydrogen bonding in biological life.
   c) What are factors which affect mutation?

Q2) Answer any two of the following:
   a) Briefly write caecinogenic effects of alkali metals.
   b) How RNA is synthesize in biological life.
   c) What are radionucleids?

Q3) Answer the any two:
   a) Sketch neat labeled diagram of DNA and write if function in cell.
   b) Explain with examples microbiological degradation in nature.
   c) Write in effects of organic compound.

Q4) Write short notes any two:
   a) Photo sensitize additives.
   b) Non-ionic detergents.
   c) Properties of water.

P.T.O.
SECTION - II

Q5) Answer any two:
   a) What are the merits and demerits of NAA.
   b) Explain the significance of component in HPLC.
   c) Write the properties of modified detergents.

Q6) Attempt any two:
   a) Sketch neat labelled diagram of AAS.
   b) What is acute toxicity? Explain with examples.
   c) Define chronic toxicity with suitable examples.

Q7) Attempt any two:
   a) What are the applications of isotop dilation?
   b) Write in brief significance of solubility of gases in water.
   c) What are the effect of lead (pb) on flora?

Q8) Write short notes any two:
   a) Chemical equilibria.
   b) Hallow cathod lamp.
   c) Limitations of Ion exchange chromatography.
P2744

[5033] - 13
M.Sc. (Semester - I)
ENVIRONMENTAL SCIENCE
ENV - 103 : Environmental Biology
(2008 Pattern)

Time : 3 Hours] [Max. Marks : 80

Instructions to the candidates:

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

SECTION - I

Q1) Attempt any two of the following:
   a) What are biogeochemical cycles? Explain ecological significance of biogeochemical cycles.
   b) Write an account on development and evolution of ecosystems.
   c) Discuss in detail applications of environmental microbiology.

Q2) Attempt any two of the following:
   a) What are functional attributes of ecosystem?
   b) Which are the factors that influence on cultivation and growth of microorganisms.
   c) Explain the energy flow in ecosystem with suitable diagram.

Q3) Attempt any two of the following:
   a) Discuss important provisions to protect wetlands under RAMSAR convention.
   b) Write an account on classification of biomes and their characteristics.
   c) Which are various forest types observed in India?

P.T.O.
Q4) Write short notes on any two of the following :
   a) Endemic species of India.
   b) Community Ecology.
   c) Ecological Significance of Wetlands.

SECTION - II

Q5) Attempt any two of the following :
   a) Write an account on biodiversity of India.
   b) What are threatened species categories of IUCN?
   c) Discuss the applications of environmental biotechnology in conservation of species.

Q6) Attempt any two of the following :
   a) What are the issues involved in wildlife management in India?
   b) Write an account on protected areas network in India.
   c) What is marine diversity? Discuss the productivity and extent of marine diversity.

Q7) Attempt any two of the following :
   a) What are the salient features of wildlife protection acts?
   b) Discuss in detail on various global agreements carried out to protect biodiversity.
   c) What is the importance of local communities in wildlife management?

Q8) Attempt any two of the following :
   a) National forest policy.
   b) Tools for data collection in wildlife management.
   c) Projects for wildlife conservation in India.

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M.Sc. (Semester - I)  
ENVIRONMENTAL SCIENCE  
ENV - 104 : Statistical & Research Methods  
(2008 Pattern)  

Instructions to the candidates:  
1) Answers to the two sections should be written in separate books.  
2) Neat diagrams must be drawn wherever necessary.  
3) All questions carry equal marks.  
4) Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.

SECTION - I

Q1) Solve any two from the following : [20]

a) Explain in brief the following terms:
   i) Sample
   ii) Simple Random Sampling
   iii) Scatter plot
   iv) Kurtosis
   v) Histogram

b) Enlist measures of central tendency. Explain method of calculation of any one of them with suitable example.

c) Calculate standard deviation for the following frequency distribution.

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Q2) Solve any two from the following:

a) What is skewness? Add a note on types of skewness with suitable diagrams.

b) Calculate arithmatic mean, median and mode for the following:

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c) Calculate correlation coefficient and interpret your answer.

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SECTION - II

Q3) Solve any two from the following:

a) Explain method of computation of one way ANOVA.

b) Write the meaning of the following terms:
   i) Null hypothesis
   ii) Independent Event
   iii) Type II error
   iv) Standard error
   v) Level of significance

c) Explain chi-square test for independence of attributes.

Q4) Solve any two from the following:

a) Discuss applications of computer based modelling with suitable examples.

b) What is time series analysis? Explain the method of moving average.

c) Explain the procedure of ‘t’ test for equality of means of two population. Add a note on applications of ‘t’ test in environmental science.
SECTION - I

Q1) Explain the obstacles and policy implementation in Environmental programmes.

Q2) Justify any two:
   a) Subsidies are essential for stabilization of environmental programme.
   b) Cultural aspects are important in bioresource conservation.
   c) Micro environmental policies are effective.

Q3) Write answer of any two from the following:
   a) Explain the policies for perishable agricultural goods.
   b) How the climate change affect market failure.
   c) Explain the long term policy for open cost mining.

Q4) Write short notes on any two:
   a) Hazardous waste transport and disposal.
   b) Theory of public goods.
   c) Public participation.

P.T.O.
Q5) Elaborate the significance of knznd’s curve with suitable examples. [10]

Q6) Justify any two:
   a) Surface temperature is important in the EL-Nino effects.
   b) CDM is important for sustainable development.
   c) Environmental legislation may influence FDI in India.

Q7) Write answer of any two:
   a) What are the problems of population vulnerability.
   b) Explain the role of abiotic stress on bioresources.
   c) What is carbon credit? Explain its importance.

Q8) Write short notes on any two:
   a) Incentives and Subsidies.
   b) Migration of population.
   c) Kyoto Protocol.
SECTION - I

Q1) Answer any two of the following :
   a) Discuss any one method of population forecasting.
   b) What is quality of water? Explain quality required for industrial purpose.
   c) Draw and label different economical feasible treatment units for water treatment.

Q2) Attempt any two of the following :
   a) What is filtration? Explain in detail pressure filter.
   b) What are the sources of water for drinking?
   c) Write in detail adverse impact of impurities on quality of water.

Q3) Answer any two of the following :
   a) What is hardness? How it is removed from water? Explain.
   b) Write in detail process of Reverse Osmosis.
   c) Compare between quality of groundwater & surface water.

Q4) Write short notes (any two) :
   a) Chlorination
   b) Aeration
   c) Sedimentation

P.T.O.
SECTION - II

Q5) Answer any two of the following :
   a) Why is it important to treat sewage before disposal?
   b) What are the standards for disposal of sewage in inland surface waters?
   c) What is the significance of grit removal in waste water treatment. How is grit removed?

Q6) Attempt any two of the following :
   a) Describe the principle of dissolved air floatation.
   b) Draw a neatly labelled diagram of trickling filter and explain its working.
   c) Describe the process of anaerobic digestion. Which wastes should be treated by this process.

Q7) Answer any two of the following :
   a) Explain the working of dairy ETP with diagram.
   b) Differentiate between suspended and attached growth processes in biological treatment. Give examples.
   c) Write a note on treatment of distillery spentwash.

Q8) Write short notes on any two :
   a) Role of clarifier in activated sludge process.
   b) Anaerobic contact process.
   c) Root zone technology.
SECTION - I

Q1) Attempt any two from the following :
    a) What is water sampling? Add a note on instruments of sampling.
    b) How mining affects soil & water resources.
    c) Write a note on specifications to dispose sewage in sea.

Q2) Attempt any two from the following :
    a) Explain in brief process of eutrophication.
    b) Write a note on specification to discharge effluent on land for irrigation.
    c) Explain in brief types, sources & effects of ocean pollution.

Q3) Attempt any two from the following :
    a) Write a note on drinking water standards as per IS 10500.
    b) What is soil reclamation? Add a note on macro nutrients of soil.
    c) Write in brief health impact of water pollution on humanbeings.

Q4) Write short notes on any two of the following :
    a) Physico chemical parameters of drinking water.
    b) Agricultural waste.
    c) Hazardous waste.

P.T.O.
SECTION - II

**Q5)** Attempt any two of the following:
   a) Write a note on ICRP recommendation.
   b) Write a note on composting and its benefits.
   c) What are effects of waste disposal on farm crops?

**Q6)** Attempt any two from the following:
   a) What are effect of radiation on plants & animals.
   b) Write in brief effect of fly ash on agricultural soil.
   c) What are health effects of industrial waste on workers working in textile industry?

**Q7)** Attempt any two of the following:
   a) Write a note on conversion of waste to energy.
   b) Explain working of semiconductor detector.
   c) What are the methods to dispose heavy metals from solid waste.

**Q8)** Write short notes on any two of the following:
   a) 3R principal.
   b) G.M. counter.
   c) Agricultural waste.

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[5033] - 24
M.Sc. (Semester - II)
ENVIRONMENTAL SCIENCE
ENV - 204: Environmental Law, Ethics and Policy

Time: 3 Hours] [Max. Marks: 80

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

SECTION - I

Q1) Answer any two of the following:
   a) Explain the role of various institutional mechanisms created under antipollution acts.
   b) What are the statutory provisions to protect environment in India?
   c) Give an account on outcome of Rio conference.

Q2) Answer any two of the following:
   a) Explain the important outcomes of Cites.
   b) Discuss the role of United Nations organisation to protect global environment.
   c) Give an account on hazardous waste management rules.

Q3) Answer any two of the following:
   a) What are the salient features of Water Act, 1974?
   b) Explain the role of courts in implementation of environmental governance.
   c) Discuss the salient features of Environment Protection Act.

P.T.O.
Q4) Write short notes on any two of the following:
   a) Motor vehicle act.
   b) Nairobi declaration
   c) Riot 10

SECTION - II

Q5) Answer any two of the following:
   a) What are the priorities associated in economic, social and environmental
development in India?
   b) Explain the impact of developmental activities on environment.
   c) Differentiate between natural and manmade growth.

Q6) Answer any two of the following:
   a) Give an account on aspects involved in carrying capacity of environment.
   b) Explain how the rate of utilization and generation impact on environmental degradation.
   c) Define and explain the concept of sustainable development.

Q7) Answer any two of the following:
   a) What are the drawbacks involved in traditional evaluation of development?
   b) What are the important provisions under municipal solid waste management rules?
   c) Discuss the requirement for audit under EPA, 1986.

Q8) Write short notes on any two of the following:
   a) Cost benefit analysis.
   b) Environmental sustainability.
   c) National policy on EIA.
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 301 : Air pollution and Climate Change

Time : 3 Hours] [Max. Marks :80

Instructions to the candidates:
1) Answer to the two sections should be written in separate books.
2) Neat diagrams must be drawn wherever necessary.
3) Figures to the right indicate full marks.
4) All questions carry equal marks.

SECTION - I

Q1) Attempt any two from the following :
   a) Explain the composition of air.
   b) What is global warming. add a note on GHG.
   c) What are the effects of No\(_x\) on flora.

Q2) Write any two from the following :
   a) Explain the importance of surface temperature in EL.Nino.
   b) What are the point sources of pollution in pulp industry?
   c) What is zoning of aerosols in atmosphere?

Q3) Solve any two from the following :
   a) Explain the formation of ozone layer in atmosphere.
   b) What are the preventive measures in agro based industries for air pollution management.
   c) Explain the La-Nina phenomenon.

Q4) Write short notes on any two :
   a) Cloud seeding
   b) Lead pollution in atmosphere.
   c) Dispersion of air pollutants.

P.T.O.
SECTION - II

Q5) Attempt any two from the following:
   a) Explain the Null and Holding cyder.
   b) Briefly write the alternative fuels.
   c) Explain the principle of venturi scrubber.

Q6) Write any two from the following:
   a) Explain the role of UNFCCC in climate change programme.
   b) How CDM can help for sustainable development.
   c) Write the types of particulate matters.

Q7) Solve any two from the following:
   a) Explain the functioning and application of pulse jet filters.
   b) What is carbon trading?
   c) What is IPCC? Explain its functional areas.

Q8) Write short notes on any two:
   a) Disadvantages of ESP.
   b) Adsorption of gases.
   c) Carbon sequestration.
Instructions to the candidates:

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

SECTION - I

Q1) Attempt any two from the following: [10]
   a) How many EIA notifications so far exercised in India. Explain categorization of projects with reference to latest EIA notification.
   b) Procedure of public hearing as per EIA notification.
   c) Detailed note on - the data collected under socio-economic environment.

Q2) Answer any two from the following: [10]
   a) Elements of primary data while collecting baseline information for an industrial project such as steel industry.
   b) Objectives of ‘National Environment Policy - 2006’.
   c) How an ‘analysis of alternatives’ is generally explained in an EIA report.

Q3) Attempt any two from the following: [10]
   a) Describe the procedure of prior environmental clearance with the help of stages involved in the process.
   b) Explain generic structure of an EIA report with reference to EIA notification - 2006.
   c) Design an environment management plan for chemical & fertilizer Industry.

P.T.O.
Q4) Write short notes on any two: [10]
   a) Three common terminologies of EIA process.
   b) Scoping stage of ‘environmental clearance’ process.
   c) Overlays method of an impact assessment.

SECTION - II

Q5) Attempt any two from the following: [10]
   a) How will you audit pollution aspect for any industry? Explain with example.
   b) Recommend measures for control, prevention & mitigation of air pollution from sugar industry.
   c) Note on impact of mining/blasting activity on air & noise environment.

Q6) Answer any two from the following: [10]
   a) Considering the upcoming thermal power projects in coastal areas of Maharashtra; explain probable ecological impacts of the project.
   b) Explain significance of ISO 14000 to an industry.
   c) Describe any five impacts of housing / township development projects.

Q7) Attempt any two from the following: [10]
   a) What is your opinion about the public hearing procedure in the process of ‘Environmental clearance’, in India?
   b) Explain an impact of petrochemical industry on social, cultural & economics aspects.
   c) Significance of meteorological data in impact assessment.

Q8) Write short notes on any two: [10]
   a) Basic structure of an environmental audit.
   b) Disposal audit.
   c) Cost benefit analysis with reference to EIA project.

☆☆☆☆☆
SECTION - I

Q1) Attempt any two of the following: [10]
   a) Explain the process of data acquisition in Remote Sensing.
   b) Explain the significance of particle theory in Remote Sensing.
   c) Discuss the energy matter interactions with the terrain.

Q2) Write notes on: (any two) [10]
   a) Raleigh Scattering.
   b) Elements of GPS.
   c) Photographic scale.

Q3) Answer any two of the following: [10]
   a) Explain the difference between active and passive remote sensing with suitable examples.
   b) Describe the operating principles of across-track multi-spectral scanner.
   c) Give the applications of thermal imaging.

Q4) Write notes on. (any two): [10]
   a) Earth Resource Satellites.
   b) Applications of Remote Sensing in Forest cover study.
   c) Tone and texture as photo-recognition elements.

P.T.O.
SECTION - II

Q5) Answer any two of the following : [10]
    a) Enumerate different components of GIS and describe people component in detail.
    b) Compare the Raster and Vector data models.
    c) Describe the basic features used for presenting a map.

Q6) Write notes on (any two) : [10]
    a) Stages of GIS data modelling.
    b) Techniques of digitization.
    c) GIS work flow.

Q7) Answer any two of the following : [10]
    a) Describe the components of DBMS.
    b) Explain Data Input Methods.
    c) Discuss the components of Geographic data quality.

Q8) Write notes on (any two) : [10]
    a) Format conversions.
    b) DTM generation.
    c) Raster Data for GIS.

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

SECTION - I

Q1) Attempt any two from the following:  
   a) Briefly explain the steps involved in restoration of mines.  
   b) What is significance of ecological succession in ecosystem?  
   c) What is the selection criteria for exotic species in restoration programme.

Q2) Answer any two from the following:  
   a) Explain the problems associated with leachate from dumping site.  
   b) Define biofiltration. Add a note on any one with labelled diagram.  
   c) Write the steps involved in restoration of saline soil.

Q3) Attempt any two from the following:  
   a) What are the steps involved in wetland restoration?  
   b) Differentiate between phytostabilization and phytoextraction.  
   c) Classify biofertilizer. Add a note on Rhizobium biofertilizer.

Q4) Write short notes on any two:  
   a) Bioscrubber  
   b) Organic farming  
   c) Blue-green algae
SECTION - II

Q5) Attempt any two from the following : [10]
   a) What are the advantages of agro-forestry?
   b) Explain the benefits of Genetically Modified Organisms (GMO) in restoration techniques.
   c) Explain the various Techniques used for soil conservation.

Q6) Answer any two from the following : [10]
   a) What is the importance of resource appraisal in watershed.
   b) Explain the role of Gram Panchayat in watershed development.
   c) What are the advantages of roof-top rain harvesting?

Q7) Attempt any two from the following : [10]
   a) Explain the Gabbian and Gully plug structures used for water conservation.
   b) What are the steps involved in micro watershed practices.
   c) Write the importance of hydrological characteristics for watershed.

Q8) Write short notes on any two : [10]
   a) Organic forming
   b) Area - treatment
   c) Bio fertilizer

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M.Sc. (Semester - III)
ENVIRONMENTAL SCIENCE (Optional)
ENV - 312 : Biodiversity & Conservation

Time : 3 Hours]
[Max. Marks : 80

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

SECTION - I

Q1) Attempt any two from the following : [10]
   a) Define biodiversity. Describe the concept and scope of biodiversity science.
   b) What are various disciplines of biodiversity? Explain any four.
   c) Describe the regional patterns of distribution of biodiversity.

Q2) Answer any two from the following : [10]
   a) What are introduced species? Explain the problems associated with suitable example.
   b) Describe the factors causing loss of species diversity.
   c) What are IUCN threatened species categories? Explain any four with suitable example.

Q3) Attempt any two from the following : [10]
   a) Describe various ecosystem services and their valuation.
   b) Explain “Species composition changes according to levels of biodiversity”.
   c) What are the characteristics of biodiversity at genetic level?
Q4) Write short notes on any two:
   a) Capacity building for biodiversity monitoring.
   b) Loss of biodiversity and economy.
   c) UNEP.

SECTION - II

Q5) Answer any two from the following:
   a) Write the details on organisations involved in financing biodiversity management.
   b) Discuss the direct values of biodiversity.
   c) Explain various sources and methods of data collection on biological diversity.

Q6) Attempt any two questions from the following:
   a) Elaborate on role of media in biodiversity conservation.
   b) What is biodiversity management? Explain any two significant movements of biodiversity in India.
   c) Discuss various social approaches for conservation of indigenous biodiversity.

Q7) Justify the following sentences (any 2):
   a) Biodiversity can also be conserved at home.
   b) Biodiversity act has limitations in its application.
   c) Protection, conservation and restoration are different approaches in biodiversity management.

Q8) Write notes on (Any 2):
   a) Categories of wetlands as per RAMSAR
   b) CITES
   c) Design of National Park
M.Sc.
ENVIRONMENTAL SCIENCE
ENV - 401 : Environmental Toxicology, Health & Safety

Time : 3 Hours] [Max. Marks :80

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

SECTION - I

Q1) Attempt any two from the following:
   a) What is toxic waste? Explain hazards associated with it.
   b) Write a note on industrial emission with reference to health effects and control measures.
   c) What is risk? Explain on site & off site risk identification.

Q2) Attempt any two from the following:
   a) What are potential health hazards in chemical industry?
   b) What are the effects of lead poisoning on health? Add note on sources of lead in water.
   c) Write a note on employee state insurance act.

Q3) Answer any two from the following:
   a) Write a note on salient features of ISO-18000.
   b) What is role of trade union in occupational health and safety.
   c) Write a note on employee state insurance act.

P.T.O.
Q4) Write short notes on any two:
   a) Life Cycle Assessment.
   b) Personnel protective equipment.
   c) Ergonomics.

SECTION - II

Q5) Answer any two from the following:
   a) Explain in brief potential health program in chemical industry.
   b) What is chronic toxicity? Add a note on metabolic effects of mercury on fauna.
   c) What is importance of awareness campaign in sanitation programme?

Q6) Attempt any two from the following:
   a) Explain in brief role of WHO in sanitation.
   b) What is biomagnification? Add a note on it with suitable example.
   c) Write in brief about anticancerous drugs.

Q7) Answer any two from following:
   a) What are the widespread effect of water borne diseases on human health?
   b) What is disaster management?
   c) Enlist at least any five carcinogenic compounds of organic nature.

Q8) Write short notes any two of the following:
   a) Biological war
   b) Flurosis
   c) Dispersion of atmospheric gases

★ ★ ★ ★
SECTION - I

Q1) Answer any two from the following:
   a)  What are the objectives of watershed programme?
   b)  Explain the importance of aerial aspect in watershed management.
   c)  What is importance of geological characteristics in watershed management?

Q2) Answer any two of the following:
   a)  What is significance of resource appraisal in watershed?
   b)  What are the main features incorporated in rural integrated watershed planning?
   c)  What are the steps considered for soil conservation?

Q3) Answer any two of the following:
   a)  What is the importance of EIA in watershed management programme?
   b)  Which are the basic parameters considered in watershed management programme?
   c)  Narrate the role of people’s organisation in watershed development.

P. T. O.
Q4) Write short notes on any two of the following :
   a) Evaporation
   b) Surface runoff
   c) Delineation

SECTION - II

Q5) Answer any two of the following :
   a) Which factors influence the water erosion?
   b) How wind erosion is estimated watershed development area?
   c) Narrate the importance of strip cropping pattern in watershed development area.

Q6) Answer any two of the following :
   a) What are the steps involved in rehabilitation of mine land?
   b) Explain the role of gully control measures.
   c) Sketch a neat labelled diagram of contour trench in non-aerable land.

Q7) Answer any two of the following :
   a) Explain the role of horticultural practices in watershed programme.
   b) Which are traditional methods used for water harvesting?
   c) Briefly explain the importance of energy plant with suitable example.

Q8) Write short notes on any two of the following :
   a) Sericulture practices
   b) Self help group
   c) State polices in WDP

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Instructions to the candidates:

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

SECTION - I

Q1) Answer the following (any two) :

a) What is meant by forest inventory? Discuss its importance in forest management.

b) Discuss role of national forest policy in protection of forests in India.

c) Which are various ways of seed technology useful in conservation of forests.

Q2) Answer the following (any two) :

a) Discuss the importance of forests in relation with economic development.

b) What is meant by social forestry? Explain its role in forest cover development.

q) What are the current problems involved in protection of forest cover in India.

Q3) Answer the following (any two) :

a) Discuss the importance of non timber forest products.

b) What is Silviculture? Discuss various methods involved in it.

c) Discuss role of RS and GIS in conservation of forests.
Q4) Write short notes on the following (any two) : [10]
   a) Joint forest management
   b) Techniques in Tree improvement
   c) Role of Tribals in Forest Protection

SECTION - II

Q5) Answer the following (any two) : [10]
   a) Discuss various legal provisions for protection of forests in India.
   b) Write an account on biological methods to protect forest cover.
   c) What is scope of forestry and habitat management? Discuss fundamental principles of it.

Q6) Answer the following (any two) : [10]
   a) What are the reasons behind degradation of forest cover in India.
   b) Discuss the importance of forest genetic resources in future development of country.
   c) Write an account on importance of integrated approach for forest management.

Q7) Answer the following (any two) : [10]
   a) Discuss fundamental principles of forest economics.
   b) What is meant by ethrobotany? Explain its role in forest conservation.
   c) Discuss various natural threats associated with forest cover.

Q8) Write short notes on the following (any two) : [10]
   a) Role of forests in soil conservation.
   b) Forest mensuration.
   c) Commercial logging.
[5033] - 44
M.Sc.
ENVIRONMENTAL SCIENCE
ENV 412 - Environmental Planning and Management

Time : 3 Hours] [Max. Marks :80

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

SECTION - I

Q1) Answer any two of the following :
   a) “Public Willingness play important role in development”. Justify the statement.
   b) Discuss in detail parameters required for planning.
   c) “Natural resources are essential for development”. Comment.

Q2) Answer any two of the following :
   a) What is planning? Write the concept of regional planning.
   b) Write problem associated with Rehabilitation.
   c) Give significance of urban planning with examples.

Q3) Attempt any two of the following :
   a) Differentiate between political and social Willingness.
   b) ‘Development is population dependent process’ Discuss.
   c) What is historical importance of planning?

Q4) Write short notes (any two) :
   a) Problems associated with planning.
   b) Socio-economic issues in planning.
   c) Impact of planning.

P.T.O.
SECTION - II

Q5) Answer any two of the following:
   a) “Development gives problems to the environment”. Discuss.
   b) Write in brief methods of EIA.
   c) How disposal of solid waste is achieved?

Q6) Answer any two of the following:
   a) Write an essay on the ‘importance of planning’ in the development.
   b) Highlight the need of sustainable development.
   c) Write in brief socio-economic issue in planning.

Q7) Attempt any two of the following:
   a) Write in brief role of pollution control boards in protection of environment.
   b) What is conservation? Discuss the methods of conservation.
   c) Enlist the laws for protection of environment.

Q8) Write short notes any two:
   a) Carrying capacity of environment.
   b) Role of sustainable development.
   c) Rehabilitation and Resettlement.
SECTION - I

Q1) Answer any two of the following:
   a) What is environmental management and how does it help in achieving sustainable development?
   b) Who are the different participants in the process of environmental management?
   c) Write a note on the international standards in environmental management.

Q2) Attempt any two of the following:
   a) What are the important factors in carrying out a life cycle Assessment?
   b) Describe the variants of LCA with examples.
   c) What are the environmental impacts to be considered in LCA.

Q3) Answer any two of the following:
   a) Explain the plan-do-check-act model of Environmental Management system.
   b) What is the importance of audit in EMS?
   c) Write about the different drivers for environmental design.
Q4) Write short notes on (any two):
   a) Importance of environmental design.
   b) Inventory analysis in LCA.
   c) Environmental policy statement.

SECTION - II

Q5) Answer any two of the following:
   a) What are the types and characteristics of biomedical wastes?
   b) Give an account an municipal solid waste management.
   c) Which criteria are used in identification of hazardous waste sites?

Q6) Answer any two of the following:
   a) Give an account on various health effects caused by solid wastes.
   b) Discuss various engineering techniques used in disposal of solid wastes.
   c) Explain the various steps involved in pyrolysis.

Q7) Answer any two of the following:
   a) Explain the design structure and benefits of sanitary landfill sites.
   b) What are the issues involved in solid waste management?
   c) What are the positive and negative aspects involved in disposal of wastes at sea?

Q8) Write short notes on any two of the following:
   a) 3R approach in MSW
   b) Incineration
   c) Management of hazardous wastes