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M.Sc. – I (Semester – II) Examination, 2014
ENVIRONMENTAL SCIENCE (Paper – V)
Analytical Techniques in Environmental Science

Day and Date : Tuesday, 22-4-2014
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Answer **five** questions.
 - 2) **All** questions carry **equal** marks.
 - 3) Answer **any two** questions from question numbers **II, III and IV.**
 - 4) Answer **any two** questions from question numbers **V, VI, and VII.**
 - 5) **Draw** neat and labeled diagrams **wherever** necessary.
 - 6) For calculation calculator is **allowed.**
 - 7) Question No. **I** is **compulsory.**

I. Fill in the blanks with appropriate words.

14

- 1) Variance in data is denoted by _____
 - a) σ^2
 - b) $\frac{1}{3}\sqrt{\sigma}$
 - c) $\sqrt{\sigma}$
 - d) σ
- 2) The maximum ozone concentration is around _____ in the stratosphere.
 - a) 20 ppm
 - b) 8 ppm
 - c) 10 ppm
 - d) 14 ppm
- 3) Which metal can be analysed using flame photometer ?
 - a) Sodium
 - b) Lead
 - c) Mercury
 - d) Chromium
- 4) Standard deviation is indicated by _____
 - a) η
 - b) σ^2
 - c) σ
 - d) \bar{X}
- 5) Pesticides can be estimated using which technique ?
 - a) AAS
 - b) GC
 - c) HPLC
 - d) X-RF



- IV. Find the standard deviation and coefficient of variation for following data : **14**
50, 60, 70, 80, 100, 110, 120, 130, 140
- V. Write note on : **14**
1) Gas chromatography
2) Merits and demerits of mean.
- VI. Describe in brief : **14**
1) Explain the terms :
i) Inclusive class
ii) Exclusive class
iii) Class limits
iv) Class frequency.
2) X-ray fluorescence.
- VII. Write an account on : **14**
1) Measures of dispersion
2) Types of data.
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M.Sc. – II (Semester – IV) Examination, 2014
ENVIRONMENTAL SCIENCE

Disaster Management and Environmental Technology (Paper – XIII)

Day and Date : Tuesday, 22-4-2014

Max. Marks : 70

Time : 3.00 p.m. to 6.00 p.m.

- Instructions :** 1) Answer **any five** questions.
2) **All** questions carry **equal** marks.
3) Answer **any two** questions from **each** Section.
4) Question No. 1 is **compulsory**.
5) **Draw** neat and labelled diagram **wherever** necessary.
6) **All** questions to be written in **answer booklet** only.

1. Fill in the blanks :

14

- 1) Flood disasters are prevented by _____
a) Making land sloppy b) Removing soil cover
c) Cutting forests d) Making dam on river
- 2) Large scale burning of fossil fuel can cause _____
a) Acid rain b) Climate change
c) Both of these d) None of these
- 3) The tropical cyclone has radius of about _____
a) 100 miles b) 50 miles
c) 20 miles d) All of these
- 4) The 'Love Canal Incidence' is concerned with _____
a) River pollution b) Toxic waste dump
c) Man made bacteria d) Chemical plant accident
- 5) Fossil fuels include _____
a) Coal b) Oil
c) Natural gas d) All of these



- 6) An interior region of earth can be harnessed for
- a) Biogas
 - b) Biomass
 - c) Geothermal energy
 - d) All of these
- 7) _____ is an anthropogenic disaster.
- a) Volcano
 - b) Flood
 - c) Earth quake
 - d) War
- 8) _____ is not a hazardous waste.
- a) Radioactive waste
 - b) Medical waste
 - c) Nuclear waste
 - d) Garden refuge
- 9) _____ disaster has localized impacts.
- a) Nuclear accidents
 - b) Earthquake
 - c) Landslide
 - d) Cyclone
- 10) _____ is not a geologic disaster.
- a) Tsunamis
 - b) Tornadoes
 - c) Wildfire
 - d) Flood
- 11) _____ is due to lack of rainfall of sufficient duration.
- a) Flood
 - b) Drought
 - c) Volcano
 - d) Earthquake
- 12) _____ is an important solution to present energy crices in rural India.
- a) Nuclear energy
 - b) Hydropower
 - c) Biogas
 - d) Fuel cell
- 13) Largest producer of natural gas in the world is _____
- a) Canada
 - b) USA
 - c) China
 - d) Russia
- 14) A theory of plate tectonics is associated with _____
- a) Flood
 - b) Earthquake
 - c) Cyclone
 - d) Volcano



SECTION – I

2. Describe in detail the nature of hazardous waste, toxic waste and chemical waste. **14**
3. Give a detailed account of environmental issues associated with energy resources. **14**
4. Write an essay on present status of energy use in India. **14**

SECTION – II

5. Write short notes on : **14**
 - a) Disaster management plan
 - b) Epidemics.
 6. Briefly discuss on : **14**
 - a) Oil spills
 - b) Classification of energy resources.
 7. Give a brief account on : **14**
 - a) Geothermal energy
 - b) Industrial fires.
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**M.Sc. – II (Semester – IV) Examination, 2014
ENVIRONMENTAL SCIENCE (Paper – XIV)
Environmental Policy, Act and Planning**

Day and Date : Thursday, 24-4-2014
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:** 1) Answer **any five** questions.
2) **All** questions carry **equal** marks.
3) Question No. **1** is **compulsory**.
4) Answer **any two** questions from **2, 3 and 4**.
5) Answer **any two** questions from **5, 6, 7**.
6) Draw **neat** and labeled diagrams **wherever** necessary.

1. Fill in the blanks :

- 1) Montreal protocol is known for _____
 - a) Global warming
 - b) Ozone layer depletion
 - c) Green house effect
 - d) Climate change
- 2) Which state will not be benefited by “Sardar Sarovar Narmada Project” ?
 - a) Gujarat
 - b) Rajasthan
 - c) Maharashtra
 - d) Karnataka
- 3) National River conservation authority was enforced in _____
 - a) 1991
 - b) 1998
 - c) 1995
 - d) 1992
- 4) Earth summit held in the year _____
 - a) 1992
 - b) 1972
 - c) 1998
 - d) 2002
- 5) Forest Conservation Act was enforced in _____
 - a) 1952
 - b) 1980
 - c) 1988
 - d) 1974
- 6) The Public Liability Assurance Act _____
 - a) 1991
 - b) 1989
 - c) 1990
 - d) 1995



- 7) ENVIS centres are opened by Ministry of Environment to _____
- Carry out environmental research
 - Spread awareness among masses about environment
 - Impact training to students
 - Disseminate environmental information
- 8) Public participation is ideally most important at which stage of EIA process ?
- Proposing mitigation measures
 - Post monitoring of the project
 - In evaluating the relative significance of likely impacts
 - In determining the scope of EIA
- 9) Which chemical species among the following possesses least ozone depleting potential ?
- HCFC 22
 - CFC 113
 - CFC
 - CFC 12
- 10) As per central forestry commission how many forest types are found in our country _____
- 16
 - 25
 - 11
 - 22
- 11) Which organisation publishes "Red data book" ?
- UNEP
 - IUCN
 - WWF
 - BNHS
- 12) The enjoyment of life and its entertainment and fulfillment is guaranteed by which Article of Indian Constitution ?
- 42A
 - 42
 - 48A
 - 21
- 13) The powers and duties of chairman and member secretary of CPCB are describe in _____
- Environment (Protection) Act, 1986
 - Air (Prevention and Control of Pollution) Amendment Act, 1987
 - Water (Prevention and Control of Pollution) Act, 1974
 - Water (Prevention and Control of Pollution) Rules, 1975
- 14) The convention on International Trade in Endangered Species (CITES) was signed by _____ countries in the year 1975.
- 109
 - 81
 - 125
 - 90



2. Write in detail Environmental Protection Articles of Indian Constitution.
 3. Comment on International Conferences on Environment Protection and development.
 4. Explain Environmental (Protection) Act, 1986.
 5. Write note on :
 - 1) Agenda 21
 - 2) Tiwari Committee.
 6. Explain in brief :
 - 1) Biodiversity Act, 2002
 - 2) Coastal Regulation Zone.
 7. Write an account on :
 - 1) SPCB
 - 2) PIL.
-



- 5) Dam is the source of irrigation for _____
a) major irrigation projects b) minor irrigation projects
c) medium irrigation projects d) all the above
- 6) Rivers originated from Himalyan region are _____
a) perennial b) ephemeral
c) intermittant d) none of them
- 7) Drainage of soil water by gravity flow below the effective root zone depth is called as _____
a) gravitational flow b) deep percolation
c) drainage water d) all above
- 8) The volume of irrigation water divided by the area irrigated, is called as _____
a) delta b) duty of water
c) base d) intensity of irrigation
- 9) The process of distribution of irrigation water is called as _____
a) regulation b) restoring c) rotation d) both a & b
- 10) Soil is a _____
a) three phase matter b) two phase matter
c) single phase matter d) none of them
- 11) Arrangement of soil particles in a soil mass refers to _____
a) soil texture b) soil structure
c) tortussity d) infiltrability
- 12) Water held in soil pores is known as _____
a) pore water b) capillary water
c) soil water d) all above
- 13) Tensiometer measures _____
a) soil moisture b) ground water
c) surface water d) all of these
- 14) Entry of water from soil surface into soil is called as _____
a) seepage b) percolation
c) infiltration d) all the above



2. What are the factors affecting runoff and discuss the method for estimation of peak runoff ? **14**
 3. Discuss in detail history of soil erosion Write various problems caused by erosion. **14**
 4. What is watershed ? Write in detail characteristics and differentiate small and large watersheds. **14**
 5. Write in short : **14**
 - a) Contour bunds
 - b) Vegetative measure for soil conservation
 6. Explain in brief : **14**
 - a) Drainage basin
 - b) Roof-top water harvesting
 7. Write a note on : **14**
 - a) Alkaline and saline soil
 - b) Wetland and its conservation
-



- 9) _____ is not produced by motor vehicle.
a) SO₂ b) CO c) Flyash d) Hydrocarbons
- 10) _____ lies between troposphere and stratosphere.
a) Stratopause b) Mesopause
c) Tropopause d) None of these
- 11) EMS stands for _____
a) Environmental Monitoring System b) Ecological Mass Surface
c) Ecological Monitoring System d) None of these
- 12) Now a days, the buses in Delhi are running on _____
a) LPG b) CNG c) HSD d) Ethanol
- 13) Smog is _____
a) Fog + Ash b) CO + H₂
c) Smoke + Ash d) Smoke + Fog
- 14) SO₂ and CO are examples of _____
a) Primary pollutants b) Secondary pollutants
c) Both of these d) None of these

SECTION – I

2. Write an essay on meteorological aspects of atmosphere. **14**
3. Give a detailed account on environmental impact assessment studies on air pollution in sitting industries. **14**
4. Discuss in detail on principle and technique for ambient and stack monitoring and air sampling. **14**

SECTION – II

5. Write short notes on : **14**
a) Atmospheric stability.
b) Effects of air pollution.
6. Briefly discuss on : **14**
a) Clean development mechanism.
b) Climate change.
7. Give a brief account on : **14**
a) Carbon credit system.
b) Dispersion and diffusion.
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**M.Sc. I (Semester – II) Examination, 2014
ENVIRONMENTAL SCIENCE (Paper – VII)
Water and Soil Pollution**

Day and Date : Saturday, 26-4-2014

Max. Marks : 70

Time : 11.00 a.m. to 2.00 p.m.

- N.B. :** 1) Answer **any five** questions.
2) **All** questions carry **equal** marks.
3) Question No. 1 is **compulsory**.
4) Answer **any two** essay questions from 2, 3, 4.
5) Answer **any two** short note question from 5, 6, 7.
6) Draw neat and labelled diagrams **wherever** necessary.

1. Choose correct alternative for the following :

14

- 1) The conversion of water vapour in the air to water droplets due to cooling is called
- a) Evaporation
b) Transpiration
c) Condensation
d) None of the above
- 2) The science which deals with study of soil is called as
- a) Pedology
b) Soil microbiology
c) Entomology
d) Sedimentology
- 3) Nitrogen soil acts as
- a) Macronutrient
b) Micronutrient
c) Vitamins
d) None of the above
- 4) Humus consists of
- a) Carbon
b) Oxygen
c) Nitrogen
d) All the above

P.T.O.



2. Define water pollution and pollutants. Explain the nature and types of pollutants. **14**
 3. What is organic pollution of water ? Write in detail impacts of organic pollution on physico-chemical and biological characteristics of water body. **14**
 4. Explain soil degradation. Give a brief account on the reclamation of degraded soil with the help of case study. **14**
 5. Write in short : **14**
 - a) Potability and non-potability of water.
 - b) Water budget.
 6. Explain in brief : **14**
 - a) Soil formation
 - b) Biomagnification
 7. Write a note on : **14**
 - a) Soil salinity
 - b) Eutrophication
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**M.Sc. I (Semester – II) Examination, 2014
ENVIRONMENTAL SCIENCE (Paper – VIII)
Introduction to Remote Sensing, GIS & GPS**

Day and Date : Tuesday, 29-4-2014
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- Instructions :** 1) Answer **any five** questions.
2) **All** questions carry **equal** marks.
3) Question **1** is **compulsory**.
4) Answer **any two** essay questions from **2, 3, 4**.
5) Answer **any two** short note questions from **5, 6, 7**.
6) Draw neat and labeled diagrams **wherever** necessary.

- 1 Choose correct alternative for the following. 14
- 1) Which of the following is not a reason why remote sensing is ideal for use in physical geography ?
- a) It will always be more reliable than field work studies
 - b) It minimizes the need for fieldwork in dangerous isolated and sensitive areas
 - c) It can be applied at any scale
 - d) It can monitor change overtime
- 2) Which form of scattering in the atmosphere is not dependent on wavelength ?
- a) Non-Selective b) Rayleigh c) Mie d) None
- 3) Which of the following is not a type of image resolution that is very important in image analysis ?
- a) Spectral b) Energy
 - c) Temporal d) Spatial
- 4) What is the most common wavelength band which electro-optical scanners work within ?
- a) 0.3 and 14 μm b) 0.9 and 14 μm
 - c) 0.3 and 0.9 μm d) 0.9 and 24 μm



- 5) Which at the following types of sensors user a highly focussed beam of light ?
- a) Sonar
 - b) Lidar
 - c) Ground penetrating radar
 - d) Side-looking radar
- 6) What does GIS stand for ?
- a) Generalized Information System
 - b) Geographic Information System
 - c) Global Interaction Society
 - d) Geographic Information Standard
- 7) Non-graphical descriptors relating to geographical features or entities in a GIS called _____
- a) Aspect
 - b) Attributes
 - c) Arc
 - d) All above
- 8) What are the two main types of data in GIS ?
- a) Table & maps
 - b) Environmental & Engineering
 - c) Raster & Vector
 - d) Pictures & Graphics
- 9) The creation of zone of equal width around a point, line, or area feature called
- a) Polygon
 - b) Networking
 - c) Buffering
 - d) All above
- 10) Computer based mapping and analysis of location-based data best describes
- a) GPS
 - b) RS
 - c) GIS
 - d) Aerial Photography
- 11) Google earth is an example of a
- a) Social map
 - b) Satellite map
 - c) Virtual globe
 - d) GPS
- 12) The intersecting lines drawn on maps and glober are
- a) latitude
 - b) longitude
 - c) geographic grids
 - d) none of them



- 13) Which of the following is not a type of map projection ?
- a) Geographic
 - b) Conic
 - c) Cylindrical
 - d) Azimuthal
- 14) What is the name of the Russian equivalent of GPS ?
- a) GPESKI
 - b) GLONASS
 - c) IKONOS
 - d) GLASNOT
2. Explain in detail GIS technology for environmental management. **14**
3. What is GIS ? Write in detail components of GIS ? **14**
4. Explain the nature of EMR ? And add a note on electromagnetic spectrum. **14**
5. Write notes on : **14**
- a) Aerial photography
 - b) Global positioning system
6. Describe in brief : **14**
- a) Radiation laws
 - b) Digital elevation model
7. Explain in short : **14**
- a) Projection and coordinate system.
 - b) DBMS.
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