# SLR-MI-387 Set P

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# M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2017 Environmental Science FUNDAMENTALS OF ENVIRONMENT

Day & Date: Thursday,16-11-2017

Time: 10.30 AM to 01.00 PM

# **Instructions:** 1) Attempt any five questions.

- 2) All Questions carry equal marks.
- 3) Question no.1 is compulsory
- 4) Attempt any two questions from Q.NO.2, 3 and 4
- 5) Attempt any two questions from Q.No.5, 6 and 7

### Q.1 Select the answer among the following.

- 1) \_\_\_\_\_ is the discipline in philosophy that studies the moral relationship of human beings to, and also the value and moral status of, the environment and its non-human contents.
  - a) Environmental Science
  - c) Interdisciplinary Science
- b) Environmental Ethics
- d) Applied Science
- 2) \_\_\_\_\_ proposes that organisms interact with their inorganic surroundings on Earth to maintain and preserve the conditions for life on the planet.
  - a) Darwinian process

b) Gaia hypothesis

c) Leopold matrix

- d) Gaussian Hypothesis
- 3) The process in which the developmental paths were evaluated, studied and selected to reduce down the adverse impacts on the natural environment is called \_\_\_\_\_.
  - a) Environmental Pollution
  - b) Environmental monitoring
  - c) Sustainable Environment
  - d) Environmental decision making
- 4) Stratospheric ozone filters \_\_\_\_\_ allowing only a small amount to reach the Earth's surface.
  - a) Air pollutants coming from the mesosphere
  - b) Acid rain
  - c) Harmful UV radiation
  - d) Particulate matter in the upper atmosphere
- 5) The uppermost part of the lithosphere that chemically reacts to the atmosphere, hydrosphere and biosphere through the soil forming process is called the \_\_\_\_\_.
  - a) Mesosphere

- b) Pedosphere
- c) Asthenosphere d) Atmosphere
- 6) Biodiversity Hotspot are characterized on the basis of:
  - a) Endemic flowering plant and threat perception
  - b) Endemic flowering plant
  - c) Species of flowering plants
  - d) None of above
- 7) Which gas exists in the highest concentration in the Earth's atmosphere?
  - a)  $CO_2$  b)  $O_2$ c)  $N_2$  d)  $O_3$

Max Marks: 70

- 8) Which of following statement is incorrect about the Biosphere?
  - a) Biosphere is combination of lithosphere, hydrosphere and atmosphere
  - b) Biosphere is missing at extreme of north and south pole
  - c) Organisms are uniformly present in Biosphere
  - d) All of the above
- 9) What is the meaning of the core bleaching?
  - a) Paling of coral color or decline in zooxanthellae (microscopic algae) due to climate change
  - b) Impacts of excessive sea trade on fishing industry
  - c) Both a and b

c) Birth rate

- d) None of the above
- 10) In a population, unrestricted reproductive capacity is called as
  - a) Carrying capacity
- b) Biotic potentiald) Fertility rate
- 11) The pyramid of energy in terrestrial ecosystem is
  - a) Upright b) Inverted
  - c) Spindle shaped d) Irregular
- The process of successful establishment of the species in a new area is called \_\_\_\_\_.
  - a) Sere
  - c) Invasion

- b) Climax
- d) Ecesis

- 13) Which one is true?
  - a) Symbiosis is when neither population affects each other
  - b) Symbiosis is when the interaction is useful for both the populations
  - c) Commensalism is when none of the interaction population affect each other
  - d) Commensalism is when the interactions is useful to both populations
- 14) The effect of inters specific completion on niches is to make them
  - a) Larger b) Smaller
  - c) More triangular d) Change location

Q.2	Discuss why environmental science is called multidisciplinary science? Explain the need of natural resource conservation with suitable example?	
Q.3	What is Soil Erosion? Discuss the environmental factors affecting soil erosion? Explain its causes and adverse effects on environment?	
Q.4	What is atmosphere? Explain its composition in detail? How CO <sub>2</sub> is responsible for the increase in troposphere temperature near the earth?	14
Q.5	<ul> <li>Write a short note on the following:</li> <li>A) Nitrogen Cycle</li> <li>B) Population Ecology</li> </ul>	
Q.6	<ul> <li>Write a brief with suitable illustration on the following:</li> <li>A) Bioaccumulation and Bio magnification</li> <li>B) Food Chain and Food Web</li> </ul>	14
Q.7	<ul> <li>Write an account on the following:</li> <li>A) Structure and composition of Lithosphere</li> <li>B) Gaia Hypothesis</li> </ul>	14

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### M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2017 **Environmental Science** ENVIRONMENTAL CHEMISTRY

Day & Date: Saturday, 18-11-2017

Time: 10.30 AM to 01.00 PM

Instructions: 1) Attempt any five questions.

- 2) All Questions carry equal marks.
- 3) Question no.1 is compulsory
- 4) Attempt any two questions from Q.No.2, 3 and 4
- 5) Attempt any two short note questions from Q.No.5, 6 and 7

### Q.1 Select the answer among the following

- 1) Which of the following process Contributes to CO<sub>2</sub> into the atmosphere
  - a) Combustion b) Fermentation
  - c) Putrefaction
  - e) All

### 2) Which of the following species result from photo insertion

- b) b<sup>+</sup> a) O<sup>+</sup><sub>2</sub>
- d) All c) NO<sup>+</sup>

Which of the following pollutants could be transported over long distances

- a) PAHs b) PCBs c) DDT
- 4) Pesticides have been found to affect
  - a) Central nervous system
  - c) Digestive System d) All
- 5) Nitric oxide is generated into the atmosphere by
  - a) Forest fires
  - c) Domestic heating
  - e) All
- 6) Liquids in gas aerosol are
  - a) Clouds
  - c) Mist
  - e) All
- 7) Aerosols may be in the form of
  - a) Smoke b) Dust
  - c) Mist
- 8) The diesel vehicles pollute the environment largely thought a) NO<sub>x</sub>

  - c) CO
  - e) All

- d) All

b) Fog

d) Smog

b) Particulates d) Un burnt Hydrocarbons

- b) Respiratory system

b) Industrial heating

d) Internal combustion engines

- d) All

d) Fog



Set

Max Marks: 70

14

**SLR-MI-388** 

- 9) The boifuel fraction in diesel is
  - a) Biodegradable
  - b) Non-toxi
  - c) Oxygen rich for efficient combustion
  - d) All
- 10) Exposure to mercury can cause
  - a) Neurotoxicity
  - b) Speech and visual impairment
  - c) Kidney failure
  - d) Alzheimer's diseases
  - e) All

### 11) Inorganic tin may undergo alkylation in aquatic environment to from

- a) Monomethyl Tinc) Both
- b) Dimethyl tind) None
- 12) Humic material in water may be found
  - a) In free form
  - b) Complexes with metal ion
  - c) Complexed wit organic Species
  - d) All

### 13) Odour in water can be eliminated from water by -

- a) Activated carbon
  - c) Aeration
- b) Chlorinationd) Ozone
- 14) Liquids in gas aerosol are
  - a) Clouds b) Fog c) Mist d) Smog
  - e) All

# Q.2 Explain in brief the principles and importance and types of filtration techniques 14 in water treatments.

# Q.3 Explain the terms Chemical Equilibrium Redox Potential Acid – base reaction Soil air Q.4 Explain the importance of DO, BOD and COD in water and waste water 14 treatments. Q.5 Write a short note on the following Sedimentation

b) Soil Fertility

### Q.6 Write In Brief:

- a) Gibbs energy
  - b) Pheromones

### **Q.7** Write importance and significance of:

- a) Integrated pest management
- **b)** Water sampling techniques

14

# Seat No.

# M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2017 **Environmental Science** COMPUTER APPLICATIONS

Day & Date: Tuesday,21-11-2017

Time: 10.30 AM to 01.00 PM

Instruction: 1) Attempt any five questions.

- 2) All Questions carry equal marks.
- 3) Question no.1 is compulsory
- 4) Attempt any two essay questions from Q.NO.2, 3 and 4.
- 5) Attempt any two short note questions from Q.No.5, 6 and 7.
- 6) Draw neat and labeled diagrams wherever necessary.

### Q.1 Choose the correct answer:

- 1) Which of the following is not a form of data?
  - a) Numbers
  - c) Sound

- b) Pictures
- d) None of the above

d) Control Central Unit

- Among the following is brain of any computer system b) Memory Processing Unit
  - a) Central Processing Unit
  - c) Final Processing Unit
- 3) What is the full from of CRT?
  - a) Current ray tube
  - c) Cathode ray tube

- b) Current ray Technology
- d) Cathode ray Technology

- 4) CD ROM stands for
  - a) Compact Device Read Only Memory
  - b) Compact Data Read Only Memory
  - c) Compactable Disk Read Only Memory
  - d) Compact Disk Read Only Memory
- 5) Which of the items below are considered removable storage media? a) Removable hard disk cartridges
  - b) Magnetic disk
  - c) Flexible disks cartridges
  - d) All of the above
- 6) VIRUS stands for
  - a) Virtual Information Resource Under Search
  - b) Virtual Information Resource Under Seize
  - c) Verify Information Result Until Source
  - d) Very Important Record User Searched
- 7) ASCII stands for
  - a) American Standard Code for Information Interchange
  - b) American Standard Code for International Interchange
  - c) American Standard Code for Intelligence Interchange
  - d) American Scientific Code for Information Interchange

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14

Marks: 70

- 8) The full form EEPROM is
  - a) Electrically Erasable Programmable Read only Memory
  - b) Easily Erasable Programmable Read only Memory
  - c) Electronic Erasable Programmable Read only Memory
  - d) All of the above
- 9) Which one of the following is important software in GIS
  - a) ARC Sensor b) ARC GIS
  - c) ARC EVS d) ARC Network
- 10) Environmental modeling do not undertake one of the following area
  - a) Parameterisation of 3D geological models
  - b) Development of numerical process techniques for groundwater
  - c) Environmental restoration through pollution control
  - d) Geostatistics and model development and data integration
- 11) Database Management System
  - a) Collection of interrelated data
  - b) Collection of Programs to access data
  - c) Collection of data describing one particular enterprise
  - d) All of the above
- 12) Bioinformatics is an interdisciplinary field that develops
  - a) Methods and software tools for biological data
  - b) Understand software tools for biological data
  - c) Connects software tools for GIS
  - d) Technology tools for organisms

13)Among the following is not the area of web design

- a) Interface Design b) Proprietary Software d) ISO Practices and Method
- c) Search Engine Optimization
- 14)Which models use an empirical method to convert rainfall volume into runoff volume
  - a) Hydrological Models b) Rainwater Models
  - c) Groundwater Models d) Agronomic Models
- Q.2 Explain the characteristics of computer. Also describe various input and 14 output devices of computer. What is an operating system? Write an account on various Components of it. Q.3 14 What are various modes of data communication and networks? Also add a Q.4 14 note on importance of it in environmental science. Q.5 Write a short note on the following: 14 a) Importance of information Technology.
  - **b)** Software Used in Environmental Sciences.

### Q.6 Write in brief on the following: a) What is DBMS and what are components of DBMS? b) Discuss the importance of computer aided programmes in Geoinformatics.

- 14 Q.7 Write in brief on the following: a) Add a note on history of computer.
  - b) Discuss the importance of computer graphics

Seat	
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# M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2017 **Environmental Science** INTRODUCTION TO GEO-SCIENCE

Day & Date: Thursday, 23-11-2017 Time: 10.30 AM to 01.00 PM

**Instructions:** 1) Attempt any five questions.

- 2) All Questions carry equal marks.
- 3) Question no.1 is compulsory
- 4) Attempt any two questions from Q.No.2, 3 and 4
- 5) Attempt any two questions from Q.No.5, 6 and 7

### Q.1 Select the answer among the following

- 1) Acidic particles and gases can also deposit from the atmosphere in the absence of moisture as \_\_\_\_\_. b) Wet Deposition
  - a) Dry Deposition
  - c) Environmental Deposition d) None of above
- 2) \_\_\_\_\_ is the rate of decrease of temperature with altitude in the stationary atmosphere at a given time and location.
  - a) Environmental Laps Rate
  - c) Thermal Conversion
- The Ring of Fire is a ring of volcanoes around the \_\_\_\_\_
  - a) Mid Atlantic Place
  - c) Eurasian Plate d) Indo-Australian Plate
- 4) Mica, Basalt and Granite are the forms of \_\_\_\_\_ type of rock.
  - a) Igneous Rock
  - c) Sedimentary Rocks
- b) Metamorphic Rocks

b) Dry Adiabatic Lapse rate

d) Wet Adiabatic Lapse rate

d) None of these

b) Pacific Plate

- 5) Long-term exposure to \_\_\_\_\_ from ground-water can cause cancer and skin lesions. Cardiovascular disease, neurotoxicity and diabetes.
  - b) Cadmium
  - a) Fluoride c) Arsenic d) Nitrates
- 6) The weather conditions in an area in general or over a long period is known as \_\_\_\_\_.
  - a) Weather b) Climate
  - c) Precipitation d) None of above
- 7) Carbon dioxide constitutes \_\_\_\_\_ percent to the atmospheric volume.
  - b) 0.003% a) 0.03%
  - c) 0.3% d) 3%
- 8) \_\_\_\_\_ amongst the following has maximum thickness.
  - a) Continental Crust c) Transitional Crust
- b) Oceanic Crust d) None of the above

b) 0.1 to 2 mg/lit

d) None of these

- 9) According to Indian Standards desirable limit Fluoride for drinking water is.
  - a) 0.6 to 1.2 mg/lit

c) 2 to 6 mg/lit

Max Marks: 70

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- 10) \_\_\_\_\_ state in India is the largest producer of bauxite.a) Ordishab) Karnataka
- a) Ordisha c) Maharashtra d) Kerala 11) The Discontinuity corresponds to the sub-horizontal boundary in continental crust at which the seismic ware velocity increases in a discontinuous way. a) Conrad Discontinuity b) Gutenberg Discontinuity d) Lehmann Discontinuity c) Gut Discontinuity 12) An increase of temperature as altitude increase can occur and is called an a) Mixing Height b) Inversion c) Lapse rate d) Rising Temperature 13) When moist air is cooled, it may reach a level when its capacity to hold water vapour ceases. a) 100% Relative Humidity b) Saturation Point c) Dew Point Reached d) All of the above 14) Which of the following materials is least susceptible to chemical weathering? b) Quartz a) Limestone c) Halite d) Feldspar Q.2 Define Weathering, Describes types of weathering and factors affecting 14 weathering process. Q.3 What do you meant by solar radiations, explain heat budget. 14 Q.4 Which are the elements of weather and climate: add a note on weather 14 forecasting model? Q.5 Write a short note on: 14 Sea Floor Spreading a) **b)** Electromagnetic Radiations Q.6 Give a brief account of: 14 a) Mineral Resources in India **b)** Geo-Strophic wind Q.7 Write a note on: 14 a) Soil Profile **b)** Oxygen as biogeochemical cycle

alpha biodiversity
There is chance in Natural selection in process of evolution due to
genetic diversity
There is chance in Natural selection in process of evolution due to
Ecosystem biodiversity
Here is chance in Natural selection in process of due to bio community diversity

Seat No.

# M.Sc. (Semester - II) (New) (CBCS) Examination Oct/Nov-2017 **Environmental Science BIODIVERSITY AND CONSERVATION**

Day & Date: Friday, 17-11-2017 Time: 10.30 AM to 01.00 PM

Q.1

Instructions: 1) Answer any Five Question. 2) All Questions carry equal marks. 3) Question No. 1 is Compulsory. 4) Attempt any two from Q.No.2, 3 and 4. 5) Attempt any two from Q.No.5, 6 and 7. A) Select the answer among the following: 1) Which one is odd for species diversity? a)  $\alpha$  diversity b)  $\gamma$  diversity c)  $\beta$  diversity d)  $\lambda$  diversity b) 34 a) 41 c) 14 d) 43 b) Virus a) Bacteria c) Fungus d) Algae found? a) Equador b) Brazil d) Peru c) Colombia 5) Which scientist has classified species diversity? a) Thoeprestus b) Lineus c) Whittaker d) Treshaw a) Nilgiri pipit, Rofous babbler, Lesser-Florican c) Malabar parakeet, Nilgiri pipit, Rofous babbler d) All the above 7) Which is the correct option.

2) How many biosphere reserves are present in India?

# 3) Which microorganism is responsible for synthesis of antibiotics?

- 4) In which region of South America maximum species of birds can be
- 6) Which group is meant for Endemic species of birds?
  - b) Lesser-Florican, Nilgiri wood pigeon, Malabar parakeet
  - a) There is chance in Natural selection in evolution process due to alpha biodiversi
  - b) There is chance genetic diversity
  - c) There is chance Ecosystem bioc d) Here is chance

**SLR-MI-392** 



Max. Marks: 70

8) How many protected areas are present in India?

a)	89	b)	581	
``	400	1)	~ 4	

- c) 492 d) 34
- 9) What can be done by the number of species in habitat?
  - a) Measurement of species diversity in habitat
  - b) Measurement of gene diversity of species in habitat
  - c) Measurement of interaction of bio-communities
  - d) Measurement of function of Ecosystem
- 10) Which is the right sequence for Ecological diversity?
  - a) Biomes  $\rightarrow$  habitat  $\rightarrow$  Ecosystem  $\rightarrow$  population
  - b) Biomes  $\rightarrow$  Ecosystem  $\rightarrow$  habitat  $\rightarrow$  niches
  - c) Biomes  $\rightarrow$  Ecosystem  $\rightarrow$  population  $\rightarrow$  niches
  - d) Biomes  $\rightarrow$  habitat  $\rightarrow$  niches  $\rightarrow$  Ecosystem
- 11) Where the knowledge of biodiversity is applicable?
  - a) To study, classification of animals and plants.
  - b) To study, Ecosystem
  - c) To study, Bio-geological region
  - d) All the given
- 12) Which statement is correct for buffer zone of biosphere reserve?
  - a) It is legally protected
  - b) Authority takes cooperation with local people.
  - c) Environmental Education is facilitated by the zone
  - d) Hunting and felling of tress occur in this zone
- 13) Biodiversity of which organism is more in Eastern Ghat in comparison to Western Ghat?
  - a) Reptilia b) Amphibian
  - c) Aves d) Mammals
- 14) What is Ecosystem diversity?
  - a) Similarity of Species diversity in Ecosystem
  - b) Variation in Species diversity in Ecosystem
  - c) Mutation in Species diversity in Ecosystem
  - d) Homozygosity in Species diversity in Ecosystem

Q.2	List the biogeographical regions in India? Explain each region properly with	14
	characteristic significance?	
~ ~		

Q.3	Explain the concept of Biodiversity Hotspot? Discuss the importance of	14
	Western Ghats with respect to its faunal species characteristics?	

Q.4 Explain the strategies of biodiversity conservation? Discuss *In-situ* and *Ex-situ* 14 Conservation methods for the protected area?

Q.5	Write a short note on the following	14
	a) Chipko Movement	
	b) Role of IUCN in world biodiversity conservation	
Q.6	Write a brief with suitable illustration on the following	14

- a) Community diversity
- **b)** Biosphere reserves
- Q.7 Write an account on the following.
  - a) Bio-piracy
  - **b)** Ramsar Convention

# M.Sc. (Semester - II) (New) (CBCS) Examination Oct/Nov-2017 **Environmental Science** WATER AND WASTEWATER ENGINEERING

Day & Date: Monday, 20-11-2017

Time: 10.30 AM to 01.00 PM

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Instructions: 1) Answer any Five Question.

- 2) All Questions carry equal marks.
- 3) Question No. 1 is Compulsory.
- 4) Attempt any two from Q.No.2, 3 and 4.
- 5) Attempt any two from Q.No.5, 6 and 7.

### Q.1 Select the answer among the following

- 1) The pH value of fresh sewage is usually
  - a) Equal to 7 b) Less than 7
  - c) More than 7 d) Equal to zero
- 2) The maximum depth of sedimentation tanks, is kept
  - a) 3 m b) 4 m
  - c) 3.5 m d) 4.5
- 3) If the depletion of oxygen is found to be 5 ppm after incubating a 2.5% solution of sewage sample for 5 days at 21°C, B.O.D. of the sewage is
  - a) 50 ppm b) 150 ppm
  - c) 100 ppm d) 200 ppm
- 4) For a continuous flow type of sedimentation tanks
  - a) Width of the tank is normally kept about 6 m
  - b) Length of the tank is normally kept 4 to 5 times the width
  - c) Maximum horizontal flow velocity is limited to 0.3 m/minute
  - d) All the above
- 5) No treatment of the sewage is given if dilution factor is
  - a) Less than 150 b) Between 200 to 300 c) Between 150 to 200 d) More than 500
- 6) For the COD test of sewage, organic matter is oxidized by K2Cr2O7 in the presence of
  - a) H2SO4
  - c) HNO3 d) None of these
- 7) Pick up the correct statement from the following:
  - a) Hydrogen sulphide gas in excess, may cause corrosion of concrete sewers

b) HCI

- b) 4 ppm of Dissolved Oxygen (D.O.) is ensured before discharging the treated sewage in river
- c) Solubility of oxygen in sewage is 95% of that of distilled water
- d) All the above
- 8) Skimming tanks are
  - a) Used to remove the grease and oil
  - b) Those from which sludge is skimmed out
  - c) Tanks provided with self-cleansing screens
  - d) Improved version of grit chambers

Max. Marks: 70

14

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**SLR-MI-393** 

- 9) The detention period for plain sedimentation water tanks, is usually
  - a) 4 to 8 hours

b) 16 to 24 hoursd) 24 to 36 hours

c) 8 to 16 hours

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- 10) In a trickling filter
  - a) Filtration process is used
  - c) Biological action is used
- b) Neither (a) nor (b)d) Both (a) and (b)
- 11) For evaporation and measurement of settable solids, the apparatus used, is
  - a) A jar

c) A breaker

- b) A test tube
- d) An Imhoff cone
- 12) The grit chambers of sewage treatment plants, are generally cleaned after
  - a) 2 days b) 12 days
  - c) 7 days d) 14 days
- 13)Pick up the correct statement from the following:
  - a) Indore method of composting involves decomposition under aerobic conditions
  - b) Bangalore method of composting involves decomposing under anaerobic conditions
  - c) Fully stabilized refuse by the Bangalore method of compositing is a powdery mass called humus
  - d) All of these
- 14) Kjeldahl nitrogen is a mixture of
  - a) Ammonia and nitrogen
  - b) Organic nitrogen and ammonia
  - c) Nitrogen and organic nitrogen
  - d) All the above

Q.5	digester with neat labeled diagram. Write a short notes on following:	14
Q.4	Explain the process and design aspect of Rotating biological Reactor (RBC)	14
Q.3	Explain the various method of Filtration. Add a note on Reverse Osmosis?	14
Q.2	2 Briefly explain the various method of population forecasting – demographic, arithmetical Progression and geometrical progression.	

- a) Bar Screening
  - **b)** Alkaline Stabilization of Sludge

Q.6	Write in with suitable illustration of the following:	14

- a) Principles, applications and designing aspects of sedimentation.
- **b)** Principles, applications and designing aspects of Activated Sludge Process.

### Q.7 Write an account on the following

- a) Explain the various methods water and waste water disinfection.
- b) Principles, applications and designing aspects of Clarifier.

Set

# Seat No.

### M.Sc. (Semester - II) (New) (CBCS) Examination Oct/Nov-2017 **Environmental Science REMOTE SENSING AND GIS IN ENVIRONMENTAL SCIENCE**

Day & Date: Wednesday, 22-11-2017 Time: 10.30 AM to 01.00 PM

Instructions: 1) Answer any Five Question.

- 2) All Questions carry equal marks.
- 3) Question No. 1 is Compulsory.
- 4) Attempt any two from Q.No.2, 3 and 4.
- 5) Attempt any two from Q.No.5, 6 and 7.

### Q.1 Select the answer among the following

- 1) Which one of the following statement is correct?
  - a) Snow albedo falls at all wave length with increase of grain size
  - b) The effect of grain size on reflection is maximum in the near IR region
  - c) The effect of grain size on reflection is low in the visible region of the spectrum
  - d) All of these
- 2) Electromagnetic radiation
  - a) Produces a time varying magnetic field and vice versa
  - b) Once generated, remains self propagating
  - c) Is capable to travel across space
  - d) All of these
- 3) The instruments which provide electromagnetic radiation of specified wave length or a band of wave lengths to illuminate the earth surface are called.
  - a) Sensors

c) Active Sensors

- b) Passive Sensors d) None of these
- 4) Which one of the following helps to identify the objects on the earth surface?
  - a) Atmospheric Window b) Signature
  - c) Radiometric error d) None of these
- 5) The part of radiation due to scattered/diffused entering the field of view of a remote sensor.
  - a) Reduces the contrast of the image and also its sharpness
  - b) Increases the contrast of image but reduces the sharpness
  - c) Increases both the contrast and sharpness
  - d) Reduces the contrast but increases the sharpness
- 6) The arrangement of terrain features which provides attributes: the shape, size and texture of objects is called.
  - a) Spatial variation

c) None of these

- b) Spectral variation
- d) Temporal variation

Max. Marks: 70

14

14

- 7) The reflectance from a surface is called secular reflection if is follows. b) Plankton's law
  - a) Snell's law
  - c) Lambert's cosine law
- 8) For interpretation of satellite data used for monitoring dynamic changes that occur on the earth surface the most suitable orbit for the satellite is.
  - a) Near polar orbit
  - a) Circular orbit
- 9) GIS deals with which kind of data
  - a) Numeric data
  - c) Spatial data

- d) Complex data
- 10) Which of the following is related to GIS
  - a) Euclidean space
  - c) Ramanujan space
- 11) Which of following belong to the eight spatial relationships?
  - a) Disjoint, meets, equals
  - c) Inside, covered by
- 12) Which of the following relationship is correct
  - a) Point (0-simplex)
  - c) Line segment (1-simplex)

c) Temporal data model

- 13) The 'boundary model' is sometimes also called a) Topological data model
  - b) Topological discrete model
    - d) Temporal discrete model

# 14) What is metadata?

- a) It is 'data about data' b) It is 'Oceanic' data
  - c) It is 'metrological' data d) It is 'Contour' data
- Q.2 Define resolution. What are its types? Throw light on its importance in remote 14 sensing.
- Q.3 Describe various types of Sensors and platforms and discuss their salient 14 features.
- Explain the difference between raster and vector data structure. Mention their **Q.4** 14 merits and limitations also.
- Q.5 Write a short notes on the following:
  - a) Advantages of Topology
  - b) Concept of Arc, Node and Vertices
- Q.6 Write a brief with suitable illustration on the following: 14 a) Explain the Historical Development of Remote sensing Technique in India. b) Elaborate the elements of Image interpretation.
- Q.7 Write an account on the following a) Spatial data query
  - b) Interval and Ratio data

b) None of these

b) Sun-synchronous orbit

b) Binary data

d) All of these

- - b) Pythagorean space
  - d) None of these
  - b) Contains, covers, Overlaps
  - d) All of these
  - b) Triangle (2-simplex)
  - d) All of these

M.Sc. (Semester - III) (New) (CBCS) Examination Oct/Nov-2017 Environmental Science ENVIRONMENTAL POLLUTION				
	& Date: Thursday, 16-11-2017 : 02.30 PM to 05.00 PM	Max. Marks: 70		
Instru	uctions: 1) Answer any Five Question 2) All Questions carry equal 3) Question No. 1 is Comput 4) Attempt any two questions 5) Attempt any two questions	marks. sory. s from Q.No.2, 3 and 4.		
Q.1	<ul> <li>Select the answer among the follo</li> <li>1) Generally, photochemical smog i</li> <li>a) Noise pollution</li> <li>c) Water pollution</li> </ul>	s related to		
	<ul><li>2) Ozone layer in Stratosphere is af</li><li>a) Low rainfall</li><li>c) Excess CO<sub>2</sub></li></ul>			
	3) The noise created at the launchir	ng of space rocket measured around is		
	a) 120 db c) 150 db	b) 180 db d) 240 db		
	<ul><li>4) The Carbon monoxide mainly contain a) Motor Vehicle</li><li>c) Industrial processes</li></ul>	<ul> <li>b) Stationery fuel combustion</li> </ul>		
	5) In case of aquatic ecosystem the	higher biomagnifications would be in		
	a) Fishes c) Zooplanktons	b) Birds d) Phytoplankton		
	<ul> <li>6) The polluted water is defined by</li> <li>a) Decreased turbidity</li> <li>b) Increased Photosynthesis</li> <li>c) Increased turbidity and de-oxy</li> <li>d) Increased oxygenation</li> </ul>			
	<ul> <li>7) DDT is banned due to</li> <li>a) Long persistence in the Environal b) Highly toxic to human</li> <li>c) None of the above</li> <li>d) Used against mosquito killing</li> </ul>			
	8) As per the WHO standards perm	issible limit of Iron (Fe) in drinking water is		
	a) 1 mg/l a) 1.5 mg/l	b) 1.5 mg/l b) 2.5 mg/l		

Set P

# Seat No.

- 9) Which soil has the highest water holding capacity?
  - a) Sandy Soil
  - b) Clayey Soil
  - c) Loamy Soil
  - d) Mixture of Sands and Loam

The minimum allowable concentration of TDS in drinking water is \_\_\_\_\_.

- b) 500 ppm a) 600 ppm
- c) 250 ppm d) 1000 ppm

Partially biodegradable plastic contains \_\_\_\_\_

- b) Corn starch and Plastics a) Polyethylene and rubber
- c) Cellulose and plastics d) Polystyrene with saw dust
- 12) Which of the following treatments are used in Composting and Iagooning?
  - a) Filtration b) Sewage disposal
  - c) Sedimentation d) Sludge digestion

### 13) Find out the group of plants which is most resistant to ionizing radiations.

- a) Coniferous forest b) Lichens and Mosses
- c) Grasslands d) Mixed forest

14) The sustainable way to the disposal of biomedical waste is\_\_\_\_\_

- a) Incineration b) Land filling c) Autoclaving d) Both (b) and (c)
- What is Air pollution? Elaborate the sources and effects in brief. 14 Q.2 Define Water pollution; explain the Water pollution monitoring procedures in 14 detail.
- **Q.4** Write in detail account on Types of soil pollution and discuss few remedial 14 techniques.
- Q.5 Write a short notes on following: 14 a) Noise Exposure. **b)** Drinking water quality standards. Write in with suitable illustration of the following: 14
- Q.6 a) Soil reclamation. b) Biomedical waste toxicity.

### Write an account on the following: Q.7

Q.3

a) Radiation exposure and health hazards.

b) Oil spill: Effects and control measures.

Set

Max. Marks: 70

Seat	
No.	

# M.Sc. (Semester - III) (New) (CBCS) Examination Oct/Nov-2017 **Environmental Science** ENVIRONMENTAL BIOTECHNOLOGY

Day & Date: Saturday, 18-11-2017 Time: 02.30 PM to 05.00 PM

Instructions: 1) Answer any Five Question.

- 2) All Questions carry equal marks.
- 3) Question No. 1 is Compulsory.
- 4) Attempt any two questions from Q.No.2,3,and 4.
- 5) Attempt any two short note questions from Q.No.5,6 and 7.
- 6) Draw neat and labeled diagrams wherever necessary.

### Q.1 Fill in the blanks.

- 1) Methamoglobinimia is caused by the drinking water contamination with
  - a) Phosphate
  - c) Cadmium
- 2) In relation to the bacterium's optimal growth requirements, which group would you except to be MOST likely involved in decomposition of compost piles?
  - a) Acidophilic

b) Psychrophilic d) Thermophilic

b) Mercury

d) Nitrate

- c) Halophilic 3) The concept of putting microbes to help clean up the environment is
  - called a) Pasterurisation

- b) Bioremediation d) Biolistics
- c) Fermentation
- 4) Which of the following does not employ bacteria?
  - a) Oxidation pond c) Contact aerators
- b) Trickling filter
- d) Rotating Biological Contractors
- 5) Activated Sludge Treatment Process involves microbes in the growth phase of
  - a) Stationary phase b) Log phase
  - c) Lag phase d) Death phase
- 6) The filtering medium of trickling filters is located with microbial flora, known as b) Geological film
  - a) Zoological film
  - c) Zoological film d) None of these
- 7) Which of the following is generally not referred to the sewerage system?
  - a) Sanitary sewers
- b) Storm sewers
- c) Combined sewers
- d) Solid sewers

			4V I
	<ul> <li>8) A dense bacterial population caugh a surface describes</li> <li>a) Coagulation</li> <li>a) A bio film</li> </ul>	b) A bio disc	
	<ul><li>a) A bio film</li><li>9) Drinking water testing relies on the organisms known as</li></ul>	<ul> <li>b) The membrane filter technique detection of certain indicator</li> </ul>	
	a) Acid-fast bacteria c) Coliforms	<ul><li>b) Bacteroids</li><li>d) Dinoflagellates</li></ul>	
	10) The process of extracting metals fr	om oil bearing rocks is called	
	a) Bioextraction c) Biofilteration	<ul><li>b) Microbial extraction</li><li>d) Bioleaching</li></ul>	
	<ul><li>11) Chlorella species is widely used in</li><li>a) Organic waste</li><li>c) Pesticides</li></ul>		
	<ul> <li>12) is an example of fun</li> <li>a) Trichoderma sp.</li> <li>c) E. coil</li> </ul>	gal biopesticides. b) B. Thuringiensis d) None of the above	
	<ul><li>13) The removal of Nitrate from waste</li><li>a) Biomagnifications</li><li>c) Eutrophication</li></ul>		
	<ul> <li>14) Transgenic means</li> <li>a) Of the third generation</li> <li>b) New variety</li> <li>c) Incorporation of new DNA into g</li> <li>d) None of the above</li> </ul>	Jerm line	
Q.2	Give an account on genetically modifie environment.	d with their applications in	14
Q.3	What is Biomethylation? How microbes soils? Explain.	s can be useful in treating polluted	14
Q.4	Explain the different microbial methods	s used for wastewater treatment.	14
Q.5	<ul><li>Write a short notes on following:</li><li>a) Degradation of xenobiotic compour</li><li>b) Biomonitoring of water.</li></ul>	ıds.	14
Q.6	<ul><li>Explain in brief.</li><li>a) Carbon sequestration.</li><li>b) Microbial growth.</li></ul>		14
Q.7	Write an account on. a) Phytoremediation		14

b) Bioleaching

Seat	
No.	

# M.Sc. (Semester - III) (New) (CBCS) Examination Oct/Nov-2017 **Environmental Science ENVIRONMENTAL STATISTICS**

Day & Date: Tuesday, 21-11-2017 Time: 02.30 PM to 05.00 PM

Instructions: 1) Answer any Five Question. 2) All Questions carry equal marks. 3) Question No. 1 is Compulsory.

- 4) Attempt any two questions from Q.No.2, 3 and 4.
- 5) Attempt any two questions from Q.No.5, 6 and 7.
- 6) Draw neat and labeled diagrams wherever necessary.
- 7) Scientific calculator is allowed for calculations.

### Q.1 Select the answer among the following

- 1) In a frequency distribution, the mid-value of a class is 60.5 and the width of the class is 10. The lower limit of the class is
  - a) 55.5 b) 65.5
  - c) 62.5 d) 56.5
- 2) The median of the data: 19,25,59,48,35,31,30, 32, 51. If 25 is replaced by 52, what will be the new median.
  - a) 35 b) 53
  - c) 43 d) 45
- The degree of peakedness is called\_
  - a) Kurtosis b) Skewness
  - c) Symmetry d) Dispersion
- 4) By which other name is the chi-square goodness of fit test known?
  - a) Two sample chi-square b) Wilcoxon
  - c) One sample chi-square d) Directional chi-square
- 5) What is the expected number of heads appearing when a fair coin is tossed three times?
  - a) 2.1 b) 1.5 c) 3.2 d) 4.1
- 6) Any hypothesis which is tested for the purpose of rejection under the
  - assumption that it is true is called:
  - a) Null hypothesis b) Alternative hypothesis c) Statistical hypothesis d) Composite hypothesis
- 7) Which method of analysis does not classify variables as dependent or independent?
  - a) Regression analysis
  - c) Analysis of variance
- b) Discriminant analysis
- d) Cluster analysis

Max. Marks: 70

Set

- 8) A coefficient of correlation is computed to be -0.95 means that .
  - a) The relationship between two variables is weak.
  - b) The relationship between two variables is strong and positive
  - c) The relationship between two variables is strong and but negative
  - d) Correlation coefficient cannot have this value
- 9) In case of open-ended classes, an appropriate measure of dispersion to be used is \_\_\_\_\_.
  - a) Range c) Mean Deviation
- b) Quartile Deviation
- d) Standard Deviation

10) The correlation between two variables is called as

- a) Multiple correlation b) Partial correlation
- c) Simple correlation d) Total correlation
- Student's t-statistic is applicable in case of : b) Unequal number of samples
  - a) Equal number of samples
- d) All of the above c) Small samples
- The specific statistical methods that can be used to summarize or to describe a collection of data is called:
  - a) Descriptive statistics
  - c) Analytical statistics
- 13) The correlation between two variables is called as
  - a) Multiple correlation c) Simple correlation
- 14) The most important part of \_\_\_\_\_ is selecting the variables on which clustering is based.
  - a) Interpreting and profiling clusters
  - b) Selecting a clustering procedure
  - c) Assessing the validity of clustering
  - d) Formulating the clustering problem

### Q.2 Answer the following.

- a) Differentiable between median and mode? Discuss their merits and demerits.
- b) Calculate the geometric mean of the following data.

Number of Seeds per plant	80-90	90-100	100-110	110-120	120-130	130-140
Number of plants	12	22	37	27	26	10

### Q.3 Answer the following

a) Calculate mean, variance and standard deviation from the following data recorded on the number of Clusters in variety of Black gram. Number of Clusters: 8, 10, 10, 10, 12, 13, 15, 15, 17, 20.

b) What are characteristics of Chi-Square test? The ratio of the male and the female births is expected to be 1:1. It was founded in one village that the male children born were 52 and the females were 48. Calculate the  $x^2$  and interpret your test.

### Q.4 Answer the following.

- a) What is correlation? Discuss various methods of studying correlation.
- b) Discuss the concept of probability with addition and multiplication rule.

14

14

- b) Inferential statistics
- d) All of the above

- b) Partial correlation
- d) Total correlation

Q.5	<ul><li>Write a short notes on following:</li><li>a) Methods of Sampling.</li><li>b) Cumulative Frequency Curve.</li></ul>	14
Q.6	<ul><li>Write in brief on the following.</li><li>a) What is cluster analysis? Add a note on different types of clusters.</li><li>b) Discuss type I and type II error in testing of hypothesis?</li></ul>	14
Q.7	<ul><li>Write an account on the following</li><li>a) What is principle component analysis? Discuss its importance in environmental studies.</li><li>b) What are basic principles of experimental design?</li></ul>	14

# Seat M.Sc. (Semester - III) (Old) (CBCS) Examination Oct/Nov-2017

# **Environmental Science ENVIRONMENTAL POLLUTION**

Day & Date: Thursday, 16-11-2017 Time: 02.30 PM to 05.00 PM

No.

Instructions: 1) Answer any Five Question.

- 2) All Questions carry equal marks.
- 3) Question No. 1 is Compulsory.
- 4) Attempt any two from Q.No.2, 3 and 4.
- 5) Attempt any two from Q.No.5, 6 and 7.
- 6) Draw neat labeled diagrams wherever necessary.

### Q.1 Select the answer among the following.

- 1) Decreasing Fish population from water bodies indicates excess of Pollutant in water.
  - a) Zn
  - c) Fluoride d) P
- 2) Most important soil pollutant is:
  - a) Plastic b) Detergents
  - c) Both A & B d) Glass Junk
- 3) Soil are impoverished over extensive cultivated areas mainly because:
  - a) Droughts and floods affect cultivation
  - b) Cultivation has been practiced for more than 4000 years
  - c) Fertilizers are not extensively used
  - d) Soil erosion has removed top soil
- not cause any atmospheric pollution? 4)
  - a) Hydrogen b) Carbon dioxide
  - c) Sulphur dioxide d) Any of these
- 5) \_\_\_\_\_ is ozone destroying constituent
  - a) Chlorofluorocarbons b)  $CH_4$
  - c)  $SO_2$ d)  $NO_2$
- 6) UV radiation is necessary for
  - a) Promoting the synthesis of vitamin D in human
  - b) Promoting CFC<sub>s</sub> production
  - c) Both A and B
  - d) None of the above
- 7) The capacity of the organic and biological matter in a sample of natural water to consume oxygen and this process catalyzed by bacteria is called
  - a) Chemical oxygen demand (COD)
  - b) Biological oxygen demand (BOD)
  - c) Bivariate oxygen demand (BOD)
  - d) Complete oxygen demand (COD)

Ρ Set

Max. Marks: 70

14

b) Hg



- 8) Water cycle is combination of
  - a) Ground water atmospheric cycles
  - b) Surface water and atmospheric cycles
  - c) Global and local cycles
  - d) Oceanic and fresh water cycles
- 9) Water cycle involves \_\_\_\_\_.
  - a) Forest trees
  - b) Microorganism
  - c) Algae
  - d) Evaporation of water from water bodies
- 10) Weathering lead to formation of
  - a) Sedimentary soil b) Immature soil
  - c) Secondary Soil d) All of these
- 11) The major organic compound of soil is
  - a) Humus b) Sludge
  - c) Subsoil d) Matrix
- 12) "Earth provides enough to satisfy every man's need, but not every man's greed." was said bya) Mahatma Gandhib) E. P. Odum
  - c) Rachel Carson
- 13) SO<sub>2</sub>, CO are -

c) Both of these

- a) Primary pollutant
- b) Secondary pollutant

d) Sundarlal Bahuguna

- d) None of these
- 14) The major source of harmful radiations in the house \_\_\_\_\_.
  - a) Tube lightb) Colour TVc) Ovend) Heater
- Q.2Write brief account of effects of Noise pollution and control of Noise at source?14
- Q.3What is thermal pollution? Explain its effects on Environment?14Q.4Discuss mining and soil pollution?14Q.5Discuss in short:14
  - a) Natural and manmade pollution of radiation pollution.b) Photochemical smog.

# Q.6Write short note on:<br/>a) Measurement of noise.<br/>b) Consequences of water pollution.14Q.7Explain in brief:14

- a) Types of radiation pollution.
  - **b**) Sources of solid waste.

Seat	
No.	

# M.Sc. (Semester - III) (Old) (CBCS) Examination Oct/Nov-2017 **Environmental Science** ENVIRONMENTAL BIOTECHNOLOGY

Day & Date: Saturday, 18-11-2017 Time: 02.30 PM to 05.00 PM

Instructions: 1) Answer any Five Quest	ion.
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- 2) All Questions carry equal marks.
- 3) Question No. 1 is Compulsory.
- 4) Attempt any two from Q.No.2, 3 and 4.
- 5) Attempt any two from Q.No.5, 6 and 7.
- 6) Draw neat and labeled diagrams wherever necessary.

### Q.1 Select the answer among the following

- 1) "Biomagnification" is \_
  - a) Increase in the biotic population of an area
  - b) Increase in the size of the individuals of a species due to natural evolution
  - c) Process where by harmful chemicals enter and get concentrated in a food chain
  - d) None of the above
- 2) Lichen is an example of \_\_\_\_\_.
  - a) Amensalism
  - c) Symbiosis

### 3) Immobilization technology can be used

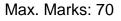
- a) Treatment of effluents c) Control of bacteria
- b) Control of pests
- d) Control of diseases
- 4) Nif gene is useful in \_\_\_\_\_.

a) Photosynthesis

- b) Reproduction
- d) Nitrogen fixation c) Circulation

### 5) The viruses which infect bacteria are

- a) Cyanophages b) Mycophages c) Bacteriophages d) None of the above
- 6) The widely used staining schedule for colouring bacterial cells is \_\_\_\_\_.
  - a) Gram staining b) Eosin staining
  - d) None of the above c) Methylene blue staining
- 7) Metal recovery by microbes involves
  - a) Bioremediation b) Biotransformation
  - c) Bioleaching d) Fermentation
- 8) A compound that is foreign in nature to biological system is \_\_\_\_\_
  - a) Halogenated compound a) Xenobiotic compound
- b) Aromatic compound b) None of the above



- b) Commensalism d) Parasitism

9) Biologically catalyzed reduction in the complexity of chemical compound is

	·		
	<ul><li>a) Biosynthesis</li><li>c) Photosynthesis</li></ul>	<ul><li>b) Bio-degradation</li><li>d) Respiration</li></ul>	
	<ul><li>10)In vermin-composting are use</li><li>a) Algae</li><li>c) Bacteria</li></ul>	ed to produce compost b) Fungi d) Worms	
	, ,	its in DNA molecule are b) Amylases d) Endonucleases	
	<ul><li>12)DNA copy of an RNA molecule is pro-</li><li>a) Ligase</li><li>c) Endonuclease</li></ul>	duced by enzyme b) Reverse transcriptase d) Lipase	
		re b) Secondary cultures d) None of the above	
	14)Most commonly used enzyme for enz	ymatic disaggregation of cell cultures is	
		b) Endonuclease d) Reverse transcriptase	
Q.2	Give a short account of Genetically modi applications.	ied organisms, highlighting their	14
Q.3	Explain the significance of Biopesticides. biopesticides useful in agricultural field.	Also, give an example of microbial	14
Q.4	Explain in detail about use of phytoremed decontamination.	liation technology for soil	14
Q.5	<ul><li>Write note on:</li><li>a) Bioremediation</li><li>b) Carbon sequestration</li></ul>		14
Q.6	<ul><li>Explain in brief:</li><li>a) Scope of environmental biotechnolog</li><li>b) Degradation of pesticides</li></ul>	Ý	14
Q.7	<ul><li>Write an account on:</li><li>a) Biological filtration process in air envir</li><li>b) Role of microorganisms in wastewate</li></ul>		14

No.						Set F
	М.	Sc. (Semester -	<i>,</i> , , , , , , , , , , , , , , , , , ,		) Examination Oct/Nov	/-2017
F	۶NV	/IRONMENTAI	Environment POLICY, ACTS		Science AWS AND ENVIRONN	IFNTAI
-			MANAGEMEI	-		
		ate: Friday, 17-11-2 30 PM to 05.00 PN			Ν	lax. Marks: 70
Instru	ıctio	<ol> <li>Question N</li> <li>Attempt an</li> </ol>	y Five Question. Ins carry equal mail No. 1 is Compulsor Iny two from Q.No.2 Iny two from Q.No.5	y. , 3,	and 4.	
Q.1		elect the answer a UNCED Conferer a) Stockholm c) London	•	b)	 Geneva Washington	14
	2)	The world as Wor a) December 1 c) November 14	ld Environmental c	b)	is celebrated on: June 2 August 15	
	3)	The Stockholm Co a) 1973 c) 1972	onference was hele	b)	 1980 1975	
	4)	The provisions of a) Article 5-A c) Article 27-B (h		b)	tion in the constitution were Article 21-B Article 48-A and Article1-A	
	5)	Red data book is a) IUCN c) BNHS	published by		WWF WHO	
	6)	<ul><li>b) United Nation</li><li>c) United Nation</li></ul>	Conference on En Convention on En Conference on En	virc erg	onment and Development onment and Development y and Development onment and Development	
	7)	The first of the ma India was: a) Water Act c) Environment A		b)	etection act to be promulgate Air Act Noise Pollution Rule	ed in
	8)	<ul><li>a) The water (pre</li><li>b) The forest (Co</li></ul>	evention and contro onservation) Act, 19 Insurance Act, 19	olo 980	al people is included f pollution) Act, 1974	_law.

# Seat No.

Set P

- 9) GIS stand for \_
  - a) General Information Service
  - b) Geographical information system
  - c) Geographical intensive system
  - d) Geographical intensive scheme

### 10)The Wildlife (Protection) Act was enacted in the year:

- a) 1986 b) 1974 c) 1994 d) 1972
- 11)The functions of Central Board are given under:
  - a) Section 16 b) Section 19
  - c) Section 25 d) Section 24
- 12)NGOs stands for:
  - a) Non-Governmental Organization
  - b) Nine-Governmental Organization
  - c) Non-Gained Organization
  - d) National-Grade Organization

13)Literate women can help in:

- a) Reducing infant mortality rate
- b) Reducing population growth
- c) Promoting female children education
- d) All of the above

### 14)Ministry of Environment and forest was established in \_\_\_\_\_. a) 1980 b) 1986

c) 1972 d) 1988

# **Q.2** Water (prevention and control of Pollution) Act, 1974.

- Q.3 Name some of the environmental Conferences? Explain the principles of 14 Stockholm conference.
- Q.4 Write in brief the international and national environmental policies of India. 14

# Q.5Write short notes on:<br/>a) Montreal Protocol<br/>b) Define EMS and it's explain its scope14Q.6Give a brief account of:<br/>a) Environmental<br/>b) IUCN14

# Q.7 Write short notes on:a) The factory act, 1948

**b)** Biodiversity status and legality in India

14

	ENVIRONMENTAL TOXICOLOGY AND SAFETY					
-	Date: Monday, 20-11-2017 2.30 PM to 05.00 PM	Max. Marks: 70				
Instruc	<ul> <li>tions: 1) Answer any Five Question.</li> <li>2) All Questions carry equal matrix</li> <li>3) Question No. 1 is Compulso</li> <li>4) Attempt any two from Q.No.</li> <li>5) Attempt any two from Q.No.</li> </ul>	ory. 2, 3, and 4.				
	Select the answer among the follow Natural source of Polycyclic Aroma a) Root exudates c) Aerobic bacteria					
	<ul> <li>2) The band labeled as UV-c, which is</li> <li>a) 0.29 - 0.32 μm</li> <li>c) 0.17 - 0.2 μm</li> </ul>	s lethal to microorganisms is b) $0.2 - 0.29 \ \mu m$ d) $0.07 - 0.21 \ \mu m$				
	<ul> <li>Which of the following dose not inc assessment of effect of toxicants?</li> <li>a) Bioaccumulation</li> <li>c) Bioassay</li> </ul>	elude in ecological monitoring in the b) Ecological population dynamics d) Habitat protection				
	<ul> <li>4) QSAR stand for in toxicolo</li> <li>a) Quality Standardization and ass</li> <li>b) Quantitative structure-activity res</li> <li>c) Quality for safe and reliable ass</li> <li>d) None of the above</li> </ul>	sured results elationship				
Į	<ul> <li>5) The biodegradability of xenobiotics</li> <li>a) Rate of CO<sub>2</sub> formation</li> <li>c) Ratio of BOD and COD</li> </ul>	b) Rate of O <sub>2</sub> Consumption				
(	<ul> <li>b) is a phytotoxins.</li> <li>a) Ochratoxin A</li> <li>c) Citrinin</li> </ul>	b) Ricin d) All the above				
-	<ul> <li>7) is a strong characterized ratio</li> <li>a) Sr<sup>90</sup></li> <li>c) I <sup>131</sup></li> </ul>	adioactive waste. b) DDT d) All of these				
8	<ul> <li>A hazardous waste is characterize</li> <li>a) Ignitibility</li> <li>a) Reactivity</li> </ul>	d by b) Toxicity b) All of these				
ę	<ol> <li>Therapeutic index is determined by</li> </ol>	/ using the formula				

M.Sc. (Semester - IV) (New) (CBCS) Examination Oct/Nov-2017 **Environmental Science** 

# Seat No.

SLR-MI-414

# 5)

- 8)
- 9)
  - a) EC 50 / LD 50
  - c) LDi / ED 99

- b) LD 50 / ED 50
- d) None of these

Ρ Set

	<ul> <li>10)Which pollutant among the following systems?</li> <li>a) SO<sub>2</sub></li> <li>c) CO</li> </ul>	<ul><li>is the most destructive to nervous</li><li>b) Lead</li><li>d) None of these</li></ul>
	<ul> <li>11)The branch of toxicology which exar immune system is</li> <li>a) Immune toxicology</li> <li>c) Ecotoxicology</li> </ul>	,
	<ul><li>12) The progressive increase in concent when it passes through the food chat a) Bio magnification</li><li>c) Hyper accumulation</li></ul>	•
	<ul><li>13)The substances which affect foetal of a) Carcinogens</li><li>c) Mutagens</li></ul>	levelopment are called as: b) Teratogens d) Sarcinogens
	<ul> <li>14)Formation of car boxy hemoglobin is</li> <li>a) Lead with hemoglobin</li> <li>b) Arsenic with hemoglobin</li> <li>c) Nitrogen with hemoglobin</li> <li>d) Carbon monoxide with hemoglobin</li> </ul>	
2	Define toxicant. Give the list of toxic che	micals in the environment. Indicate

Q.2	Define toxicant. Give the list of toxic chemicals in the environment. Indicate their sources and toxic actions?	14
0.2	Discuss the taxic responses of the respiratory system with suitable	11

Q.3	Discuss the toxic responses of the respiratory system with suitable example?	14
Q.4	What are personal protective equipments? Give its types and advantages?	14

- Q.5 Write a short note on following:

  a) Bioassay
  b) Animal toxins and Phytotoxins

  Q.6 Write in brief on the following:

  a) Effects of toxicants on ecosystems.
  b) Detoxification of toxicant.

  Q.7 Write an account on the following:

  14
  - a) TLC
  - b) Need of occupational safety

		ate: Wednesday, 22-11-2017 .30 PM to 05.00 PM			Max. Marl		
Instr	ucti	<ul> <li>ions: 1) Answer any Five Question.</li> <li>2) All Questions carry equal ma</li> <li>3) Question No. 1 is Compulsor</li> <li>4) Attempt any two from Q.No.2</li> <li>5) Attempt any two from Q.No.5</li> <li>6) Draw neat and labeled diagram</li> </ul>	y. , 3 , 6	and 4. and 7.			
Q.1	Select the answer among the following						
	1)	Research is based upon - a) Scientific method c) Experiments		Scientist General Person			
	2)	Research should be - a) Objective c) Valid		Reliable All the above			
	3)	A conjectural statement of the relationship between the two more variables is defined as -					
		a) Hypothesis c) Correlation	-	Regression Research design			
	4)	<ul><li>The survey research are classified us</li><li>a) Fundamental researches</li><li>c) Both of the above</li></ul>	b)	r the - Experimental researches None of the above			
	5)	<ul><li>Which of the following is not an esse</li><li>a) Research Methodology</li><li>c) Reference</li></ul>	b)	l element of report writing? Conclusion None of these			
	6)	Testing hypothesis is a a) Inferential statistics c) Descriptive statistics		Data preparation Data analysis			

- 7) The quality of a problem is
  - a) Clarity c) Worth for solution
- 8) Which method can be applicable for collecting qualitative data?
  - a) Artifacts (Visual)
  - b) People

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- c) Media products (Textual, Visual and sensory)
- d) All of these
- 9) Hypothesis is
  - a) A thoughtful statementc) A forwarding statement
- b) A temporary solution

b) Hypothesis oriented

d) All the above

d) All the above

- M.Sc. (Semester IV) (New) (CBCS) Examination Oct/Nov-2017

**Environmental Science RESEARCH METHODOLOGY** 

Max. Marks: 70

# **SLR-MI-415**

Set

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- 10) In group interview there are
  - a) One interviewer and one interviewee
  - b) More than one interviewer and one interviewee
  - c) One interviewer and more than one interviewee
  - d) More than one interviewer and more than one interviewee
- 11) The process of writing a research paper is
  - a) Scientific b) Original
  - c) Unscientific d) Plagiarism
- 12) Before preparing your research report you consult with
  - b) Your Predecessor's work
  - c) Your Colleague d) All the above
- 13) The method that consists of data through observation and experimentation formulation and testing of hypothesis is called \_\_\_\_\_.
  - a) Empirical method

a) Your Guide

- b) Scientific method
- c) Scientific Information
- d) Practical knowledge
- 14) Information acquired by experience or experimentation is called as \_\_\_\_\_.
  - a) Empirical b) Scientific
  - c) Facts d) Scientific evidences
- Q.2 What do you mean by research? Explain its significance in modern times? 14
- Q.3 What is a hypothesis? What characteristics it must possess in order to be a good hypothesis?
  Q.4 What do you understand by research report? Describe in detail, the layout of a research report, covering all relevant points?
  Q.5 Write a short notes on following:

  a) Science and Logic
  b) Empirical Research
- Q.6 Write in brief on the following:
  - a) Literature review
  - **b)** Sampling design and fundamentals
- Q.7 Write an account on the following
  - a) Primary data collection methods.
  - **b)** Search engines for research.

14

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# M.Sc. (Semester - IV) (New) (CBCS) Examination Oct/Nov-2017 Environmental Science WATERSHED MANAGEMENT

Day & Date: Friday, 24-11-2017 Time: 02.30 PM to 05.00 PM

**Instructions:** 1) Answer any Five Question.

- 2) All Questions carry equal marks.
- 3) Question No. 1 is Compulsory.
- 4) Attempt any two from Q.No.2, 3 and 4.
- 5) Attempt any two from Q.No.5, 6 and 7.
- 6) Draw Neat Labeled Diagrams wherever necessary.

# Q.1 Select the answer among the following

- The vulnerability of soils to water erosion depends on \_\_\_\_\_.
  - a) Rainfall Intensity and Nature of Soil
  - b) Rainfall Type and Temperature
  - c) Water Availability and Nature of Soil
  - d) Seasons and Nature of Soil
- 2) Land Capability Classification is a system of grouping soils primarily on the basis of their capability to produce common \_\_\_\_\_.
  - a) Cash Crop and Pasture plants
  - b) Cultivated Crop and Pasture plants
  - c) Drought Resistant Crop and Pasture plants
  - d) High Yielding Crop and Pasture plants
- The Rational Method is used to calculate \_\_\_\_\_.
  - a) Peak Surface Rainfall
  - b) Peak Surface Runoff Rate
  - c) Peak Surface Seepage Rate
  - d) Peak Surface Rainfall Duration
- 4) The standard way of measuring rainfall or snowfall is the \_\_\_\_\_.
  - a) Rain Meter c) Rain Gauge
- b) Rain Geometerd) Rain Gap
- 5) The area from which rainfall flows into a river, lake, or reservoir is called as
  - a) Water shadow region b) Water acceptor
  - c) Catchment d) Catchment of fertility
- 6) Engineering practices followed for soil and water conservation are
  - a) Terracing and Mulching
  - b) Terracing and Strip Cropping
  - c) Terracing and Banding
  - d) Terracing and Vetiver Grass Planning

Max. Marks: 70

Set

- 7) Which among the following is not the outcome as consequences of a degraded watershed?
  - a) Erosion of soil and washed out of crops
  - b) Decrease in productivity of agriculture and pollution of streams
  - c) Siltation of river beds and flash floods
  - d) Frequent water logging and high evaporation rate by plants
- 8) Steam order is a technique to:
  - a) Stop stream disturbance by scientific techniques
  - b) Classification of streams based on their location in drainage network
  - c) Prevent flow from running downhill
  - d) Allow flow of water on orderly channelization
- 9) \_\_\_\_\_ is the area of land where of the water that falls in it and drains off it goes to a common outlet.
  - a) Watershed

b) River Mouth

- c) Water Channel
- d) Aquifer
- 10) Hydrograph means \_\_\_\_\_.
  - a) Rainfall is plotted over time in minutes or hours
  - b) Recharge is plotted over time in minutes or hours
  - c) Discharge (rate of flow) is plotted over time in minutes or hours
  - d) Quantity of water is plotted over time in minutes or hours
- 11) Cropping methods in watershed areas should be based on \_\_\_\_\_
  - a) Land permeability, percentage of cover and vegetation type
    - b) Soil salinity and type of vegetation
    - c) Soil fertility, high yielding varieties and demand
    - d) Land compactness, percentage of moisture and vegetation type
- 12) Hydrological type of burning may be due to \_\_\_\_\_.
  - a) Burning of dried parts
  - b) Prescribed burning of forests
  - c) Lightening, accidental and prescribed burning
  - d) Accidental burning of trees
- 13) \_\_\_\_\_ is an underground layer of water-bearing permeable rock, rock fractures or unconsolidated materials from which groundwater can be extracted.
  - a) Aquitard
- b) Aquiferd) Confined pool
- 14) Alluvial Fans means \_\_\_\_\_.

c) Aqua pool

- a) Stream flow in to a larger main valley and free to spread out
- b) Stream flow and merges with river
- c) Stream flow and meets with seawater
- d) Fan like structure of watershed area
- Q.2 Which are he factor that affect watershed operations? Also discuss the objectives of watershed management and role of public participation in it.
- Q.3 What are causes of soil erosion? Discuss in detail on medaling of erosion using 14 Universal Soil Loss Equation.
- Q.4 Explain in detail on rainfall pattern in India. Also elaborate on factors affecting 14 runoff.

Q.5	<ul> <li>Write a short notes on following:</li> <li>a) What are agronomic measures of soil and water conservation?</li> <li>b) Which are important considerations under watershed management plan?</li> </ul>	14
Q.6	<ul> <li>Answer the following in brief:</li> <li>a) Discuss general characteristics of watershed?</li> <li>b) What are various engineering measures fir soil and water conservation?</li> </ul>	14
Q.7	<ul><li>Write short notes on the following:</li><li>a) Gully Plugging</li><li>b) Rainfall Parameters</li></ul>	14