

Seat No.	
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M.Sc. (Environmental Science) (Sem I) (New) (CBCS) Examination, 2017
Fundamental Of Environment

Day & Date: Tuesday, 18-04-2017

Max Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B.:** 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

14

- 1) Environmental science is also referred to as an interdisciplinary field because _____
 - a) It shows the characteristics of environment
 - b) It is basic science
 - c) It includes the study of various resources in the world
 - d) It incorporates information and ideas from multiple disciplines

- 2) _____ is the process of evaluating how social, political, Economic and governing factors affect the natural environment when considering development.
 - a) Decision making
 - b) Sustainable development
 - c) Environmental planning
 - d) Environmental monitoring

- 3) In the earth atmosphere, the major percentage of ozone is present in _____.
 - a) Upper stratosphere
 - b) Lower troposphere
 - c) Upper mesosphere
 - d) Upper thermosphere

- 4) Earth's _____ includes the crust and the uppermost mantle, which constitute the hard and rigid outer layer of the Earth.
 - a) Atmosphere
 - b) mesosphere
 - c) lithosphere
 - d) ionosphere

- 5) In Earth's lithosphere _____ are responsible for the subdivision in two categories.
 - a) Chemical characteristics
 - b) Rock water interactions
 - c) Tectonic plates
 - d) Soil erosion

- 6) In the ionosphere the _____ is responsible for the formation of Auroras in a day time or at evening time.
 - a) Ionization of solar radiation
 - b) Ionization of UV lights
 - b) Ozone hole
 - d) Ionization of ozone molecules

- 7) Ozone depletion is caused by _____.
a) Nitrous oxides b) Chlorofluorocarbons
c) Carbon dioxide d) Methane
- 8) Consider following statement about the estuary
I) Estuary is place where the river fresh water meets with ocean Water
II) This area is highly productive
III) This area is highly unproductive
IV) All of the above
a) I only b) II only c) I and II d) III
- 9) 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) Organism are uniformly present in Biosphere
d) All of the above
- 10) Which of the following statement is true about the ecotone?
a) It is meeting place of two different eco systems
b) It is meeting place of two same eco system
c) Density of species is very low here
d) It is meeting place of river and sea
- 11) Human population growth curve is a _____.
a) S shaped curve b) Parabola curve
c) J shaped d) Zig-zag curve
- 12) The concept the 'population tends to increase geometrically, while food supply increases arithmetically', was put forward by
a) Adam Smith b) Charles Darwin
c) Thomas Malthus d) Stuart Mill
- 13) What is the most important factor for the success of animal Population?
a) natality b) unlimited food
c) adaptability d) interspecies activity
- 14) Which of the following interaction will not promote co-evolution?
a) commensalism b) mutualism
c) parasitism d) interspecific competition

Q.2 What is atmosphere? Explain its composition in detail? How CO₂ is Responsible for the increase in troposphere temperature near the earth?

14

- Q.3** What is biosphere? Explain various components of biosphere? Hydrological Cycle with various process and factors influencing hydrological cycle? **14**
- Q.4** What is Ecological Succession? Discuss the types of ecological succession? Explain the different stages of ecological succession and discuss its importance in plant biodiversity? **14**
- Q.5** **Write a short note on the following** **14**
A) Ecosystem Productivity
B) Soil erosion
- Q.6** **Write a brief with suitable illustration on the following** **14**
A) Energy flow in terrestrial ecosystem
B) Difference between biotic and abiotic factors in ecosystem.
- Q.7** **Write an account on the following** **14**
A) Structure and composition of Atmosphere
B) Concept of ecotone

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M.Sc. (Environmental Science) (Semester I) (New)
(CBCS) Examination, 2017
ENVIRONMENTAL CHEMISTRY

Day & Date: Thursday, 20-04-2017

Marks: 70

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** 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.

Q.1 Choose the correct answer:

14

- 1) Compound of which of the following element are generally present in colloidal state in natural waters
 - a) Fe
 - b) Si
 - c) AL
 - d) All
- 2) The alkalinity of natural waters is usually due to the presence of
 - a) HCO_3
 - b) CO_3^{2-}
 - c) OH
 - d) All
- 3) Which of the following is the source of carbon in aquatic environment (oceans)
 - a) Living organism
 - b) Sedimentary carbonate material
 - c) Dissolved organic matter
 - d) Dissolved inorganic matter
 - e) All
- 4) Inorganic tin may undergo alkylation in aquatic environment to form
 - a) Monomethyl tin
 - b) Dimethyl tin
 - c) Both
 - d) None
- 5) Humic material in water may be found
 - a) In free form
 - b) Complexes with metal ion
 - c) Complexed with organic species
 - d) All
- 6) Chlorine demand of water is equal to-
 - a) Applied chlorine
 - b) Residual chlorine
 - c) Sum of residual chlorine
 - d) Difference of applied and residual chlorine

- 7) Which of the chemical used for dechlorination-
a) Carbon oxide b) Bleaching Powder
c) Sulphur Oxide d) Chloramines
- 8) Standard BOD measures at ---
a) 20C b) 25 C c) 30C d) 35 C
- 9) Which of the following process Contributes to CO₂ into the atmosphere
a) Combustion b) Fermentation c) Putrefaction d) Fog e) All
- 10) Which of the following species results from photo insertion
a) O⁺² b) b⁺ c) NO⁺ d) All
- 11) Which of the following pollutants could be transported over long distances
a) PAHs b) PCBs c) DDT d) All
- 12) Pesticides have been found to affect
a) Central nervous system b) Respiratory system
c) Digestive System d) All
- 13) Nitric oxide is generated into the atmosphere by
a) Forest fires b) Industrial heating
c) Domestic heating d) Internal combustion engines e) All
- 14) Liquids in gas aerosol are
a) Clouds b) Fog c) Mist d) Smog e) All

- Q.2** What is integrated pest management? Add a note on Pheromones. **14**
- Q.3** What is photochemical smog. Add a note on its chemical reactions in atmosphere. **14**
- Q.4** Explain in brief second law of thermodynamics with suitable examples. **14**
- Q.5** **Write a short note on the following:** **14**
A) Lambert's – Beer Law
B) Nernst distribution law
- Q.6** **Write a brief with suitable illustration on the following:** **14**
A) Cation and anion exchange
B) Soil profile
- Q.7** **Write the significance and importance of-** **14**
A) Micronutrients in soil
B) Carbonic acid system

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M.SC. Environmental Science (Sem-I) (New) (CBCS) Examination, 2017
Introduction to Geo – Science

Day & Date: Tuesday, 25-04-2017

Marks: 70

Time: 10.30 AM to 01.00 PM

- Instructions :** 1) Answer any **Five Questions**
 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 Fill in the blanks using correct choice.

14

- 1) What are the causes of acid rain?
 - a) Burring of Fossil Fuel
 - b) Vehicular Exhaust
 - c) Coal Thermal Power Plant
 - d) All of the above

- 2) _____ is the measure of the atmosphere's tendency to encourage or deter vertical motion, and vertical motion is directly correlated to different types of weather systems and their severity.
 - a) Thermal inversion
 - b) Atmospheric stability
 - c) Thermal conversion
 - d) Latent heat

- 3) Metal extraction process in which an ore (usually mixed with Purifying and/or heat generating substances such as limestone and coke) is heated at high temperature in an enclosed furnace is known as _____.
 - a) Roasting
 - b) Reduction
 - c) Fluxes
 - d) Smelting

- 4) Amongst the following _____ is a form of sedimentary rocks.
 - a) Gypsum
 - b) Sandstone
 - c) Lime Stone
 - d) All of the above

- 5) Blue Baby syndrome can widely caused by _____ Contamination in ground water.
 - a) Fluoride
 - b) Arsenic
 - c) Cadmium
 - d) Nitrates

- 6) The state of the atmosphere at a particular place and time as regards heat, cloudiness, dryness sunshine, wind rain, etc. Are known as _____
 - a) weather
 - b) Precipitation
 - c) Climate
 - d) None of Above

- 7) Which of the following gas not contribute to the green house effect
 - a) Notrogen
 - b) Water Vapour
 - c) CO₂
 - d) CH₄

- 8) Conrad Discontinuity is present in between _____ and _____ Layer of earth
 a) Upper and Lower crust b) Upper and Lower Core
 c) Upper and Lower mantle d) Mantle and Asthenosphere
- 9) According to Indian Standards desirable limit Chloride for drinking Water is
 a) 150 mg/lit b) 300 mg/lit c) 250 mg/lit 100 mg/lit
- 10) _____ state in India is the largest producer of manganese ore
 a) Jharkhand b) Maharashtra c) Madhya Pradesh d) Odisha
- 11) DDT stands for
 a) Dichloro-diphenyl trichloroethane
 b) Dichloro-triphenyl dichloroethane
 c) Dichloro triammomium methane
 d) Difluoro-diphenyl-tribromobutane
- 12) Atmospheric convection is the result of _____.
 a) Temperature difference b) Different Lapse rate
 c) Heating of Earth Surface d) All of the above
- 13) When moist air cooled, it may reach a level when its capacity to hold Water vapour ceases
 a) 100% Relative Humidity b) Dew Point Reached
 c) Change in pressure gradient d) All of the above
- 14) Which sequence of process occurs in the correct order
 a) Weathering, erosion, transportation
 b) Erosion, transportation, weathering
 c) Erosion, weathering, transportation
 d) None of these

- Q.2** Define Rocks. Classify and discuss economic importance of sedimentary rocks. **14**
- Q.3** What do you mean by deforestation, explain causes, effects and control measures of deforestation. **14**
- Q.4** Define normal lapse rate, explain different types of lapse rate. **14**
- Q.5** **Write short notes on:** **14**
 a) Wind Rose
 b) Applications of meteorology in air pollution study
- Q.6** **Give a brief account of** **14**
 a) Geo – gradient wind
 b) Interior structure of Earth
- Q.7** **Write a note on:** **14**
 a) Impact of pesticides and fertilizer on water and soil
 b) Turbulence and diffusions

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M.Sc. (Semester – II) (New) (CBCS) Examination, 2017

ENVIRONMENTAL SCIENCE

BIODIVERSITY AND CONSERVATION

Day & Date: Wednesday, 19-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B. :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 A) Select the answer among the following:

14

- 1) The union Ministry of Environment and Forest has suggested species recovery action plans in the State to save – Great Indian Bustard, Lesser Florican and Bengal Florican. Which of the following statements with regard to these three birds are correct.
 1. All these 3 birds are critically endangered according to UUCN Red list.
 2. Lesser Florican is mostly found in the Western part of India whereas Bengal Florican is found in the Eastern part of India.
 3. All the three birds belong to the Bustard family.
 - a) 1 & 2 Only
 - b) 1 & 3 Only
 - c) 2 & 3 Only
 - d) 1,2 &3 Only
- 2) The type of diversity including all the different kinds of living things found in a certain habitat is called as:?
 - a) Species diversity
 - b) Genetic diversity
 - c) Ecosystem diversity
 - d) Population diversity
- 3) A taxon with restricted geographical distribution is termed as
 - a) Rare
 - b) Vulnerable
 - c) Endemic
 - d) Extinct
- 4) Conservation of biodiversity outside the natural habitat is called as:
 - a) Ex-situ
 - b) In- situ
 - c) Invasion
 - d) In-vivo

- 5) Which of the following does not come under the threatened categories?
- a) Endangered b) Vulnerable
c) Extinct d) Least concern
- 6) Biosphere reserve has following zone except one:
- a) Core zone b) Command zone
c) Buffer zone d) Spherical zone
- 7) In which of the following boundaries are not circumscribed:
- a) Biosphere b) Sanctuary
c) National park d) Colony parks
- 8) In _____ type of wildlife management the wildlife is protected from hunting mainly during breeding season and is enforced by law and if violated is punishable and termed as illegal:
- a) Closed season b) Open wild-life season
c) Custodial management d) Limited entry zone
- 9) The knowledge of which of the following factor does not help in the wildlife management:
- a) Habitat of wildlife b) Behavior of wildlife
c) Food habitat of wildlife d) Name of wildlife
- 10) Biodiversity of which organism is more in Eastern Ghat in comparison to Western Ghat?
- a) Reptile b) Amphibian
c) Aves d) Mammals
- 11) 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
- 12) Which one is odd for species diversity?
- a) α diversity b) γ diversity
c) β diversity d) λ diversity
- 13) Which is the right sequence for Ecological diversity
- a) Biomes → habitat → Ecosystem → population
b) Biomes → Ecosystem → habitat → niches
c) Biomes → Ecosystem → population → niches
d) Biomes → habitat → niches → Ecosystem
- 14) Which group is meant for Endemic species of birds?
- a) Nilgiri pipit, Rufous babbler, Lesser-Florican
b) Lesser-Florican, Nilgiri wood pigeon, Malabar parakeet

- c) Malabar parakeet, Nilgiri pipit, Rufous babbler
- d) All the above

Q.2	List the biogeographical regions in India? Explain each region properly with characteristic significance?	14
Q.3	Explain the concept of 'Biodiversity Hotspot'? Discuss the importance of Western Ghats with respect to its faunal species characteristics?	14
Q.4	Explain the strategies of biodiversity conservation? Discuss <i>In-situ</i> and <i>Ex-situ</i> conservation methods for the protected area?	14
Q.5	Write a short note on the following <ul style="list-style-type: none">1) Exotic species2) Types of forest ecosystem	14
Q.6	Write a brief with suitable illustration on the following <ul style="list-style-type: none">1) Gangetic plains2) Red Data Book	14
Q.7	Write an account on the following. <ul style="list-style-type: none">1) Biological Diversity Act 20022) Coral reefs	14

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M.Sc. (Environmental Science) (Semester – II) (CBCS)

(New) Examination, 2017

WATER AND WASTE WATER ENGINEERING

Day & Date: Friday, 21-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :**
- 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** **14**

- 1) Volatile oxidation corrosion product of metal is,

a) Fe_2O_3	b) Fe_3O_4
c) MoO_3	d) FeO

- 2) Standard electrode potential of hydrogen is,

a) 1.00 V	b) 0.01 V
c) 0.00 V	d) 0.001 V

- 3) Which of the following gases accelerates rusting of iron?

a) CO_2	b) NO_2
c) SO_2	d) All of above

- 4) Acid value is also called is,

a) Acid number	b) Base number
c) Neutralization number	d) Basic number

- 5) Conversion of Fe to Fe_{2+} is,

a) Oxidation	b) Corrosion
c) Reduction	d) None of above

- 6) Attached growth reactor is -

a) Oxidation Pond	b) RBC
c) Lagoons	d) All the above

- 7) Maximum permissible velocity 1.5 m/sec, is adopted in drains

a) With beds of rocks and gravels	b) Both (a) and (b)
c) Lined with stones	d) Neither (a) nor (b)

- 8) The average temperature of sewage In India, is

a) 10°C	b) 20°C
c) 15°C	d) 25°C

- 9) In the activated sludge process

- a) Aeration is continued till stability
- b) Aeration is done with an admixture of previously aerated sludge
- c) Sludge is activated by constant stirring
- d) Water is removed by centrifugal action

10) In septic tanks.

- a) Free board of 0.3 m may be provide
- b) The baffles or tees are extended up to top level of scum
- c) The clear space between the baffle top and covering slab is about 7.5 cm
- d) All the above

11) Primary treatment of sewage consists of removal of

- a) Large suspended organic solids
- b) Sand and girt
- c) Oil and grease
- d) Floating materials

12) The temperature affects the

- a) Biological activity of bacteria in sewage
- b) Viscosity of sewage
- c) Solubility of gases in sewage
- d) All the above

13) The maximum depth of sedimentation tanks, is kept

- a) 3 m
- b) 4 m
- c) 3.5 m
- d) 4.5 m

14) 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

- Q.2** Briefly explain the difference between an anaerobic reactor and an anoxic reactor with its merits and demerits. **14**
- Q.3** What is chlorination? Why then is the breakpoint concentration used rather than a lesser concentration? **14**
- Q.4** Explain the process and design aspect of Upflow anaerobic sludge biological (UASB) digester. **14**
- Q.5** **Write a short notes on following:** **14**
- a. Wet air oxidation
 - b. Sludge thickening
- Q.6** **Write in with suitable illustration of the following:** **14**
- a. Principles, applications and designing aspects of clarifier
 - b. Bioremediation of sludge with composting and conditioning
- Q.7** **Write an account on the following** **14**
- a. Explain the various methods of population forecasting and their applications
 - b. Principles, applications and designing aspects of Trickling filter

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**M.Sc. (Environmental Science) (Semester – II) (New)
(CBCS) Examination, 2017
REMOTE SENSING AND GIS IN ENVIRONMENTAL SCIENCE**

Day & Date: Monday, 24-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :**1) Answer any **Five** Questions.
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: 14

- 1) In the world of GIS another term for the Property of connectivity is
 - a) Proximity
 - b) Neighborhood
 - c) Topology
 - d) Boolean identity

- 2) Stevens levels of data scaling do Not include
 - a) Ordinal
 - b) Nominal
 - c) Ratio
 - d) Dasymetric

- 3) Which of the following statements is true about the capabilities of GIS
 - a) Data capture and Preparation
 - b) Data Management, including Storage
 - c) Data Manipulation and analysis
 - d) All of the above.

- 4) By spatial data we mean data that has
 - a) Complex Values
 - b) Positional Values
 - c) Graphic Values
 - d) Decimal Values

- 5) A (geographic) field is a geographic phenomena for which every point in the study area
 - a) A value can be determined
 - b) A value cannot be determined
 - c) A value is not relevant
 - d) A value is missing

- 6) Which of the following is true about 'Nominal data values'
 - a) They are values that provide name
 - b) True computations cannot be done with these values
 - c) When the values assigned are sorted according to some set of non-overlapping categories
 - d) All of the above

- 7) SDI stands for
 a) Spatial Data Interface b) Spatial Data Intention
 c) Spatial Data Infrastructure d) Spatial data international
- 8) Relative Observations of the same areas at equal interval of time are useful to monitor the dynamic phenomena
 a) Vegetative cover b) Forest fires
 c) Snow covers d) All of these
- 9) The altitudinal distance of a geostationary satellite from the earth is about.
 a) 44,000 km b) 26,000 km c) 36,000 km d) 30,000 km
- 10) The infrared portion of EMR lies between
 a) 0.7-1.3 μm b) 0.7 mm-14 μm c) 0.5 mm-1 m d) 0.4-0.7 μm
- 11) A passive Sensor uses
 a) Flash light as a source of energy b) Sun as the source of energy
 b) Its own source of energy c) None of these
- 12) Who coined the term 'Remote Sensing'
 a) Evelyn L. Pruitt, a Geographer
 b) Gaspard Felix Tournachon, a French Scientist
 c) Wilbur Wright, an Italian Scientist
 d) None of these
- 13) The Optical property of a water body depends on
 a) Absorption by the suspended particulate matter
 b) Absorption by the dissolved material
 c) Scattering by the suspended particulate matter
 d) All of the above
- 13) In case of reflection and refraction of electromagnetic radiation
 a) Angle of incidence = angle of refraction
 b) Angle of refraction = sum of the angles of incidence and refraction
 c) Angle of incidence = angle of refraction
 d) All of the above

- Q.2** Throw light on the basic Principles and History of remote sensing. **14**
- Q.3** What do you mean by Electromagnetic spectrum? Describe its different regions with the help of diagram. **14**
- Q.4** Discuss the Components of GIS. **14**
- Q.5** **Write a short note on the following:** **14**
 a) Concept of Connectivity, Containment and Contiguity
 b) Concept and Advantages of Topology
- Q.6** **Write a brief with suitable illustration on the following** **14**
 a) Describe the stages of acquisition of data in remote sensing
 b) Differentiate between pushbroom and whiskbroom scanners.
- Q.7** **Write an account on the following.** **14**
 a) Advantages and disadvantages of Raster data model
 b) Nominal and Ordinal data

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M.Sc. (Semester – III) (New) (CBCS) Examination, 2017

ENVIRONMENTAL SCIENCE

Environmental Pollution

Day & Date: Tuesday, 18-04-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

- N.B. :**
- 1) Q.1 is **compulsory**.
 - 2) Attempt **any two** questions from Q. 2, 3 and 4.
 - 3) Attempt **any two** questions from Q. 5, 6 and 7.
 - 4) Figures to the **right** indicate **full** marks.
 - 5) Draw neat and labeled diagram wherever necessary.

Q.1 Choose correct alternatives:

10

- 1) Main Environmental impact of deforestation is/are _____
 - a) Atmospheric pollution
 - b) Soil erosion
 - c) Landslides
 - d) All of these

- 2) Vegetation of a particular locality is controlled by _____
 - a) Man
 - b) Climate
 - c) Altitude
 - d) Edaphic

- 3) UV radiation is necessary for _____
 - a) Promoting the synthesis of vitamin D in humans
 - b) Promoting CFCs production
 - c) Both a and b
 - d) None of the above

- 4) The photochemical smog is _____
 - a) An Ozone layer in the wrong place
 - b) A source nitric oxide
 - c) A initiator of volatile organic compounds
 - d) All of the above

- 5) 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)

- 6) The earlier impact of noise
 - a) Constriction of blood vessels
 - b) Digestive Spasm
 - c) Anxiety and stress reaction
 - d) Increased heart beat

- 7) _____ is the agency that has laid down the standards for the control of pollution of air, water and noise etc.
- a) Central pollution control tribunal
 - b) Central pollution control agency
 - c) Ministry of home affairs
 - d) Central pollution control board
- 8) Decreasing Fish population from water bodies indicates excess of _____ pollutant in water.
- a) Zn
 - b) Hg
 - c) Fluoride
 - d) P
- 9) Good urban land management practice consists in:
- a) Leaving large land depressions unfilled
 - b) Creation of gardens and parks
 - c) Growing broad green belts
 - d) All of these
- 10) The biological treatment of hazardous waste includes -
- a) Sludge process and aerated lagoons
 - b) Trickling filters and stabilization ponds
 - c) Anaerobic digestion
 - d) All of the above
- 11) To determine moisture contents of solid waste; _____
- a) It is dried to obtain a constant mass
 - b) Weighing the entire sample to obtain the wet weight
 - c) Both of the above
 - d) None of the above
- 12) Cyclone collector is used to minimize-
- a) Radioactive pollution
 - b) Air pollution
 - c) Noise pollution
 - d) Water pollution
- 13) Organic matter is an very essential part soils because:
- a) It increase greenhouse gas
 - b) It is source of water
 - c) Earthworms eat up humus
 - d) It stabilizes and holds soil particles together, thus reducing the hazard of erosion
- 14) Toxic risk assessment includes-
- a) Toxic identification and exposure assessment
 - b) Dose response assessment
 - c) Risk characterization
 - d) All of the above

- Q.2** What is solid waste? Give brief accounts of classification of waste. **14**
- Q.3** Explain soil pollution and physicochemical and biological methods of soil reclamation. **14**
- Q.4** What is air pollution? Discuss natural and anthropogenic sources of air pollution.
- Q.5 Explain in brief:** **14**
a) Types of radiation pollution
b) Sources of solid waste
- Q.6 Write short note on:** **14**
a) Sources of oil pollution
b) Thermal pollution
- Q.7 Discuss on:** **14**
a) Religious festivals and noise
b) Acid rain

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**M. Sc Environmental Science (Semester – III) (New) (CBCS)
Examination, 2017
ENVIRONMENTAL BIOTECHNOLOGY**

Day & Date: Thursday, 20-04-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

- N.B. :**
- 1) Answer **any five** questions.
 - 2) Questions **NO.1 Compulsory**.
 - 3) Attempt **any two** questions from 2,3 to 4
 - 4) Attempt **any two** questions from 5,6 to 7
 - 5) Figures to the **right** indicate **full** marks.
 - 6) Draw **neat** and labeled diagrams **wherever** necessary.

Q.1 A) Choose the correct alternative given in the bracket. 14

- 1) The biological sequestering of substance at a higher concentration than that occurs in surrounding or medium or medium is called _____.
 - a) Biomagnifications
 - b) Biotransformation
 - c) Bioaccumulation
 - d) All of these
- 2) Among the following _____ form of Chromium is very toxic.
 - a) Monovalent
 - b) Trivalent
 - c) Hexavalent
 - d) None of the above
- 3) Venoms are _____ in nature.
 - a) Carbohydrates
 - b) Proteins
 - c) Lipids
 - d) Acids
- 4) Two bacteria found to be useful in genetic engineering experiments are _____.
 - a) Nitrobacter and Azatobacter
 - b) Rhizobium and Diplococcus
 - c) Nitrosomonas and Kleibsiella
 - d) Escherichia coli and Agrobacterium
- 5) Which of the following bacteria is called as superbug which could clean up the oil?
 - a) Bacillus subtilus
 - b) Pseudomonas putida
 - c) Pseudomonas denitrificans
 - d) Bacillus denitrificans
- 6) Bactria used in Biogas fermentation _____.
 - a) Halophiles
 - b) Methanogens
 - c) Cynobacyeria
 - d) Vibrio bacteria
- 7) First cloned animal was _____.

- a) Dolly sheep b) Dog c) Mule d) Cat

- 8) which of the bacteria is considered for biological leaching?
 a) T. thiooxidans b) T. ferrooxidans
 c) Ferrobacillus ferrooxidans d) All of these
- 9) Golden Rice is a transgenic crop of the future with the following improved trait _____
 a) Insect resistance b) High protein content
 c) High Vitamin A content d) High lysine content
- 10) Which of the following organisms are used as components of biofertilisers?
 a) Blue green algae only
 b) Coliform bacteria and mushrooms
 c) N- fixing bacteria only
 d) Blue green algae and N- fixing bacteria
- 11) Which of the following is useful biological indicator of Sulphur dioxide pollution?
 a) Bryophytes b) Algal Blooms
 c) Pseudomonas d) Lichens
- 12) _____ are human-made chemicals that present in the environment at unnaturally high concentrations.
 a) Xenobiotic compound b) Aliphatic compound
 c) Aromatic compound d) Natural compound
- 13) _____ is an example of fungal biopesticides.
 a) Trichoderma sp. b) Thuringiensis
 c) E. coli d) None of the above
- 14) Bacteria are classified on the basis of _____
 a) Method of reproduction b) Nucleus
 c) Cell wall d) Pigments

- Q.2** Give an account on nature and functions of microorganisms in soil environment. **14**
- Q.3** Discuss in detail Phytoremediation technology for soil decontamination as well as for waste water treatment **14**
- Q.4** Explain in detail about scope of environmental biotechnology in environmental science. **14**
- Q.5 Write short note on.** **14**
 1) Sequestrating Carbon dioxide
 2) Transgenic plants
- Q.6 Explain in brief:** **14**
 1) Degradation of Xenobiotic compounds
 2) Microbial growth and energy

Q.7 Write an account on:

14

1) Superbug

2) Structure and function of prokaryotic cell

Seat No.	
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M.Sc. (Environmental Science) (Semester – IV) (New)
(CBCS) Examination, 2017
ENVIRONMENTAL POLICY, ACTS, LAWS AND ENVIRONMENTAL
MANAGEMENT SYSTEM

Day & Date: Wednesday, 19-04-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

- N.B. :** 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

14

- 1) Montreal protocol was developed for _____.
 a) Ozone layer protection b) Soil conservation
 c) Water conservation d) Air pollution
- 2) The power to declare an area as a sanctuary or national park of central Government is wildlife (Protection) Act is under:
 a) Section 38 b) Section 39
 c) Section 18 d) Section 27
- 3) The water Act contains:
 a) 4 Chapters b) 5 Chapters
 c) 7 Chapters d) 8 Chapters
- 4) Noise pollution has been inserted as pollution in the Air Act in:
 a) 1981 b) 1987
 c) 1982 d) 2000
- 5) Earth summit was held at _____.
 a) Rio b) Montreal
 c) London d) Stockholm
- 6) UNEP stands for _____.
 a) United Nations Environment Programme
 b) Union Nations Environment Programme
 c) United Nations Environment Protection
 d) United Nations Environment Programme
- 7) The world as world Environmental day is celebrated on:
 a) December 1 | b) June 5 | c) November 14 | d) August 15

- 8) The Stockholm Conference was held in _____.
 a) 1973 | b) 1980 | c) 1972 | d) 1975
- 9) The provisions of environmental protection in the constitution were made under:
 a) Article 5-A | b) Article 21-B
 c) Article 27-B (h) | d) Article 48-A & Article 51-A (g)
- 10) Red data book is published by
 a) IUCN | b) WWF | c) BNHS | d) WHO
- 11) UNCED stands for _____.
 a) United Nations Conference on Environment and Development
 b) United Nations Convention on Environment and Development
 c) United Nations Conference on Energy and Development
 d) Union National Conference on Environment and Development
- 12) The Forest (Conservation) Act was enacted in the year:
 a) 1986 | b) 1974 | c) 1980 | d) 1972
- 13) The first of the major environmental protection act to be promulgated in India was:
 a) Water Act | b) Air Act
 c) Environmental Act | d) Noise Pollution Rule
- 14) _____ Committee recommended the creation of separate Department of Environment to coordinate issues arising out of economic development and social needs.
 a) Mandal | b) Trivedi | c) Tiwari | d) Jim Corbet

- Q.2** Discuss the legal provisions regarding environmental protection in India. **14**
- Q.3** What is EMS? Explain the EMS cycle in details. **14**
- Q.4** Define RS and GIS? Explain its applications in Environmental Management. **14**
- Q.5** **Write a short note on:** **14**
 a) The Water (prevention and control of pollution) Act, 1974
 b) IUCN
- Q.6** **Give a brief account of** **14**
 a) Rio (UNCED) Summit
 b) Public Liability Insurance Act, 1991
- Q.7** **Write short notes on:** **14**
 a) CRZ
 b) CBD

Seat No.	
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**M.Sc. Environmental Science (Semester – IV) (New) (CBCS)
Examination, 2017**

Environmental Toxicology and Safety

Day & Date: Friday, 21-04-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

- N.B. :** 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 and labeled diagrams wherever necessary.

Q.1 A) Select the answer among the following 14

- 1) Acid precipitate kills fish by release of:

a) Al – ions	b) Anticoagulants
c) Carbon monoxide	d) Mercury

- 2) The major cause of drop in human sperm count observed since last 60 years is due to:

a) Environmental estrogen	b) Environmental mutagens
c) Environmental androgens	d) Environmental teratogens

- 3) Pollutant causing leaf curling:

a) SO ₂	b) CO
c) H ₂ S	d) O ₃

- 4) Use of DDT is undesirable because, it is:

a) Harmful	b) Accumulate in food chain
c) Degradable	d) Causes mutation

- 5) The cigarette smoke contains the ... and ... as major pollutants/ toxicants;

a) Co and Dioxin	b) Benzene and CO
c) Nicotine and CO	d) Dioxin and Benzene

- 6) Having a sudden onset, lasting a short time effect called as:

a) Acute	b) Lethal
c) Chronic	d) Concentric

- 7) Main pollutant in atmospheric air harmful to human health is:

a) CO	b) NO ₂
c) CO ₂	d) SO ₂

- 8) Test used to evaluate the relative potency of a chemical by comparing its effect on a living organism with the effect of standard preparation on the same type of organism called as:
- a) Biomonitoring
 - b) Bioconcentration
 - c) Bioassay
 - d) Bioactivation
- 9) The impact on human health like black lung and urban emphysema are caused mainly by:
- a) Methane
 - b) Particulates
 - c) SO₂
 - d) All of these
- 10) Natural source of Polycyclic Aromatic Hydrocarbons (PAHs) is _
- a) Root exudates
 - b) Anaerobic bacteria
 - c) Aerobic bacteria
 - d) Grass fires
- 11) The band labeled as UV-C, which is lethal to microorganisms is ___
- a) 0.29- 0.32 μm
 - b) 0.2- 0.29 μm
 - c) 0.17-0.2 μm
 - d) 0.07-0.21 μm
- 12) Which of the following does not include in ecological monitoring in the assessment of effect of toxicants?
- a) Bioaccumulation
 - b) Bioassay
 - c) Ecological population dynamics
 - d) Habitat protection
- 13) QSAR stands for in toxicological studies
- a) Quality Standardization and assured results
 - b) Quantitative structure-activity relationship
 - c) Quality for safe and reliable assessment
 - d) None of the above
- 14) The biodegradability of xenobiotics can be characterized by
- a) Rate of CO₂ formation
 - b) Ratio of BOD and COD
 - c) Rate of O₂ Consumption
 - d) All of these

- Q.2** Define toxicant and toxicity? Give an account of the various factors that influence the environmental concentration of a toxicant. **14**
- Q.3** Define response? Discuss the toxic responses of the reproductive system? **14**
- Q.4** What are personal protective equipment? Give its types and advantages? **14**
- Q.5** Write a short note on following: **14**
A. Hallucinogens B. Phytotoxins and animal toxins
- Q.6** Write in brief on the following: **14**
A. Adaptation and tolerance level B. Occupational health

Q.7

Write an account on the following:

14

A. TLC

B. Safety standards and codes.

Seat No.	
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M.Sc.(Environmental Sci.) (Sem IV) (New)(CBCS) Examination, 2017
Research Methodology

Day & Date: Monday, 24-04-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

- N.B. :**
- 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 and labeled diagrams wherever necessary.

Q.1 Select the answer among the following 14

- 1) Generally a scientist's observations related to experiment and testing are based on

a) Scientific principle	b) House hold rules
c) Self-imagination	d) Self-experience
- 2) Information acquired by experience or experimentation is called as _____

a) Scientific evidences	b) Scientific
c) Facts	d) Empirical
- 3) Which of the following is not a characteristic of a research?

a) Irrelevant data collection	b) Irrelevant data analysis
c) Irrelevant conclusion	d) All the above
- 4) _____ was the proponent of deductive method.

a) Aristotle	b) Christian Huygenes
c) Francis Bacon	d) Issac Newton
- 5) The reasoning that uses general principle to predict specific results is called _____

a) Inductive	b) Deductive
c) Both a and b	d) Hypothetico-deductive
- 6) The reasoning that uses specific observations to construct general principles is

a) Inductive	b) Deductive
c) Both a and b	d) Hypothetico-deductive
- 7) The control in survey method is required-

a) To a great extent	b) To a less extent
c) To a normal extent	d) Not at all

- 8) The method that starts with formulation of hypothesis and testing of hypothesis in sequential steps where deduction applied is
 - a) Inductive
 - b) Deductive
 - c) Both a and b
 - d) Hypothetico-deductive
- 9) The ethics in research is not related to-
 - a) Self- interest
 - b) Scientific method
 - c) Reliability
 - d) Humanity
- 10) All research process starts with _____
 - a) Hypothesis
 - b) Experiments to test hypothesis
 - c) Observation
 - d) All of these
- 11) Each word of a research should be -
 - a) Justifiable
 - b) Full of wisdom
 - c) Enjoyable
 - d) Entertaining
- 12) The method of research report should be -
 - a) Scientific
 - b) Personal
 - c) Ethical
 - d) Favorable to globalization
- 13) The justifiable scientific list of all references is called as-
 - a) Index
 - b) Bibliography
 - c) References
 - d) Citations
- 14) Logical reasoning process used in research is important to -
 - a) Draw inferences
 - b) Make studies
 - c) Derive problem statements
 - d) Frame hypothesis

- Q.2** What do you mean by research? Describe the various steps involved in a research process? **14**
- Q.3** What is 'Sample Design'? What points should be taken into consideration by a researcher in developing a sample design for this research project? **14**
- Q.4** Explain importance of research report and describe the various steps involved in writing such a report? **14**
- Q.5 Write a short note on following:** **14**
- A) Use of Search engines for research
 - B) Literature review and its significance
- Q.6 Write in brief on the following:** **14**
- A) Rephrasing the research problem
 - B) Characteristics and Test of Hypothesis
- Q.7 Write an account on the following:** **14**
- A) Source and types of data
 - B) Difference between patents and publications

Seat No.	
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**M.Sc. (Environmental Science) (Semester – IV) (New)
(CBCS) Examination, 2017
WATERSHED MANAGEMENT**

Day & Date: Saturday, 29-04-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B. : 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

14

- 1) Universal Soil Loss Equation do not consider one of the following parameter
 - a) Soil Loss
 - b) Rainfall Erosivity Factor
 - c) Topographic Factors
 - d) Soil Capillary Action
- 2) _____ is the ability of a liquid to flow in narrow spaces without the assistance of or even in opposition to external forces like gravity.
 - a) Capacity Action
 - b) Peak Action
 - c) Capillary Motion
 - d) Gravity Action
- 3) Cook's method of rainfall estimation is based on
 - a) Catchment Size and Conditions
 - b) Catchment Point and Conditions
 - c) Rainfall Pattern and Conditions
 - d) Rainfall Intensity and Conditions
- 4) Which among the following region of India receives more than 200 cm of rainfall?
 - a) Deccan Plateau
 - b) Eastern Region
 - c) Western Ghats
 - d) Central India
- 5) _____ is a small, temporary or permanent dam constructed across a drainage ditch, swale, or channel to lower the speed of concentrated flows.
 - a) Gully Check
 - b) Gully Plug
 - c) Gully Chock
 - d) Gully Pack
- 6) Which among the following is not the common treatment method for deteriorated watershed?
 - a) Contour building and contour trenching
 - b) Break the velocity of runoff and contour stone walls
 - c) Bench terraces and farm bunds
 - d) Construction of wells and plantation of drought tolerant varieties

- 7) Which among the following is not a function of hydrological watershed?
- Collection of rainfall as water and increase groundwater table
 - Store water in various amounts and for different periods
 - Release water as runoff
 - Provide conditions for various bio-chemical reactions
- 8) Which among the following is the correct option for Watershed Development Projects in India?
- Scientific planning and capacity building
 - Involvement of foreign country agencies
 - Taxation on people living in watershed area for funds
 - Centralization of the schemes by government
- 9) The main causes of flood are _____
- Channelization of watershed, decrease in infiltration and heavy in rainfall
 - Sedimentation of river, increase in infiltration and changes in rainfall pattern
 - Denudation in watershed, decrease in infiltration, deforestation and heavy in rainfall
 - Degradation of soil quality and water logging
- 10) Cropping systems are _____
- Intercropping, strip cropping and circular cropping
 - Intercropping, layer cropping and rotation cropping
 - Intercropping, strip cropping and rotation cropping
 - Intra-cropping, strip cropping and rotation cropping
- 11).Watershed management in forest area is important for _____
- Soil protection, flood control and water yield
 - Soil formation, energy production and water yield
 - Humus regeneration, energy production and water yield
 - Soil protection, water storage and water for industries
- 12) Which among the following is not a basic component of watershed cycle?
- | | |
|--|---|
| <ol style="list-style-type: none"> Precipitation Stem flow | <ol style="list-style-type: none"> Canopy interaction Soil moisture |
|--|---|
- 13) Material deposited by flowing floodwater is called is _____
- | | |
|---|---|
| <ol style="list-style-type: none"> Alluvium Mud | <ol style="list-style-type: none"> Alluvial Fans Muddy sediment |
|---|---|
- 14) What is the correct objective among the following for watershed management?
- An increase in agricultural production and self-reliance of villages
 - Increasing standard of living
 - Increasing GNP
 - Construction of more dams for industrial requirement of water

- Q.2** What is importance of watershed management? Discuss in detail on various engineering measures for soil and water conservation? **14**
- Q.3** What is groundwater table? What are various ways to recharge it? Also add a note on importance of land capability classification **14**
- Q.4** Explain in detail on factors affecting soil erosion. Also elaborate on modeling of soil erosion by Universal Soil Loss Equation. **14**
- Q.5** **Write an account on the following.** **14**
a) Discuss agronomic measures of soil and water conservation?
b) What are various methods used to estimate surface runoff?
- Q.6** **Answer the following in brief:** **14**
a) Discuss importance of public participation in watershed management?
b) Explain important considerations under designing of simple bund structure.
- Q.7** **Write short notes on the following:** **14**
a) Rainfall Pattern in India
b) Factors Affecting Watershed