Duration: 3 hours
Max. Marks 100
NB

1. Attempt all sections
2. Figures to the right indicate full marks
3. Draw neat labelled diagrams wherever necessary

Section I

I **All questions are compulsory**

Choose the most appropriate choice for the following: **(40X10 = 40marks)**

1) Mycorrhizae is an example of
   a) Ammensalism
   b) Commensalism
   c) Parasitism
   d) Symbiosis

2) Which of the following bacterium is called as the superbug that could clean up oil spills.
   a) *Bacillus subtilis*
   b) *Pseudomonas putida*
   c) *Pseudomonas denitrificans*
   d) *Bacillus denitrificans*

3) *Ex situ* bioremediation involves the
   a) Degradation of pollutants by microbes directly
   b) Removal of pollutants and collection at a place to facilitate microbial degradation
   c) Degradation of pollutants by genetically engineering microbes
   d) None of these

4) Ozone is found in
   a) Mesosphere
   b) Ionosphere
   c)Stratosphere
   d) Exosphere

5) Wildlife Week in India is celebrated between
   a) 1st October and 8th October

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b) 15th October and 21st October
c) 1st June and 7th June
d) 15th June and 21st June

6) The heavily polluted zone of water reservoir is known as
a) pleosaprophytic zone
b)mesosaprophytic zone
c)oligosaprophytic zone
d)none of these

7) A high biological oxygen demand (BOD) indicates that
a) Water is pure
b) Absence of microbial action
c) Low level of microbial population
d) High content of easily degradable organic material in the sample

8) The principal components of photochemical smog in urban areas are
a) SO_2 and NO_2
b) SPM and CO
c) SPM and NO_2
d) Oxides of Nitrogen, Hydrocarbons and Ozone

9) Assertion (A): Upper atmosphere shield life on earth
Reason (R): Ultraviolet radiations are absorbed in the upper atmosphere.
a) Both (A) and (R) are true and (R) is the correct explanation of (A).
b) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
c) (A) is true and (R) is false.
d) (A) is false and (R) is true.

10) Cells grown in medium containing isotope sulphur 35 will show radio labelling in
a) Membrane lipids
b) Membrane proteins
c) Glycogen

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d) Nucleic acids

11) Identify the correct sequence of materials in terms of their porosity.
   a) Sand > clay > gravel
   b) Clay > sand > gravel
   c) Gravel > sand > clay
   d) Gravel > clay > sand

12) Which of the following is used as a coagulant for removal of phosphates in water?
   a) Aluminium sulphate
   b) Iron sulphate
   c) Copper sulphate
   d) Potassium chromate

13) Which one of the following is used as microbial indicator of water contamination?
   a) Coliform bacteria
   b) Giardia
   c) Cryptosporidium
   d) Tobacco mosaic virus

14) Under anaerobic conditions nitrogenase catalises
   a) breakdown of atmospheric nitrogen
   b) oxidation of atmospheric nitrogen
   c) reduction of atmospheric nitrogen
   d) hydrolysis of nitrogenous compounds

15) The biodegradation of plant material is slow because of presence of
   a) cellulose b) xylene c) protein d) lignin

16) An ecotype is
   a) Genetically distinct geographic variety, population or race within a species, which is adapted to specific environmental conditions.
   b) Genetically identical geographic variety, population or race within a species, which is adapted to specific environmental conditions

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c) Morphologically different forms of the same organisms
d) None of the above.

17) Oxygen concentrations in compost developed in static piles is usually
a) ten times lower than in ambient air
b) five times lower than in ambient air
c) two times more than in ambient air
d) five times more than in ambient air

18) Poorly nourished lakes are known as
a) oligotrophic
b) eutrophic
c) mesotrophic
d) xerotrophic

19) Highest level of biotic interaction is
a) mutualism b) predation c) parasitism d) amensalism

20) Which types of forests are found at an altitude of 5330 feet chiefly on the Himalayan mountains?
a) Dry deciduous b) moist tropical c) temperate d) tropical

21) Reserve food material in algae is
a) Starch b) cellulose c) lignin d) protein

22) Soil borne plant pathogens can be controlled by
a) Lowering pH
b) Increasing pH
c) Adding lime
d) None of the above

23) In a typical municipal solid waste least percentage of ash is found in
a) Textiles b) Plastic c) Leather d) Rubber

24) Which year was declared as the international year of Biodiversity?
a) 1972 b) 2002 c) 2010 d) 2012

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25) Which of the following is a type of biodiversity extinction caused primarily due to anthropogenic activities

a) Carboniferous rain forest collapse
b) Permian Triassic extinction
c) Cretaceous Palaeogene extinction
d) Holocene extinction

26) Which of the following is used as a plant indicator for detecting the presence of SO_2 and HF in air?

a) Lichen b) Orchid c) Apricot v d) tobacco

27) Indira Gandhi canal passes through

a) Punjab, Haryana, Rajasthan
b) Uttar Pradesh
c) Punjab
d) Maharashtra

28) Which of 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 systems
c) Density of species is very low here
d) All of the above

29) What does the high Biological Oxygen Demand (BOD) indicates?

a) High level of Microbial Pollution
b) Low level of Microbial Pollution
c) Absence of Microbial Pollution
d) Water is fully pure

30) 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 and Article 51-A (g)

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31) The Forest (Conservation) Act extends to the whole of India except:

a) Uttar Pardesh
b) Karnataka
c) Jammu and Kashmir
d) Haryana

32) Noise pollution has been inserted as pollution in the Air Act in:

a) 1981
b) 1987
c) 1982
d) 2000

33) Hierarchy of priorities in hazardous waste management is

a) Eliminate generation → Reduce generation → Recycle / Reuse → Treatment → Disposal
b) Reduce generation → Eliminate generation → Recycle/Reuse → Treatment → Disposal
c) Eliminate generation → Reduce generation → Treatment → Recycle/Reuse → Disposal
d) Reduce generation → Eliminate generation → Treatment → Recycle/Reuse → Disposal

34) Global Warming Potential (GWP) of a greenhouse gas (GHG) is a comparison of global warming impact between

a) 1 kg of GHG and 1 kg of methane
b) 1 kg of GHG and 1 kg of CO_2
c) 1 kg of GHG and 1 kg of N_2O
d) 1 kg of GHG and 1 kg of CFC-11

35) The sources of thermal pollution are

a) Power plants
b) Cooling towers
c) Industrial effluents
d) All of the above

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36) The major photochemical oxidant is:

a) Ozone
b) Hydrogen peroxide
c) Nitrogen oxides
d) Peroxyl Acetyl Nitrate (PAN)

37) Which of the following air pollution control devices is suitable for the removing the finest dust from the air?

a) Cyclone separator
b) Electrostatic precipitator
c) Fabric filter
d) Wet scrubber

38) Sound becomes hazardous noise pollution at decibels:

a) Above 80
b) Above 30
c) Above 100
d) Above 120

39) Peroxy acyl nitrates (PAN)

a) decreases the rate of photosynthesis
b) increases the rate of photosynthesis
c) decreases the rate of transpiration
d) increases the rate of transpiration

40) The persons working in textile factories such as carpet weavers are exposed to which of the following occupational hazard?

a) Asbestosis
b) Asthma and tuberculosis
c) Silicosis
d) d. Siderosis

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Section II

II Attempt any three (3) of the following (3X10 = 30 marks)

Q1) Give an account of Biotic / Abiotic components of an ecosystem.

Q2) Describe briefly applications of nanotechnology in environmental issues.

Q3) Citing suitable examples, explain the role played by the TRAFFIC global programme in the conservation of wildlife.

Q4 Give five examples of green marketing from the world of business. From these examples ascertain whether the claims made by these companies to call their products/services "Green or Ecofriendly" are sincere or not? Justify your answer.

Q5) Justify describing Sun as an ideal energy source. Describe the principle and working of a solar cell. What are the disadvantages of solar energy?

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Section III

III Attempt any two (2) of the following (2X15=30 marks)

Q1) 'Managing planet Earth is a matter of multidisciplinary international effort'. Critically explain.

Q2) Explain the sources of Arsenic contamination of ground water. Comment on Arsenic calamity in West Bengal. Suggest some remedial measures.

Q3) Write as essay on biomedical waste management with emphasis on sources of generation, categories, segregation and treatment of biomedical waste.

Q4) The following is a frequency distribution table for the length of mature leaves of Ashoka plants growing near Rashtiya Chemical Fertilizers , Mumbai in cm:

Class interval (cm)	Frequency (*f*)
8-10	20
10-12	35
12-14	40
14-16	30
16-18	20

Calculate
i) The arithmetic mean
ii) Median
iii) Mode and
iv) Standard deviation for the same.

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