

ENTRANCE TEST FOR Ph.D. PROGRAMME, 2023

ENVIRONMENTAL SCIENCE

Time : Three Hours

Maximum : 100 Marks

Part A

*Answer all questions.**Each question carries 1 mark.*

Choose the correct answer from the options given :

1. An estuary is :

- a) Semi closed coastal body of water with free connection with sea.
- b) Closed coastal body of water with no connection to sea.
- c) Fresh water body.
- d) A closed saline water body.

2. Nilgiris biosphere reserve spreads over :

- a) TamilNadu, Andhra Pradesh and Kerala.
- b) Kerala and Tamil Nadu.
- c) Tamil Nadu, Karnataka and Kerala.
- d) Kerala and Karnataka.

3. Red Data book is maintained by :

- a) IUCN* .
- b) WWF.
- c) UNESCO.
- d) Forest Department.

4. The first U.N. Environmental Conference was held at:

- a) Rio de Generio.
- b) Montreal.
- c) Washington.
- d) Stockholm.

5. The Oxygen content of water is maximum at :

- a) 0°C.
- b) below 0°C.
- c) 10°C.
- d) 25°C.

Turn over

6. Pedogenesis is the process of :
- a) Soil development.
 - b) Rock formation.
 - c) Mountain formation.
 - d) Mist formation.
7. Bog is a wetland that receives water from :
- a) Nearby water bodies.
 - b) Melting.
 - c) Rainfall only.
 - d) Sea only.
8. Bacteria has maximum growth during :
- a) Lag phase.
 - b) Log phase.
 - c) Stationary phase.
 - d) Both a) and b).
9. Most well sorted sediments on the land surface are deposited by :
- a) Wind action.
 - b) Running water.
 - c) Glaciers.
 - d) Ocean currents.
10. The tendency of ecosystem to remain stable is termed as :
- a) Homeostasis.
 - b) Homogeneity.
 - c) Stationary ecosystem.
 - d) Homobiotic.
11. Upwellings in the ocean :
- a) Are locations of reef communities.
 - b) Occur over deep-sea hydrothermal vents.
 - c) Are responsible for ocean currents.
 - d) Bring nutrient-rich water to the surface.
12. The species richness of a community refers to :
- a) The relative numbers of individuals in each species.
 - b) The number of different species found in a community.
 - c) The feeding relationships within the community.
 - d) The species diversity that is characteristic of that community.

13. Storage of lead in human body is in :
- a) Blood cells.
 - b) Bones.
 - c) Soft tissues.
 - d) Hairs and Nails.
14. Shales are basically :
- a) Metamorphic rocks.
 - b) Sedimentary rocks.
 - c) Igneous rocks.
 - d) Sandstones.
15. The period of earth's history dominated by man is :
- a) Ordovician.
 - b) Quaternary period.
 - c) Silurian.
 - d) Cambrian.
16. Ozone day is celebrated on :
- a) August 16.
 - b) September 16.
 - c) October 18.
 - d) August 18.
17. The harmful gas in tobacco smoke is :
- a) CO_2 .
 - b) NO.
 - c) CO.
 - d) SO_2 .
18. Allogenic succession involves make up of a community as a result of :
- a) Changes in external environment.
 - b) Effects of the organisms themselves.
 - c) Effect of environmental pollution.
 - d) Effect of all genes.
19. Biocoenose is synonymous to :
- a) Population.
 - b) Community.
 - c) Ecosystem.
 - d) Living species.

Turn over

20. Alluviation is :

- a) The deposition of sediment by a river.
- b) The deposition of aluminium.
- c) The deposition of alum.
- d) The deposition of detritus.
- e) None of these.

21. Granite is a :

- a) Igneous rock.
- b) Sedimentary rock.
- c) Metamorphic rock.
- d) Metasomatic rock.

22. Loess deposits are characteristic of :

- a) Water.
- b) Wind.
- c) Glacier.
- d) Lakes.

23. The main source of geothermal energy is :

- a) Ocean waves.
- b) Underground hot water and steam.
- c) Windmills.
- d) Coal and oil.

24. Bacteriophage is :

- a) Bacteria that attack virus.
- b) Virus that attack bacteria.
- c) Bacteria that attack fungi.
- d) Virus that attack fungi.

25. The marine plain near to the coast which stretches between 0 to 200 m. depth is known as :

- a) Continental margin.
- b) Continental shelf.
- c) Continental slope.
- d) Abyssal plain.

26. Ouch-ouch disease is due to :

- a) Zn poisoning.
- b) Hg poisoning.
- c) Cd poisoning.
- d) Cr poisoning.

27. Belt of low pressure around the world at the equator are called :
- a) Calderas.
 - b) Doldrums.
 - c) Microclimate.
 - d) Macroclimate.
28. Podzols are the characteristics of :
- a) Taigas.
 - b) Temperate forests.
 - c) Woodlands.
 - d) Grasslands.
29. Namdapha Biosphere reserve is in :
- a) Uttar Pradesh.
 - b) Tamil Nadu.
 - c) Rajasthan.
 - d) Arunachal Pradesh.
30. Those species which will become endangered if causal factors are not controlled are :
- a) Extinct.
 - b) Vulnerable.
 - c) Rare.
 - d) Threatened.
31. Indian National Wildlife Action Plan was formulated in :
- a) 1983.
 - b) 1985.
 - c) 1984.
 - d) 1981.
32. The radioactive element which replaces Ca in bones is :
- a) Uranium.
 - b) Radon.
 - c) Thorium.
 - d) Radium.
33. Stratopause divides stratosphere with :
- a) Troposphere.
 - b) Mesosphere.
 - c) Thermosphere.
 - d) Ionosphere.
34. Thermal oxidation of organic matter to CO₂, water and inert ash is :
- a) Incineration.
 - b) Landfilling.
 - c) Composting.
 - d) Vitrification.

Turn over

35. One among the following is a primary treatment process :
- a) Ion exchange.
 - b) Activated sludge process.
 - c) Floatation.
 - d) Reverse osmosis.
36. The author of "The Population Bomb" is :
- a) Dr. M.S. Swaminathan.
 - b) Paul Ehrlich.
 - c) Rachel Carson.
 - d) P.Harrison.
37. Permitted level of SO_2 ($\mu\text{g}/\text{m}^3$) in residential areas is :
- a) 20.
 - b) 40.
 - c) 60.
 - d) 80.
38. Project Tiger was launched in the year :
- a) 1975.
 - b) 1974.
 - c) 1973.
 - d) 1976.
39. Highly toxic form of mercury is :
- a) Hg^{2+} .
 - b) R_2Hg .
 - c) HgS .
 - d) RHg^+ .
40. Teratogens are those which cause :
- a) DNA alteration.
 - b) Birth defects.
 - c) Poisoning.
 - d) Mutation.
41. The study of seasonal changes in ecosystems is called :
- a) Climatology.
 - b) Weather.
 - c) Sere.
 - d) Phenology.
42. Methemoglobinemia or blue baby disease is caused due to :
- a) Sulphate pollution.
 - b) Air pollution.
 - c) Mercury pollution.
 - d) Nitrate pollution.
43. Nutrient poor lake is referred as :
- a) Oligotrophic.
 - b) Eutrophic.
 - c) Dystrophic.
 - d) Syntrophic.

44. Noise is measured in :
- a) Dobson.
 - b) Decimal.
 - c) Decibel.
 - d) Doldrums.
45. Ozone layer is present in :
- a) Troposphere.
 - b) Stratosphere.
 - c) Mesosphere.
 - d) Thermosphere.
46. Lichen is a symbiotic association between :
- a) Algae and bacteria.
 - b) Algae and fungi.
 - c) Algae and bryophytes.
 - d) Fungi and bryophytes.
47. The powerful eye irritant present in smog is :
- a) Oxygen.
 - b) Nitric oxide.
 - c) Sulphur dioxide.
 - d) Peroxyacetyl nitrate.
48. Terrestrial ecosystem with highest primary productivity is :
- a) Savannah.
 - b) Temperate forest.
 - c) Cultivated land.
 - d) Tropical rain forest.
49. In situ conservation of species include :
- a) Gene pools.
 - b) Zoological parks.
 - c) Embryo culture.
 - d) National parks.
50. The red colour associated with red sea is due to :
- a) Iron.
 - b) Ribidium salts.
 - c) Phytoplankton.
 - d) Zooplankton.

(50 × 1 = 50 marks)

Turn over

Part B

*Answer any ten questions.
Each question carries 5 marks.*

Write notes on the following :

51. Ecological succession.
52. Acute and Chronic toxicity.
53. Ozone depletion.
54. Bioremediation.
55. Natural hazards.
56. Meteorological factors affecting air pollution.
57. Bioenergy from biomass.
58. Biodiversity conservation.
59. Analysis of air pollution by gas chromatography.
60. Methods of Environmental Impact Analysis.
61. Types of water pollution.
62. Environmental auditing.
63. Applications of remote sensing in environment.
64. Risk identification and management.

(10 × 5 = 50 marks)