

M.Sc. ENVIRONMENTAL SCIENCE
First Semester
ENVIRONMENTAL BIOLOGY
(MEV - 101)

Duration: 3Hrs.

Full Marks: 70

Part-A (Objective) =20
Part-B (Descriptive) =50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

Answer any *five* of the following questions:

1. Discuss the structural composition of atmosphere with proper diagram. Distinguish between homosphere and heterosphere. What are aerosols? (7+2+1=10)
2. What is biogeochemical cycle? Explain the nitrogen cycle with proper diagram. What do you mean by eutrophication? (1+7+2=10)
3. Define population and population density. Describe survivorship curve and its types. Discuss age structure. What type of structure is found in India? (1+5+3+1=10)
4. What is ecological succession? Elaborately discuss the process of succession in terrestrial ecosystem. What is climax community? (2+7+1=10)
5. Define species. Write a short note on concept of species. Explain the concept of speciation and its types. (1+3+6=10)
6. Write short note on (*any two*): (5+5=10)
 - a) Phosphorus cycle
 - b) Structure of lithosphere
 - c) Life zones of fresh water system

7. Elaborately discuss the any two methods of estimation of productivity. (5+5=10)
8. Discuss the theories of evolution of flowering plant groups. Write a brief note on insect pollination in angiosperms. (6+4=10)

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Duration: 20 minutes

Marks – 20

(PART A- Objective Type)

I. Choose the correct answer:

1×20=20

- Which of the following step occurs first in a primary succession?
(a) Invasion (b) Nudation (c) Ecesis (d) Aggregation
- The hierarchical levels at which we discuss interacting units of ecology are,
(a) Individual < population < community < ecosystem < biome < biosphere.
(b) Biosphere < biome < ecosystem < community < population < Individual.
(c) Ecosystem < Biosphere < community < biome < population < Individual.
(d) None.
- Biogeochemical cycle is important because
(a) biogeochemical cycles enable the transformation of matter from one form to another.
(b) biogeochemical cycles facilitate the storage of elements.
(c) biogeochemical cycles assists in functioning of ecosystems.
(d) all the above.
- The amount of time that an element or a chemical is held in one place is called its
(a) resident time (b) reservoir time (c) exchange time (d) influx time
- Which of the following is a primary consumer?
(a) Euglena (b) Snake (c) Goat (d) Fox
- In which type of speciation geographical isolation is the cause of speciation?
(a) Allopatric (b) Parapatric (c) Sympatric (d) Peripatric
- The amount of nitrogen fixed in biological fixation process is about
(a) 140 – 700 mg/m²/year (b) 140 – 170 mg/m²/year
(c) 140 – 240 mg/m²/year (d) 140 – 1300 mg/m²/year
- Which type survivorship curve is shown by oak trees?
(a) Highly concave curve (b) Diagonal curve
(c) Highly convex curve (d) Both a & b
- Rapidly increasing population shows maximum of
(a) Reproductive individuals (b) Young individuals
(c) Old individuals (d) Both (a) and (c)

10. The meteorite landed on earth in 1969 was
 (a) Murchirson (b) Murchitson
 (c) Murchison (d) Murichison
11. According to Arber and Parkin, flowering plants are probably evolved from
 (a) Pteridophytes (b) Cycadales
 (c) Gnetales (d) Coniferales
12. Small solid particles and liquid droplets in air that serve as condensation nuclei for cloud formation are known as
 (a) Dust (b) Water vapour (c) PAN (c) Aerosols
13. In present scenario of environmental problems, which component of environment is included
 (a) Atmosphere (b) Hydrosphere
 (c) Lithosphere (d) All the above
14. Which of the following atmospheric layer is significant for the flight of jet planes and radio communications?
 (a) Mesosphere (b) Thermosphere
 (c) Troposphere (d) Stratosphere
15. Which among the following is the most variable component in the atmosphere?
 (a) Nitrogen (b) Water vapour (c) Oxygen (d) Helium
16. The movement of individuals into and out of population is caused by factors like birth, death, immigration, emigration, etc. Such a state denotes
 (a) Population density.
 (b) Population turnover.
 (c) Population regulation population control.
17. Biological diversity is maximum in
 (a) Littoral zone (b) Profundal zone
 (c) Limnetic zone (d) Benthic zone
18. Locally adapted populations developed from species with wide geographical ranges are
 (a) Ecotypes (b) Paratypes (c) Syntypes (d) Prototypes
19. *Nitrococcus*, *Nitrosomonas* and *Nitrosogloea* are examples of
 (a) Fixation bacteria (b) Denitrifying bacteria
 (c) Ammonifying bacteria (d) Nitrifying bacteria
20. What is the turnover time of phosphorus in deep oceans?
 (a) 2×10^3 years (b) 1500 years (c) 50 years (d) Few days
