



Bs/EVS M-4T

2 0 2 5

(FYUGP)

(4th Semester)

ENVIRONMENTAL SCIENCE

(MINOR)

Paper : EVS M-4T

(Systematics and Biogeography)

Full Marks : 75

Pass Marks : 40%

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 50)

*The figures in the margin indicate full marks
for the questions*

1. What are the different types of taxonomic literatures? Discuss the taxonomic evidences obtained from Palynology and Cytology.

3+7=10

Or

Define taxonomic identification keys.
Describe the method of herbarium
preparation.

2+8=10

2. What is taxonomic hierarchy? Describe the various concepts of species. 2+8=10

Or

Explain the classification system of Bentham and Hooker. 10

3. Define rooted, unrooted and ultrametric phylogenetic trees. Write the differences between parallelism and convergence evolution. 4+6=10

Or

What is natural selection? Explain any two biogeographical rules. 2+8=10

4. What are the different types and processes of speciation? Explain the biogeographic dynamics of climate change and Ice age. 5+5=10

Or

What is ecological diversification? Describe the paleo records of diversity and diversification. 2+8=10

5. Explain the concept of rarity and commonness. How are biogeographical rules used to design protected areas and biosphere reserves? 4+6=10

Or

Define niche concept. Explain the island biogeography theory. 2+8=10

★ ★ ★

2 0 2 5

(FYUGP)

(4th Semester)

ENVIRONMENTAL SCIENCE

(MINOR)

Paper : EVS M-4T

(Systematics and Biogeography)

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

PART—A

(Marks : 15)

A. Put a Tick (✓) mark against the correct answer in the
brackets provided : 1×15=15

1. Who coined the term 'taxonomy'?

(a) A. P. de Candolle ()

(b) C. Linnaeus ()

(c) Charles Darwin ()

(d) Michener ()

2. "A group of organisms that shares a common ancestor but not all of its descendants" is called
- (a) Homology ()
 - (b) Paraphyly ()
 - (c) Monophyly ()
 - (d) Polyphyly ()
3. Who wrote the book, *Historia Plantarum*?
- (a) Linnaeus ()
 - (b) Theophrastus ()
 - (c) Hooker ()
 - (d) Aristotle ()
4. The suffix '-ales' is used for which rank?
- (a) Genus ()
 - (b) Family ()
 - (c) Order ()
 - (d) Class ()
5. Which of the following is/are considered as physical barrier of dispersal of plants and animals?
- (a) Mountain ()
 - (b) Desert ()
 - (c) Ocean ()
 - (d) All of the above ()

6. Who first developed the biological species concept?

- (a) Wiley () (b) Nelson ()
(c) Ray () (d) Mayer ()

7. A niche that is occupied by a variable population of a species in the presence of competitor species is called

- (a) realized niche ()
(b) fundamental niche ()
(c) habitat niche ()
(d) Hutchinsonian niche ()

8. Who defined the term 'Homology'?

- (a) Darwin ()
(b) Owen ()
(c) Simpson ()
(d) Takhtajan ()

9. Which is an abiotic factor that determines communities?

- (a) Population size ()
(b) Symbiosis ()
(c) Topography ()
(d) Predation ()

10. Who was the first person to propose the idea that continents might have 'drifted' apart?

- (a) Otto Ampferer ()
- (b) Alfred Wegener ()
- (c) Abraham Ortelius ()
- (d) Arthur Holmes ()

11. Multiple access keys are also called as

- (a) serial keys ()
- (b) bracketed keys ()
- (c) indented keys ()
- (d) polyclave keys ()

12. The study of how genetic lineages spread across time and space is called

- (a) phytogeography ()
- (b) phylogeography ()
- (c) phylogeny ()
- (d) biogeography ()

13. Who proposed the 'equilibrium theory of insular biogeography' ?
- (a) Bentham and Hooker ()
 - (b) Avise and Geist ()
 - (c) MacArthur and Wilson ()
 - (d) Linnaeus and Darwin ()
14. Names which are rejected because there is no accompanying description is called
- (a) nomen nudum ()
 - (b) nomen ambiguum ()
 - (c) nomen dubium ()
 - (d) tautonym ()
15. Variation of individuals of a population which are separable by infinitely small differences in their attributes is called
- (a) developmental variation ()
 - (b) continuous variation ()
 - (c) discontinuous variation ()
 - (d) genetic variation ()

(6)

PART—B

(Marks : 10)

B. Write notes on any *five* of the following : 2×5=10

1. Role of botanical garden in taxonomic study

2. Taxonomy databases

3. Author citation

4. Operational taxonomic units

5. Cladogram

6. Species-area relationship

7. Continental drift

8. Gene flow
