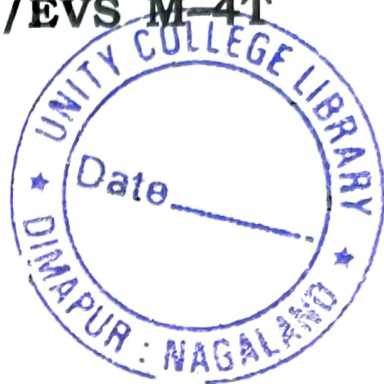


Bs/EVS M-4T



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(FYUGP)

(4th Semester)

ENVIRONMENTAL SCIENCE

(MINOR)

Paper : EVS M-4T

(Systematics and Biogeography)

Full Marks : 75

Pass Marks : 40%

Time : 3 hours

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

(PART : A—OBJECTIVE)

(Marks : 25)

A. Choose the correct option : 1×15=15

1. A group of closely related species with common ancestry is called a/an

- (a) species*
- (b) genus*
- (c) family*
- (d) order*

2. Who proposed the Evolutionary Species concept?
- (a) Wiley, 1978
 - (b) Niles Eldredge, 1980
 - (c) Simpson, 1961
 - (d) Lamarck, 1809
3. What is the name of the land bridge that connected Asia and North America during the Ice Age?
- (a) Isthmus land bridge
 - (b) Bass Strait land bridge
 - (c) Bering land bridge
 - (d) None of the above
4. In ICBN, 'nomen ambiguum' means a name is rejected
- (a) if it is based on a type consisting of 2 or more entirely discordant elements
 - (b) if it is used in different sense by different authors
 - (c) if it is dubious as it is impossible to establish the taxon to which it should be referred
 - (d) if the same name has been published by a different author

5. During Ice Age, some species were able to survive in isolated warmer areas called as
- (a) land bridge
 - (b) refugia
 - (c) pangea
 - (d) All of the above
6. Which type of ecological niche is called *n*-dimensional hyper volume?
- (a) Hutchinson's niche
 - (b) Eltonian niche
 - (c) Spatial niche
 - (d) Trophic niche
7. Extinction that occurs at a large scale due to a sudden catastrophic event is called
- (a) endemic extinction
 - (b) mass extinction
 - (c) background extinction
 - (d) ecological extinction
8. Who gave the definition of phylogeography?
- (a) Charles Darwin
 - (b) Carolus Linnaeus
 - (c) John Avise
 - (d) Robert Mayr

9. The study of ancestral relationship and evolutionary history of a taxonomic group is called
- (a) taxonomy
 - (b) ecology
 - (c) palaeontology
 - (d) phylogeny
10. Which time period is called the 'Age of Dinosaurs'?
- (a) Paleozoic era
 - (b) Cenozoic era
 - (c) Mesozoic era
 - (d) Pre-Cambrian era
11. Alfred Wegener suggested the continents were once part of a single supercontinent called
- (a) Laurasia
 - (b) Gondwanaland
 - (c) Eurasia
 - (d) Pangea
12. The suffix 'phyta' is used for which taxon?
- (a) Family
 - (b) Order
 - (c) Class
 - (d) Division

13. The chemical that is used for preservation of species in herbarium is called

- (a) ethanol
- (b) formaldehyde
- (c) glycerine
- (d) hydrochloric acid

14. Which is a factor that does not affect species richness in islands?

- (a) Island size
- (b) Immigration
- (c) Distance from mainland
- (d) Ocean size

15. Who proposed the 'equilibrium theory of insular biogeography'?

- (a) Bentham and Hooker
- (b) Avise and Geist
- (c) MacArthur and Wilson
- (d) Linnaeus and Darwin

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

1. Biological concept of species
2. Principle of priority

(6)

3. Character coding
4. Phenogram
5. Natural selection
6. Adaptive radiation
7. Hutchinson niche
8. Rarity and commonness

(PART : B—DESCRIPTIVE)

(Marks : 50)

Answer the following questions :

10×5=50

1. What are taxonomic database? Discuss the taxonomic evidence obtained from anatomy.

2+8=10

Or

Define herbarium. Explain the role of museum in taxonomic studies.

2+8=10

2. What is DNA barcoding? Draw the chart of Bentham and Hooker classification system.

2+8=10

Or

Define clade. Write the difference between homology and analogy.

2+8=10

3. Discuss "Genes as a unit of evolutionary change". 10

Or

Explain continental drift and plate tectonics and their role in biogeographic patterns. 10

4. Write a note on the means of dispersals and barriers to dispersals. 5+5=10

Or

Describe the various biogeographical realms and their fauna. 10

5. What is species-area relationship? Explain the biotic and abiotic determinants of communities. 3+7=10

Or

Define phylogeography. Describe the use of remote sensing in conservational planning. 2+8=10

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