

**M.Sc. ENVIRONMENTAL SCIENCE
FIRST SEMESTER
FUNDAMENTALS OF ECOLOGY
MEV-101**

(Use separate answer scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

[PART-A : Objective]

Time : 20 min.

Marks : 20

Choose the correct answer from the following:

1×20=20

1. What is Ecotone?
 - a. It denotes a mosaic boundaries or inter-digitting zone between two more homogenous vegetation units.
 - b. A term was applied by Erhart to periods of soil formation.
 - c. It is formed by the interactions among population of living animals and plants.
 - d. None of the above/More than the above.
2. Select the correct term related to the phrase- 'The entire complement of species of organisms, plants and animals, found within a given region'.
 - a. Community
 - b. Biotype
 - c. Biota
 - d. Biome
3. What do you understand by Food Web?
 - a. It deals with the relationship between the number of primary producers and consumers of different order.
 - b. It is the sequence of energy transfer from the lower levels to the upper or higher trophic levels.
 - c. A community of organisms where there are several interrelated food chains.
 - d. None of the above/More than the above.
4. Who had given the theory of evolution of species by natural selection?
 - a. Darwin
 - b. Mendel
 - c. Dalton
 - d. Morgan
5. Which of the following are the sources which provide evidences for evolution?
 - a. Homologous organs
 - b. Analogous organs
 - c. Fossils
 - d. All of the above
6. The theory of origin of life on earth is proposed by:
 - a. Haldane
 - b. Stanley Miller
 - c. Harold C. Urey
 - d. Lamarck
7. Which of the following are the postulates of Darwin's theory of evolution?
 - a. Within any population, there is natural variation.
 - b. Even though all species produce a large number of offsprings, populations remain fairly constant naturally.
 - c. The struggle for survival within populations eliminates the unfit individuals.
 - d. All the above are correct.
8. The process by which new species develop from the existing species is called:
 - a. Homologous
 - b. Analogous
 - c. Speciation
 - d. Genetic variation

9. Arrange the following in the order of shortest to longest duration on Geological Time Scale.
- a. Epoch-Period-Era-Eons
b. Eons-Era-Period-Epoch
c. Epoch-Eons-Period-Era
d. Era-Period-Epoch-Eons
10. Choose the false statement among the following statements.
- a. Due to the process of differentiation the earth forming material got separated into different layers.
b. The present composition of the earth atmosphere has remained same throughout the earth's history.
c. Scientists at present believe that the moon was formed about 4.44 billion years ago due to "the big splat".
d. Through the process of differentiation that the earth forming material got separated into different layers.
11. Butterfly display survivorship curve of:
- a. Convex type
b. Staircase type
c. Concave type
d. Diagonal
12. Synecology deals with:
- a. Population
b. Community
c. Individual
d. Species
13. Diapause, a phenomena of meeting temperature extreme is observed in:
- a. Bear
b. Bird
c. Bat
d. Earthworm
14. The tail, snout and legs are comparatively smaller in the mammals of cold climates than those in the hot climatic regions as per:
- a. Jordan's Rule
b. Bergman's rule
c. Allen's Rule
d. Gloggei's Rule
15. Tomato plants are:
- a. Long day plant
b. Short day plant
c. Day neutral plant
d. None
16. The response of animals to the rhythms of light and darkness is called:
- a. Photophase
b. Scatophase
c. Compensation
d. None
17. Terrestrial animals which can tolerate extremely dry conditions and pass long periods without water:
- a. Hydrophytes
b. Xerophytes
c. Mesophytes
d. Xerocoles
18. In northern hemisphere, which slope receives more solar radiation?
- a. Northern
b. Southern
c. Eastern
d. Western
19. At poles, stratosphere is about:
- a. 18 km thick
b. 62 km thick
c. 72 km thick
d. None
20. In forest ecosystem, pyramid of number is:
- a. Upright
b. Inverted
c. Irregular
d. None

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[PART-B : Descriptive]

Time : 2 hrs. 40 min.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. What do you mean by food chain? Categorize food chain with suitable examples. What is its significance? 1+6+3=10
2. Define ecological factor. State the effect of temperature on plants and animals distribution. 1+9=10
3. Define population interaction. Cite population interaction types with suitable instances. 1+9=10
4. Write short notes on: 5+5=10
a) Natality
b) Population fluctuation
5. Describe the quantitative characteristics of a biotic community. 10
6. a) Write in detail Raunkaier's life forms. 5
b) Describe in detail the ecological succession. 5
7. a) Give the postulates of Lamarck's theory of evolution. 5
b) Give important differences between Lamarckism and Darwinism. 5
8. What do you understand by the term "Species"? What are the different modes of speciation? Describe in detail. 3+7=10

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