

**M.Sc. Environmental Science**  
**FIRST SEMESTER**  
**FUNDAMENTALS OF ECOLOGY**  
**MEV-101**

Duration: 3 Hrs.

Marks: 70

PART : A (OBJECTIVE) = 20  
PART : B (DESCRIPTIVE) = 50

**[ PART-B : Descriptive ]**

Duration: 2 Hrs. 40 Mins.

Marks: 50

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

1. Explain the structure and composition of atmosphere and lithosphere with suitable diagram. 5+5 = 10
2. Define biogeochemical cycle. What are its types? Explain nitrogen cycle with suitable diagram and example. 2+2+6 = 10
3. What is gross primary productivity and net primary productivity? How they are related? Discuss any one method of estimation of productivity. 2+1+7 = 10
4. Define ecological succession. What are different types of succession found based on the habitat condition? Elaborate the process of succession in aquatic ecosystem. 2+2+6 = 10
5. Define species. Write a short note on concept of species. Explain the process of speciation and its types. 1+3+6 = 10
6. Discuss any two theories of evolution of flowering plant groups. Write a brief note on insect pollination in angiosperms. 6+6 = 10
7. Define population density. What is survivorship curve and what are its types? Discuss age structure. What type of age structure is found in India? 1+4+4+1 = 10
8. What is ecotone and ecoline? What are the factors that determine formation of ecotone? Why diversity of species is high in ecotone? What is ecotype? Give suitable examples of ecotype. 2+3+2+1+2 = 10

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**[ PART-A : Objective ]**

Choose the correct answer from the following :

1 × 20 = 20

1. Which type survivorship curve is shown by small birds?
  - a. Highly concave curve
  - b. Highly convex curve
  - c. Diagonal curve
  - d. Both a & b
2. Rapidly decreasing population shows maximum of \_\_\_\_\_.
  - a. Reproductive individuals
  - b. Old individuals
  - c. Young individuals
  - d. None of the above
3. These small particles and liquid droplets in air serve as condensation nuclei for cloud formation.
  - a. Dust
  - b. Water vapour
  - c. PAN
  - d. Aerosols
4. Which of the following gas in atmosphere have less change in its concentration?
  - a. Nitrogen
  - b. Water vapour
  - c. Carbon dioxide
  - d. Ozone
5. The concentration of water vapour in atmosphere by volume in tropics is about
  - a. 0 %
  - b. 0.5 %
  - c. 0.15 %
  - d. 0.25 %
6. Which layer(s) of atmosphere help in radio communication
  - a. Mesosphere
  - b. Ionosphere
  - c. Stratosphere
  - d. Both a & b
7. The functional aspect of ecosystem is related to
  - a. Energy flow
  - b. Material cycling
  - c. Both a & b
  - d. None
8. The term ecosystem was coined by
  - a. Clarke, 1954
  - b. A.G. Tansley, 1935
  - c. E.P. Odum, 1966
  - d. Ernst Haeckel, 1866
9. *Micrococcus*, *Pseudomonas* and *Thiobacillus* are examples of \_\_\_\_\_ bacteria
  - a. fixation
  - b. ammonifying
  - c. nitrifying
  - d. denitrifying
10. Which type of coral reef separates lagoon from ocean?
  - a. Fringing reef
  - b. Atoll reef
  - c. Barrier reef
  - d. both b & c
11. Which of the following step occurs first in a primary succession?
  - a. Invasion
  - b. Nudation
  - c. Ecesis
  - d. Aggregation
12. In which type of speciation geographical isolation is the cause of speciation
  - a. Allopatric
  - b. Parapatric
  - c. Sympatric
  - d. Peripatric
13. Which of the following is pioneer community in lithosere?
  - a. Grasses
  - b. Mosses
  - c. Lichen
  - d. All the above
14. According to Arber and Parkin, flowering plants are probably evolved from
  - a. Pteridophytes
  - b. Cycadales
  - c. Gnetales
  - d. Coniferales

**UNIVERSITY OF SCIENCE & TECHNOLOGY, MEGHALAYA**



**[PART (A) : OBJECTIVE]**

Duration : 20 Minutes

Serial no. of the  
main Answer sheet

- 15. Which among the following is the most variable component in the atmosphere
  - a. Nitrogen
  - b. Water vapour
  - c. Oxygen
  - d. Helium
- 16. Locally adapted populations developed from species with wide geographical ranges are
  - a. Ecotypes
  - b. Paratypes
  - c. Syntypes
  - d. Prototypes
- 17. Which of the following pyramid is always upright?
  - a. Pyramid of energy
  - b. Pyramid of number
  - c. Pyramid of biomass
  - d. All the above
- 18. Ecological Succession that starts in sufficient sand is called as \_\_\_\_
  - a. Halosere
  - b. Mesarch
  - c. Xerach
  - d. Psammosere
- 19. The inward movement of a part of population is called \_\_\_\_
  - a. Migration
  - b. Emigration
  - c. Immigration
  - d. None of the above
- 20. Which portion of lithosphere have maximum concentration of iron
  - a. Inner core
  - b. Outer core
  - c. Lower mantle
  - d. Upper mantle

Course : .....

Semester : ..... Roll No : .....

Enrollment No : ..... Course code : .....

Course Title : .....

Session : ..... 2017-18 ..... Date : .....

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**Instructions / Guidelines**

- The paper contains twenty (20) / ten (10) questions.
- Students shall tick (✓) the correct answer.
- No marks shall be given for overwrite / erasing.
- Students have to submit the Objective Part (Part-A) to the invigilator just after completion of the allotted time from the starting of examination.

Full Marks	Marks Obtained
20	

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Scrutinizer's Signature

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Examiner's Signature

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Invigilator's Signature