

M.Sc. BOTANY
FOURTH SEMESTER
PLANT ECOLOGY
MSB-402 D

**SET
B**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

(Objective)

Time: 30 mins.

Marks: 20

Choose the correct answer from the following:

1 × 20 = 20

- Which of the following is not a type of age pyramid?
 - Expanding age pyramid
 - Realized age pyramid
 - Stable age pyramid
 - Diminishing age pyramid
- Smaller hypervolume occupied by a species is called:
 - Fundamental niche
 - Niche overlapping
 - Realised niche
 - None
- Each ecosystem can sustain a fixed number of organisms depending on its size and productivity. This is called:
 - Carrying capacity
 - Biotic potential
 - Natality
 - Mortality
- Which phenomenon is not a result of Pyramid of numbers?
 - A great many small units are required to equal to the mass of one big unit
 - The pattern of many small organisms and few large ones is the food chain
 - Horizontal size of the metabolic rate pattern
 - Inverse size metabolic rate pattern
- Logistic model is represented by:
 - $dN=rN (K-N)$
 - dTK
 - $dN =rN$
 - $dN=Dt$
- When a stationary and stable age distribution exists, the specific growth rate is called:
 - Co-efficient of population growth
 - Carrying capacity
 - Age structure
 - Intrinsic rate of natural increase
- $e = \sum (n_i/N)$ designate:
 - Shannon index of diversity
 - Evenness index
 - Dominance index
 - Index of similarity
- A process carried out by nitrifying bacteria, transforms soil ammonia into nitrates (NO_3^-), which plants can incorporate into their own tissues:
 - Ammonification
 - Nitrification
 - Denitrificaion
 - Assimilation
- If the environment is constant, selection favours slow development, longer life span, low or medium metabolic rate, longer body size are the characteristics of:
 - Population fluctuation
 - Biological clock
 - r selected species
 - k selected species

10. Organisms that occupy the similar ecological niches in different geographical regions are known as:
- | | |
|----------------------------|-------------------------|
| a. Ecological displacement | b. Ecological community |
| c. Ecological equivalent | d. Allopatry |
11. Raunkiaer classified higher plants into how many major life forms?
- | | |
|------|------|
| a. 1 | b. 2 |
| c. 4 | d. 5 |
12. Diagrammatic representation of phenological events is called:
- | | |
|----------------|----------------|
| a. Phenogram | b. Phytophases |
| c. Phenography | d. None |
13. Transitional zone or junction zone between two or more diverse communities is called:
- | | |
|----------------------|-------------------------------------|
| a. Seral communities | b. Qualitative feature of community |
| c. Ecotone | d. Euphotic zone |
14. Property/Properties of biological organization, including ecosystems is/are:
- | | |
|--|--------------------------------------|
| a. Ecosystems exist independently of specific components | b. Its components are interdependent |
| c. A sliding scale of organization exists | d. All of the above |
15. Energy flow provides a suitable index for comparing any and all components of an ecosystem by:
- | | |
|--------|----------------------|
| a. P+R | b. R+R |
| c. P+P | d. None of the above |
16. The loss of individuals under a given environmental condition not a constant but varies with population and environmental conditions is termed as:
- | | |
|----------------------|-----------------------|
| a. Realised natality | b. Realised mortality |
| c. Minimum mortality | d. Minimum natality |
17. The term used for ecological interaction between two species where one species obtains a benefit from the relationship and the second species is affected by it:
- | | |
|----------------------|--------------|
| a. Parasitism | b. Mutualism |
| c. Proto-cooperation | d. Symbiosis |
18. Density increases rapidly in exponential or compound interest fashion and stops abruptly as environmental resistance or other limit become effective more or less suddenly in:
- | | |
|--------------------------------------|-----------------------|
| a. The J shaped form of growth curve | b. Sigmoid form |
| c. Acceleration phase | d. Survivorship curve |
19. The concept of niche is given by:
- | | |
|---------------|-------------------|
| a. Hutchinson | b. Odum |
| c. Koromondy | d. Joseph Grinnel |
20. Number of quadrats in which species A occurred/total number of quadrats examined $\times 100$ designates:
- | | |
|--------------|-------|
| a. Frequency | b. RF |
| c. Abundance | d. RD |

(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

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

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|---|----------|
| 1. Discuss any three Functional characteristics of Ecosystem with special emphasis on energy flow with suitable examples. | 8+2=10 |
| 2. Write short notes on:
a) Different types of niches
b) Biotic factors | 5+5=10 |
| 3. Write short notes on:
a) J shaped growth curve
b) Mortality
c) r and k selected species
d) Seasonal population fluctuation | 2.5×4=10 |
| 4. Intricate the different positive and negative interactions with suitable examples. | 5+5=10 |
| 5. What is Community? Illustrate the qualitative characteristics of a community. | 2+8=10 |
| 6. What is diversity? Describe different diversity indices with formula. | 2+8=10 |
| 7. What is ecological succession? What are the general causes and stages of succession? | 2+8=10 |
| 8. What is biogeochemical cycle? Elucidate Nitrogen cycle with suitable diagrams. | 2+8=10 |

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