

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

(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:

1X20=20

1. Raunkiaer classified higher plants into how many major life forms
 - a. 1
 - b. 2
 - c. 4
 - d. 5
2. Which of the following is not a type of age pyramid
 - a. Expanding age pyramid
 - b. Realized age pyramid
 - c. Stable age pyramid
 - d. Diminishing age pyramid
3. Diagrammatic representation of phenological events is called
 - a. phenogram
 - b. phytophases
 - c. phenography
 - d. none
4. Smaller hypervolume occupied by a species is called
 - a. Fundamental niche
 - b. Niche overlapping
 - c. Realised niche
 - d. none
5. 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
6. Each ecosystem can sustain a fixed number of organisms depending on its size and productivity. This is called
 - a. Carrying capacity
 - b. Biotic potential
 - c. natality
 - d. mortality
7. 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
8. Which phenomenon is not a result of Pyramid of numbers
 - a. A great many small units are required to equal to the mass of one big unit
 - b. the pattern of many small organisms and few large ones is the food chain
 - c. horizontal size of the metabolic rate pattern
 - d. inverse size metabolic rate pattern

9. Energy flow provides a suitable index for comparing any and all components of an ecosystem by
- P+R
 - R+R
 - P+P
 - None of the above
10. Logistic model is represented by
- $dN=rN (K-N)$
 - $dT = K$
 - $dN = rN$
 - $dN=Dt$
11. The loss of individuals under a given environmental condition not a constant but varies with population and environmental conditions is termed as
- Realised natality
 - Realised mortality
 - minimum mortality
 - minimum natality
12. 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
13. 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
- parasitism
 - mutualism
 - proto-cooperation
 - symbiosis
14. $e = \sum(n_i/N)$ designate
- Shannon index of diversity
 - Evenness index
 - Dominance index
 - Index of similarity
15. 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
- the J shaped form of growth curve
 - sigmoid form
 - acceleration phase
 - survivorship curve
16. A process carried out by nitrifying bacteria, transforms soil ammonia into nitrates (NO_3^-), which plants can incorporate into their own tissues.
- Ammonification
 - Nitrification
 - Denitrification
 - Assimilation
17. The concept of niche is given by
- Hutchinson
 - Odum
 - Koromondy
 - Joseph Grinnel
18. 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
19. Number of quadrats in which species A occurred/total number of quadrats examined $\times 100$ designates
- Frequency
 - RF
 - Abundance
 - RD

20. 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

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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. Discuss the Functional characteristics of Ecosystem with suitable examples 8+2=10
2. Write short notes on: 5×5=10
 - i. Biotic factors
 - ii. Density dependent and independent factors
3. Write short notes on: 2.5×4=10
 - a. S shaped growth curve
 - b. Mortality
 - c. r and k selected species
 - d. Biotic potential
4. What is Community? Illustrate the quantitative and qualitative characteristics of a community 2+8=10
5. What is habitat and niche? Explain the different types of niches with suitable examples 4+6=10
6. Intricate the different positive and negative interactions with suitable examples 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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