2023/06

M.Sc. BOTANY
FOURTH SEMESTER
PLANT ECOLOGY
MSB-402 D
[USE OMR SHEET FOR OBJECTIVE PART]

SET
A

Duration: 3 hrs.

Full Marks: 70

(**Objective**)

Time: 30 mins.

Marks: 20

Choose the correct answer from the following:

1 ×20=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. Diagramatic representation of phonological 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:
   a. P+R
   b. R+R
   c. P+P
   d. None of the above

10. Logistic model is represented by:
    a. dN=rN (K-N)
    b. dTK
    c. dN =rN
    d. 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:
    a. Realised natality
    b. Realised mortality
    c. Minimum mortality
    d. Minimum natality

12. When a stationary and stable age distribution exists, the specific growth rate is called:
    a. Co-efficient of population growth
    b. Carrying capacity
    c. Age structure
    d. 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:
    a. Parasitism
    b. Mutualism
    c. Proto-coperation
    d. Symbiosis

14. $e= \sum (ni/N)$ designate:
    a. Shannon index of diversity
    b. Eveness index
    c. Dominance index
    d. 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:
    a. The J shaped form of growth curve
    b. Sigmoid form
    c. Acceleration phase
    d. Survivorship curve

16. A process carried out by nitrifying bacteria, transforms soil ammonia into nitrates ($NO3^-$), which plants can incorporate into their own tissues:
    a. Ammonification
    b. Nitrification
    c. Denitrificaion
    d. Assimilation

17. The concept of niche is given by:
    a. Hutchinson
    b. Odum
    c. Koromondy
    d. 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:
    a. Population fluctuation
    b. Biological clock
    c. r selected species
    d. k selected species

19. Number of quadrats in which species A occurred/total number of quadrats examined ×100 designates:
    a. Frequency
    b. RF
    c. Abundance
    d. 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

-- --- --

(Descriptive)

Time : 2 hr. 30 mins.   Marks : 50

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

1. Discuss any three Functional characteristics of Ecosystem with special   8+2=10
   emphasis on energy flow with suitable examples.

2. Write short notes on: 5+5=10
   a) Different types of niches
   b) Biotic factors

3. Write short notes on: 2.5×4=10
   a) J shaped growth curve
   b) Mortality
   c) r and k selected species
   d) Seasonal population fluctuation

4. Intricate the different positive and negative interactions with suitable   5+5=10
   examples.

5. What is Community? Illustrate the qualitative characteristics of a   2+8=10
   community.

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   2+8=10
   of succession?

8. What is biogeochemical cycle? Elucidate Nitrogen cycle with suitable   2+8=10
   diagrams.

== == *** == ==