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3 (Sem-4/CBCS) BOT HC 2

2023

BOTANY

(Honours Core)

Paper : BOT-HC-4026

(Plant Ecology and Phytogeography)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer of the following :

1×7=7

(a) Taxa which have long evolutionary history, once enjoyed a wide distribution but presently restricted to dispersal by barriers or extinction in the remaining areas is :

- (i) Paleoendemics
- (ii) Neoendemics
- (iii) Holoendemics
- (iv) Pseudoendemics

Contd.

(b) The soil which has abundant humus retain both nutrients as well as water and is suitable for crop cultivation is categories as :

- (i) Podsols
- (ii) Gleys
- (iii) Chernozems
- (iv) Latosols

(c) The occurrence of high percentage of therophytes in an area would indicate :

- (i) desert climate
- (ii) warm and moist climate
- (iii) warm and dry climate
- (iv) extremely cold climate

(d) Which of the following is incorrectly matched with reference to succession ?

- (i) Lithosere-Rock
- (ii) Psamnosere-Sand
- (iii) Halosere-Saline soil
- (iv) Senile-Moist area

(e) The tendency for increased diversity and density of species at the junction between *two* quite different communities is known as :

- (i) ecological amplitude
- (ii) edge effect
- (iii) ecological equivalent
- (iv) ecological niche

(f) The order of different layers with respect to thermal stratification of deep water in lakes from top to bottom is :

- (i) epilimnion-thermocline-hypolimnion
- (ii) hypolimnion-epilimnion-thermocline
- (iii) epilimnion-hypolimnion-thermocline
- (iv) thermocline-epilimnion-hypolimnion

(g) Lianes are interesting group of woody climbers rooted to the ground which show the following interspecific interaction :

- (i) parasitism
- (ii) commensalism
- (iii) neutralism
- (iv) symbiosis

2. Write short notes on the following: $2 \times 4 = 8$

- (a) Allopatric speciation
- (b) Weathering
- (c) Allelopathy
- (d) Continental drift

3. Write briefly on **any three** of the following :
 $5 \times 3 = 15$

- (a) Soil profile
- (b) Concept of homeostasis

(c) Adaptive features of plants to fire and wind

(d) Ecological niche and its types

(e) Different vegetation types in Assam

4. Answer **any three** of the following : $10 \times 3 = 30$

(a) Distinguish between autogenic and allogenic succession. Describe briefly the various phases involved in the process of primary autotrophic succession in a particular habitat.

$2 + 8 = 10$

(b) With appropriate examples, explain briefly the various types of population growth curves as observed under specific environmental conditions. Write in brief the various limiting factors that regulate population growth.

$6 + 4 = 10$

(c) What do you understand by ecosystem energetics ? Discuss briefly the various models of energy flow in an ecosystem with suitable diagrammatic representation. $2+8=10$

(d) What is an Eltonian pyramid ? With suitable diagrams, discuss briefly the different types of ecological pyramids along with their significance. Mention *two* limitations of studying ecological pyramids. $2+6+2=10$

(e) "In a natural ecosystem, both the grazing food chain and detritus food chain are interlinked and operational at certain trophic levels". Citing suitable examples, discuss briefly in support of the above statement.

(f) List few characteristic features of tundra biomes. Write briefly the climatic conditions and biota found in the various types of tundra biome. $4+6=10$