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**3 (Sem-4/CBCS) BOT HC 2**

**2021**

**BOTANY**

(Honours)

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. Answer the following questions :  $1 \times 5 = 5$

(a) The inherent ability and development of mechanism of the biological system to resist change and to maintain itself in the stable state of dynamic equilibrium is termed as —

(i) ecological amplitude

*Contd.*

- (ii) homeostasis
  - (iii) adaptations
  - (iv) carrying capacity
- (b) The dominance of therophytes in a particular area would indicate that climate is —
- (i) warm and dry
  - (ii) warm and moist
  - (iii) extremely cold
  - (iv) cold and dry
- (c) When the number of young and middle-aged individuals in a particular population is nearly equal, then the shape of age pyramid is —
- (i) urn-shaped
  - (ii) bell-shaped
  - (iii) triangular-shaped
  - (iv) irregular-shaped

(d) The stratum of a deep lake in temperate region which shows drastic thermal fluctuations during different seasons of year is —

(i) epilimnion

(ii) hypolimnion

(iii) thermocline

(iv) metalimnion

(e) The nutrient poor infertile and highly acidic soils formed in humid temperate climates is :

(i) Gleys

(ii) Podzols

(iii) Chernozems

(iv) Latosols

2. Write short notes on : 2×5=10

(a) Edge effect

(b) Sigmoid growth curve

(c) Commensalism

(d) Aquifer

(e) Paleoendemism.

3. Answer/Write on **any three** of the following :  $5 \times 3 = 15$
- (a) Define ecological niche and discuss briefly its types.
  - (b) Discuss briefly the various ecological adaptations of plants in response to temperature.
  - (c) Describe in brief, the density-dependent regulation of population.
  - (d) What is soil profile ? Discuss briefly the various factors that contribute soil formation.
  - (e) Explain briefly the contributory factors responsible for endemism.
4. Answer **any three** of the following questions : (Within **500** words)  $10 \times 3 = 30$
- (a) Explain the meaning of the term 'climax'. Write briefly the different schools of thought about the climax state. Mention few major trends of changes which are observed during the process of ecological succession.

- (b) What do you understand by the term 'ecological energetics'? Describe briefly the different models of energy flow in an ecosystem. Which model shows more realistic picture of energy flow and why ?
- (c) Mention the different mechanisms by which speciation occur in nature. Elucidate briefly allopatric speciation with the help of example.
- (d) "Each type of Eltonian pyramids provides different sorts of information about the trophic relationships between organisms at different levels in a community." Justify and elucidate the statement citing suitable examples.
- (e) Define biome. Explain briefly the major terrestrial biomes on earth with special reference to tropical and temperate biomes stating their characteristic vegetation type found.