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63/2 (SEM-2) BOT 204

2022

BOTANY

(Theory Paper)

Paper Code : BOT 204

(Ecology, Environment and Phytogeography)

Full Marks – 80

Time – Three hours

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

1. Choose the correct answer for the following
questions (*all* questions are compulsory) : $1 \times 6 = 6$

(i) Pyramid of energy in a river ecosystem is

- (a) Always upright (b) Always erect
(c) Constant (d) Declining

(ii) In the carbon cycle, bacteria play the role of

- (a) Photosynthesis
(b) Chemosynthesis
(c) Breakdown of organic compounds
(d) Assimilation of nitrogen compounds

[Turn over

(iii) Which of the following is not a climax vegetation ?

- (a) Grasses
- (b) Savannah
- (c) Forests
- (d) Hydrophytes

(iv) Lichens are good bioindicators of

- (a) Air pollution
- (b) Environmental radiation
- (c) Soil pollution
- (d) Water pollution

(v) Measuring BOD (Biological Oxygen Demand) is primarily used for

- (a) Estimating the types of microbes
- (b) Determining the level of dissolved oxygen
- (c) Quantifying the organic matter in sewage water
- (d) None of the above

(vi) The allelopathy describes

- (a) Inhibition of growth of one species by another by producing toxins
- (b) Inhibition of growth of one species by another by preventing reproductions

(c) Altering the reproductive cycle of one organism by another organism

(d) Inhibition of sporulation of pathogen by host organism.

2. Answer any *five* of the following short questions : 2×5=10

- (a) What is biomagnification ?
- (b) What do you understand by carrying capacity of the environment ?
- (c) Name the various sources of e-waste.
- (d) Define continental drift hypothesis.
- (e) Write two characters each of r-selected and k-selected species.
- (f) What do you understand by edge effect ?

3. Answer any *six* of the following questions :

5×6=30

- (a) What is the relationship between Global warming and Ozone layer depletion ?
- (b) Define niche. State the differences between Fundamental niche and Realized niche with suitable examples. 1+4=5

- (c) Write a short note on positive species interactions in an ecological system.
- (d) Elucidate the effect of light and temperature on the distribution of plants.
- (e) Differentiate between Logistic and Exponential growth curve. Name the factors that affect the size of a population.
- (f) Write a concise note on the barriers of plant migration.
- (g) Explain the theories of Island biogeography.
- (h) Explain the heavy metal pollution in drinking water with examples.
- (i) Write a note on endemic plants of North East India.

4. Answer any *two* of the following questions :

10×2=20

- (a) Discuss elaborately about the principles of competitive exclusion. What is character displacement ? How does competitive exclusion relate with character displacement ?

5+2+3=10

- (b) Give a brief account on structural and functional attributes of ecosystem. Explain the reason why the flow of energy in various trophic levels in an ecosystem is unidirectional and non-cyclic. 7+3=10

- (c) What is population ? Write a note on important characteristics of population.

1+9=10

- (d) Define biome. What type of vegetation is observed in tropical rain forests ? 4+6=10

5. Answer any *one* of the following questions :

14×1=14

- (a) Describe the phytogeographical regions of India with their local vegetation. Prepare a map that shows the location. 5+5+4=14

- (b) Define ecological succession. Give an account on general process of succession that take place in nature. Distinguish between seral and climax communities. 2+7+5=14