Biology Sample paper-3

Unit- X : Ecology and Environment (PYQs)

Max. Marks 35 **Time allowed: 2 hours**

General Instructions:

i) All questions are compulsory.

ii) The question paper has three sections and 13 questions. All questions are compulsory.

iii) Section–A has 6 questions of 2 marks each; Section–B has 6 questions of 3 marks each; and Section–C has a case-based question of 5 marks.

iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

v) Wherever necessary, neat and properly labelled diagrams should be drawn.

Section-A

1. Explain why very small animals are rarely found in polar region.

2. List any four parasitic adaptations in a parasite.

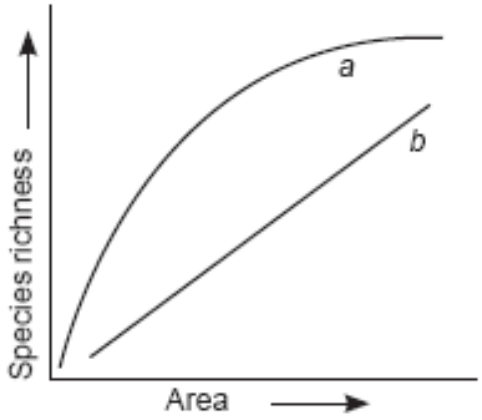
3. Why do clown fish and sea-anemone pair up? What is this relationship called?

4. Describe the mutual relationship between fig tree and wasp and comment on the phenomenon that operates in their relationship.

OR

Differentiate between immigration and emigration.

5. The above graph shows Species-Area relationship. Write the equation of the curve 'a' and explain.



6. What is meant by 'alien species' invasion? Name one plant and one animal alien species that are a threat to our Indian native species.

OR

Why are certain regions of the Earth called hot-spots? Name any two hot-spots in India.

Section-B

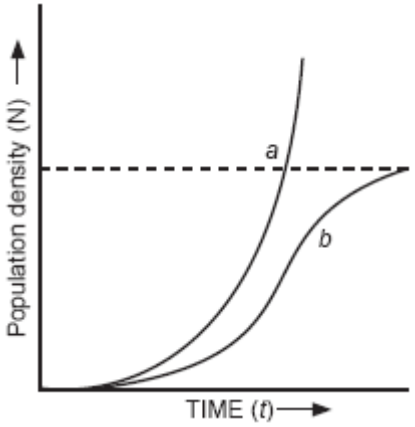
7. (a) State how the constant internal environment is beneficial to organisms.

(b) Explain any two alternatives by which organisms can overcome stressful environmental conditions.

8. How do organisms cope with stressful environmental conditions, which are localised or of short duration?

9. List three symptoms of high altitude sickness and state three adaptations to overcome it.

10. Study the graph given below and answer the questions that follow:



(i) Write the status of food and space in the curves (a) and (b).

(ii) In the absence of predators, which one of the two curves would appropriately depict the prey population?

(iii) Time has been shown on X-axis and there is a parallel dotted line above it. Give the significance of this dotted line.

11. Since the origin of life on Earth, there were five episodes of mass extinction of species.

(i) How is the 'Sixth Extinction' presently in progress, different from the previous episodes?

(ii) Who is mainly responsible for the 'Sixth Extinction'?

(iii) List any four points that can help overcome this disaster?

OR

Explain giving one example, how co-extinction is one of the causes of loss of biodiversity. List the three other causes also (without description).

12. What is the 'wise use' concept of Ramsar Convention? Name four types of wetlands included in its mission.

Section-C

13. Read the following passage and answer the questions that follow:

Population ecology is an important area of ecology, because it links ecology to population genetics and evolution.

A population has certain attributes that an individual organism does not have, such as birth rate, death rate, sex-ratio and age-ratio.

(a) What is population in ecology?

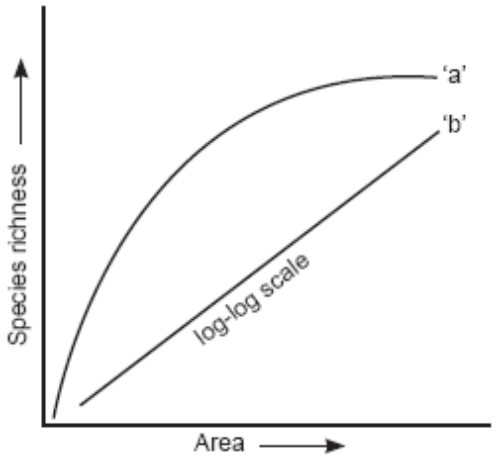
(b) Define birth rate.

(c) Calculate the death rate of fruit flies, if 4 individuals in a laboratory population of 40 individuals died in a week?

(d) The shape of the age-pyramid reflects the growth status of the population. Identify the growth status represented in the age pyramids A and B shown. Justify your answer.

OR

The graph shows species–area relationship:



(a) If b denotes the relationship on log scale–

(i) Describe a and b

(ii) How is slope represented? Give the normal range of slope.

(iii) What kind of slope will be observed for frugivorous birds and mammals in a tropical forest?

(b) Species diversity of plants (22%) is much less than that of animals (72%). Analyze the reasons for greater diversity of animals as compared to plants.