

2021
ZOOLOGY
[HONOURS]
Paper : IV

Full Marks : 75

Time : 4 Hours

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any **five** of the following: 1×5=5
- a) What is meant by biotransformation?
 - b) What is meant by biodiversity hotspot?
 - c) Which gases are referred to as greenhouse gases?
 - d) What is meant by stratification?
 - e) Define ecological efficiency.
 - f) Name two biodiversity hotspots in India.
 - g) Define ecological niche.
 - h) What is a GMO? Give an example.
 - i) Write down the full form of CITES. What is TRAFFIC?

[Turn over]

2. Answer any **six** of the following: 2×6=12
- a) Define and differentiate between production and assimilation.
 - b) Differentiate between National Park and Sanctuary.
 - c) Differentiate between fecundity and fertility.
 - d) Differentiate between ecotone and edge. What is meant by edge effect?
 - e) Differentiate between production and productivity.
 - f) What is biopiracy?
 - g) What is meant by ecological footprint?
 - h) Explain the difference between in-situ and ex-situ conservation with one example in each case.
 - i) What is pedology? What are horizons?
3. Answer any **three** of the following: 6×3=18
- a) i) Differentiate between r-selected and k-selected life history types with examples.
 - ii) Define efficiency. In briefly, write on efficiency within a trophic level and efficiency between trophic levels.
- 2+1+3

- b) What is sustainable exploitation? Differentiate between in-situ and ex-situ conservation with examples. Write briefly about CITES and TRAFFIC. $1+1+(2+2)$
- c) What are the differences among effluent, sewage and sludge? Explain the process of municipal wastewater treatment with a schematic diagram. $3+(2+1)$
- d) Write briefly on conservation initiatives for the Tiger and the Olive Ridley Turtle in India. $3+3$
- e) What are survivorship curves? Differentiate among life-histories of homeotherms and poikilotherms on the basis of their survivorship curves. Add appropriate diagram. $1+2+2+1$
- f) What is meant by the "Ozone Layer"? Explain its importance in our daily lives. Add a note on the reasons for its depletion. $1+2+3$
4. Answer any **four** questions: $10 \times 4 = 40$
- a) i) What are xenobiotics? Differentiate between Phase I and Phase II biotransformation reactions. $1+4$
- ii) Write a short note on the application of reduce-reuse-recycle principle in management of solid waste. 5

- b) i) What is meant by population density? How does population density differ from population size?
- ii) What are the factors that regulate population density? Explain each in brief.
- iii) What is the difference between species abundance and species richness?
 $(1+1)+(1+3+3)+1$
- c) i) Define succession. Differentiate between primary and secondary succession. What is ecesis?
- ii) What are the characteristics of ecological succession?
- iii) Describe the change of soil structure and ecosystem structure as communities progress from early to late successional stages. $(1+1+1)+3+(2+2)$
- d) i) Briefly describe the provisions of the Indian Wildlife Protection Act-1972, with regard to setting up of designated areas for protection and conservation of biodiversity. 5

- ii) What are Ramsar Sites? Name two designated Ramsar sites in India, mentioning the states they are situated in. 1+2
- iii) Differentiate among National Parks, Sanctuaries and Biosphere Reserves. 2
- e) Define eutrophication. What is a limiting nutrient? Give example. Explain the effects of sudden increase of limiting nutrient load in an aquatic ecosystem with appropriate diagram/flowchart. 1+1+1+6+1
- f) Write short notes on (any **two**): 5+5
- i) Growth forms and their classification
 - ii) Diversity and diversity indices
 - iii) GIS and Remote Sensing
 - iv) Biosafety of GMOs
