

**Five-Year Integrated M.Sc. Examination 2022**  
**Semester - VII**  
**Earth and Environmental Science**  
**Paper: EES-4-7-5**  
**Subject: Ecology**

**Time: 3 Hours**

**Full Marks: 40**

The marks of the questions are indicated on the margin.

Answer **Question No.1** and **any four** from the rest.

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1. Write the short notes on **any four** of the following. 4×2 = 8
  - a. Pyramid of numbers
  - b. Significance of food chain and food web
  - c. Internal nutrient budget
  - d. Hydrosere succession
  - e. Field capacity and stream discharge
  - f. Pools and fluxes of carbon cycle
  
2. What are the types of ecological succession? Explain the phosphorous cycle with a schematic diagram. 2+6 = 8
  
3. What do you mean by primary and secondary productivity? Explain how energy flow in the ecosystem by depicting the single channel flow model. 2+6 = 8
  
4. Discuss the methods for measuring population density? How many types of survivorship curve you can see in an ecosystem? 4+4 = 8
  
5. Define carrying capacity and intrinsic rate of increase of a population? What conditions favour the exponential and logistic growth of a population? Current population of India is 1414 million (141.4 crore) as of January 10, 2023. Every year 24 million babies are born and 10 million people are died. In this rate what will be projected population of India in 10<sup>th</sup> January 2033? [Follow the exponential growth curve]. 2+3+3 = 8
  
6. Discuss the qualitative structure of a plant community? You have given a 10 m<sup>2</sup> quadrat, where number of species A is 100 and number of individual of species A, B, C, D altogether is 250. Calculate the relative density for species A. 6+2 = 8
  
7. Discuss the negative types of population interaction with example. What types of intraspecific competition exists in ecosystem? 6+2 = 8