

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
 ORGANISATION OF ISLAMIC COOPERATION (OIC)
 DEPARTMENT OF NATURAL SCIENCES

Mid Semester Examination
 Course Number: GS 4253
 Course Title: Ecology and Environment

Summer Semester: 2023-2024
 Full Marks: 120
 Time: 2 Hours

Answer all the 4 (FOUR) questions. The symbols have their usual meanings. Marks of each question and the corresponding CO and PO are written in the brackets.

1. a) What are the different types of population growth curves in ecology? Explain the exponential and logistic growth of the population. (12)
(CO1)
(PO1)
- b) On a small island in Bangladesh, the initial population of a bird species was recorded as 350 individuals. If the population grows at a constant exponential rate of 0.05 per year, what will be the estimated population size after 5 years (12)
(CO3)
(PO2)
- c) Write short note on biomass and carrying capacity. (06)
(CO1)
(PO1)
2. a) What are the different types of biogeochemical cycles in nature? (08)
(CO1)
(PO1)
- b) Write down the importance of nitrogen cycle for our environment. (10)
(CO1)
(PO1)
- c) Draw and explain the nitrogen cycle in a neat sketch, including all-natural and man-made processes. (12)
(CO1)
(PO1)
3. a) Identify how a food web differs from a food chain in an ecosystem? Analyze the role played by decomposers play in a food web. (08)
(CO2)
(PO2)
- b) What is a trophic level in an ecosystem? Describe the role of organisms at each of the first four trophic levels and explain why the amount of energy decreases at higher trophic levels. (12)
(CO1)
(PO1)
- c) A team of wildlife researchers conducted a population study of ground squirrels in a grassland area of northern Bangladesh. On their first day, they captured and tagged 60 squirrels before releasing them. A week later, they returned and captured 75 squirrels, of which 12 had tags. Unfortunately, 15 squirrels were found dead, including 4 tagged individuals. Using the Lincoln Index, estimate the total ground squirrel population in the study area. (10)
(CO4)
(PO2)
4. a) What is ecological succession? Explain the process of ecological succession and the different types of succession. (10)
(CO1)
(PO1)
- b) What are the major restrictions have been imposed on the four Bangladeshi rivers declared as ecologically critical areas? What are the punishments and fines specified for violations of orders or directions of the DG, DOE? (10)
(CO1)
(PO1)
- c) What is biodiversity? Explain the importance of biodiversity and the threats it faces. (10)
(CO1)
(PO1)