



'समानो मन्त्रः समितिः समानी'

**UNIVERSITY OF NORTH BENGAL**

B.Sc. Honours 3rd Semester Examination, 2023

**SEC1-P1-ZOOLOGY**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.*

**The question paper contains Group-A and Group-B.  
The candidates are required to answer any *one* from *two* Groups and  
candidates should mention it clearly on the Answer Book.**

**GROUP-A**

**APICULTURE**

1. Answer any **five** questions from the following: 1×5 = 5
  - (a) What do you mean by “fungus garden” in honey comb?
  - (b) What is propolis?
  - (c) What do you mean by Queen Excluder in honey comb?
  - (d) What is Royal Jelly?
  - (e) Write down the causative agent of American foul brood disease.
  - (f) What do you mean by parthenogenesis in honey bee?
  - (g) Write the scientific name of Rock bee.
  - (h) What is swarming?
  
2. Answer any **three** questions from the following: 5×3 = 15
  - (a) Briefly describe the different castes found in a beehive.
  - (b) What is “colony collapse disorder”? How a new colony is established in an artificial hive?
  - (c) What are the various enemies causing problems in apiary? Write down its controlling measures.
  - (d) Write a short note on “Bee Pasturage”. Add a note on its significance.
  - (e) Write a short note on indigenous method of honey extraction with its disadvantages.
  
3. Answer any **two** questions from the following: 10×2 = 20
  - (a) Define Eusociality. Describe the social behaviour of honey bees emphasizing on different caste systems.

- (b) Describe the modern methods in employing artificial beehive for cross pollination in horticultural gardens.
- (c) What are bee languages? How these languages are translated by the worker bee?
- (d) What do you mean by pollen basket? Write down the various duties and responsibilities performed by worker bees to maintain eusocial colonial life in honey comb.

### GROUP-B

#### AQUARIUM FISH KEEPING

1. Answer any **five** questions from the following: 1×5 = 5
- (a) What is an aquarium?
  - (b) Why direct sunlight on the aquarium must be avoided?
  - (c) Name two carnivorous aquarium fishes.
  - (d) Name two protozoan diseases and their causative agents.
  - (e) Name two bacterial diseases and their causative agents.
  - (f) Give two examples of egg burriers.
  - (g) What is the use of chloramphenicol?
  - (h) Give two examples of exotic aquarium fishes.
2. Answer any **three** questions from the following: 5×3 = 15
- (a) Briefly describe the preparation of formulated feeds for aquarium fish.
  - (b) Mention the different types of filters that is used in aquarium.
  - (c) Describe the common characteristic features of Anemone fish and Butterfly fish. 2½ × 2 = 5
  - (d) What are the factors that need to be considered while fish transportation?
  - (e) Mention the problems faced by ornamental fish culturists in India.
3. Answer any **two** questions from the following: 10×2 = 20
- (a) Briefly explain different methods applied by egg layers for spawning. Write short note on live-bearing fishes. 7+3
  - (b) Mention the important criteria for selection of aquarium fishes. Briefly describe the ornamental fish handling and forwarding techniques. 5+5
  - (c) Why is captive breeding important? Describe the measures to be adopted for successful captive breeding. 3+7
  - (d) Mention the different precautions taken for an ideal aquarium. Write down the strategies for sustainable growth of ornamental fish in India. 5+5

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