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‘समानो मन्त्रः समितिः समानी’

UNIVERSITY OF NORTH BENGAL
B.Sc. Honours 3rd Semester Examination, 2023

North Bengal St. Xavier's College
Library
Rajshahi, Post Box No.-1
Pin.- 735134, Dist.- Jalpaiguri

CC5-ZOOLOGY

CHORDATES

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

1. Answer any **five** questions from the following:

1×5 = 5

- (a) What do you mean by haemotoxic venom?
- (b) What is calamus?
- (c) Write the name of the larval form of lamprey.
- (d) What type of migration is found in Salmon fish?
- (e) Mention the type of jaw suspension in snakes.
- (f) Mention the name of one flightless bird endemic to Australian realm.
- (g) What is metanephric Kidney?
- (h) What is portal system?

2. Answer any **three** questions from the following:

5×3 = 15

- (a) Write the characteristic features and affinities of Prototheria.
- (b) Write a short note on Oriental Realm.
- (c) Write a brief description on the parental care in Amphibia.
- (d) Explain the Echinoderm theory of origin of chordates.
- (e) Write a note on retrogressive metamorphosis in *Ascidia*.

3. Answer any **two** questions from the following:

10×2 = 20

- (a) Explain the biting mechanism of poisonous snake. Add a note on the structure of poison apparatus. 5+5
- (b) Write the differences between Chondrichthyes and Osteichthyes. Write the characteristics features of Dipnoi. 6+4
- (c) Describe the mechanism of aerodynamics of flight in birds.
- (d) Give an account of different types of exoskeletal derivatives in mammals.

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CC6-ZOOLOGY

PHYSIOLOGY: CONTROLLING AND COORDINATING SYSTEM

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

1. Answer any **five** questions from the following: 1×5 = 5
 - (a) Name two protein fibres present in the extracellular matrix of the connective tissue.
 - (b) What is action potential?
 - (c) Write the function of Leydig cell.
 - (d) What is periosteum?
 - (e) Define paracrine signal.
 - (f) What are GPCRs?
 - (g) What type of epithelium is one-cell-layer thick?
 - (h) What is the covering of an individual muscle fibre?

2. Answer any **three** questions from the following: 5×3 = 15
 - (a) Differentiate between elastin and collagen.
 - (b) Describe the composition of bones.
 - (c) Compare and contrast skeleton, smooth and the cardiac muscles.
 - (d) With proper diagram, briefly describe the histological structure and function of endocrine pancreas. 1+2+2
 - (e) Write a short note on neuro-muscular junction.

3. Answer any **two** questions from the following: 10×2 = 20
 - (a) Write down the components of cartilage. Name the different types of cartilage. Describe the process of Chondrogenesis. 1+1+8
 - (b) Discuss in brief about peptide hormone, steroid hormone, amino hormone and eicosanoid hormone with examples. $2\frac{1}{2} \times 4 = 10$
 - (c) Identify the six hormones produced by the anterior lobe of the pituitary gland, their target cells and their principal actions. How the secretion of the anterior lobe of pituitary gland is regulated by the hypothalamus? $(1\frac{1}{2} + 1\frac{1}{2} + 3) + 4$
 - (d) Describe the histoarchitecture of mammalian ovary with a suitable diagram. Name the hormones secreted by ovary and mention their functions. 5+(2+3)

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CC7- ZOOLOGY

GENETICS

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

1. Answer any **five** questions from the following: 1×5 = 5
 - (a) What is an allele?
 - (b) What is meant by lethal gene?
 - (c) What is map unit of recombination?
 - (d) Write the function of sex pili in bacteria.
 - (e) What is heterochromatin?
 - (f) Distinguish between back cross and test cross.
 - (g) Multiple allelism is the phenomenon of presence of more than two alleles in a particular locus. (True/False)
 - (h) What is a linkage group?

2. Answer any **three** questions from the following: 5×3 = 15
 - (a) Write a short note on dominant epistasis.
 - (b) Discuss the role of Y chromosome in human sex determination.
 - (c) A family has four (4) offspring belonging respectively to blood group A, B, AB and O. Deduce the genotype of the parent.
 - (d) What is frameshift mutation? How thymine dimer is formed? 2½ + 2½
 - (e) State the symptoms and causes of Klinefelter syndrome.

3. Answer any **two** questions from the following: 10×2 = 20
 - (a) What is co-dominance? Explain it with a suitable example. What would be the F₂ genotypic and phenotypic ratio of a dihybrid cross if the alleles of one of the two genes show co-dominance? 2+5+3
 - (b) Explain the inheritance of ‘Kappa’ particle in *Paramecium*.
 - (c) Enumerate the different numerical and structural changes in chromosomes. 5+5
 - (d) How does F⁺ differ from Hfr cells? Describe the process of mating when each of them conjugates individually with a F⁻ cell. 3+7

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SEC1-P1-ZOOLOGY

Time Allotted: 2 Hours

Full Marks: 40

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**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

- What do you mean by “fungus garden” in honey comb?
- What is propolis?
- What do you mean by Queen Excluder in honey comb?
- What is Royal Jelly?
- Write down the causative agent of American foul brood disease.
- What do you mean by parthenogenesis in honey bee?
- Write the scientific name of Rock bee.
- What is swarming?

2. Answer any *three* questions from the following:

5×3 = 15

- Briefly describe the different castes found in a beehive.
- What is “colony collapse disorder”? How a new colony is established in an artificial hive?
- What are the various enemies causing problems in apiary? Write down its controlling measures.
- Write a short note on “Bee Pasturage”. Add a note on its significance.
- Write a short note on indigenous method of honey extraction with its disadvantages.

3. Answer any *two* questions from the following:

10×2 = 20

- 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. $2\frac{1}{2} \times 2 = 5$
 - (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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