

**RAMAKRISHNA MISSION VIDYAMANDIRA**  
(Residential Autonomous College affiliated to University of Calcutta)

FIRST YEAR [2017-20]  
B.A. /B.Sc. SECOND SEMESTER (January – June) 2018  
Mid-Semester Examination, March 2018

Date : 14/03/2018

Time : 11am – 1pm

**ZOOLOGY (Honours)**

Paper: II

Full Marks: 50

1. Answer **any five** questions of the following: (5 × 2)
  - a) What are vital dyes? Name any one of such dye. [1 + 1]
  - b) Enumerate the significance of Blastocoel in an amphibian blastula?
  - c) What is Nieuwkoop Center?
  - d) Give an account of missense and silence mutations.
  - e) Cite an example of trisomy and an example of monosomy from man
  - f) Compare Robertsonian fusion and reciprocal translocation.
  - g) Write the function of levator bulbi and retractor bilbi?
  - h) What is optic chiasma? Write its function. [1 + 1]
  
2. Answer **any four** questions of the following: (4 × 10)
  - a) Mention the role of pneumatic sacs in fishes. Distinguish between Physostomous and Physoclistous swim bladders with a neat diagram. Enumerate the functions of BMP (Bone Morphogenetic Protein) and Chordin in the process of metamorphosis in *Ascidia*. [2 + 4 + 4]
  
  - b) State the role of a kinocilium. How does the lateral line regulate different behaviours in fishes? How does the spiracle get blood supply in chondrichthyans? What is the most significant anatomical modification found in the arterial system in reptiles? Illustrate various alternative configurations of the departing arches in birds with a neat diagram. [1 + 4 + 1 + 1 + (2 + 1)]
  
  - c) Mention the important diagnostic features of phylum Chordata. Write four major characteristic features of the order Struthioniformes with an example. What is Wheel organ? Give its function. Describe the structure of a Branchiostomal pharynx with a proper diagram. [2 + 2 + (1 + 1) + (3 + 1)]
  
  - d) Give an account of missense and silence mutations. Briefly describe the Nucleotide Excision Repair (NER) mechanism induced by UV light. Define linkage and design a genetic cross to prove the complete linkage phenomenon in *Drosophila* sp. [2 + 3 + 1 + 4]

- e) Mention the chromosomal aberration by which a dicentric bridge can be formed. Describe the fate of a dicentric chromosome during mitosis and/or meiosis. Design an experiment to detect visible/lethal sex-linked mutation by CIB method in *Drosophila* sp. State the differences between paracentric and pericentric inversions. [1 + 3 + 4 + 2]
- f) Explain why the plane of a mitotic spindle determines the site of cleavage furrow formation? Why mammalian acrosome reaction is not absolutely species specific? What is grey crescent? Explain the role of calcium in establishing the mammalian female haploid nucleus. [4 + 2 + 1 + 3]
- g) “Sea Urchin fertilization is a species specific molecular phenomenon”- justify. What are Bottle cells? What is manchette? Explain the role of progesterone in mammalian ovulation. [4 + 2 + 1 + 3]

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