

**RAGHUNATHPUR COLLEGE**  
**DEPARTMENT OF ZOOLOGY**  
**U.G. 1<sup>st</sup> Semester Class Test 2023**  
**Subject: ZOOLOGY (MAJ-1)**  
 Course Code: **BZOOMAJ01C**  
 Course Title: **Non-chordates and Cytogenetics**

**Full Marks 60**

**Time 3 hours**

*The figures in the right hand side margin indicate marks. Candidates are required to give their answers in their own words as far as practicable.*

**1. Answer any ten from the following:**

**2X 10 = 20**

- Write two important features of Phylum Sarcocystophora.
- State the function of choanocyte.
- What is endomyxsis?
- Give example of two echinoderm larva.
- Differentiate prosopyle and apopyle.
- What is holometabolic metamorphosis? Give example.
- Define torsion. What is Phyllobranch?
- What is incomplete dominance? Give example.
- Distinguish between prokaryotic and eukaryotic cells.

- What is Barr body? In a nucleus that has 22 AA+XXX<sup>Y</sup> chromosomal compositions, how many Barr bodies are expected?
- What is 'Bombay Phenotype'?
- What is DNA packaging? Mention its importance.
- What are the difference between euchromatin and heterochromatin?
- What is the importance of meiotic arrest?
- What do you mean by sex-influenced and sex-limited inheritance.

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

**5×6=30**

- Write a note on the pathogenicity caused by *Wuchereria bancrofti*. Why is *Wuchereria bancrofti* a nocturnal species? 3+2
- Describe the components of a typical water vascular system in *Asterias* sp. 5
- Briefly describe the effect of torsion on the digestive system and nervous system of Gastropoda. 2.5 + 2.5
- Explain the structure of a typical gill in prawn and mechanism of respiration. 3+2
- Write about the importance of *Onychophora* in evolution. Write about the control measures of *Fasciola hepatica*. 2.5+2.5
- Describe complete and incomplete link with suitable example. Write down the factors which controls crossing over.
- Describe the prophase 1 phase of Meiosis cell division with suitable diagram.
- A normal woman, whose father had haemophilia, married a normal man. What is the chance of haemophilia in their children? 5
- Write a brief note about Turner and Down syndromes. 2.5+ 2.5
- Describe tripartite organization of nucleolus. What are sub nucleolar components of nucleolus? 2.5 + 2.5

**3. Answer any one question from the following:**

**10×1=10**

- Determine the gene order, map distance, Interference and the Coefficient of Coincidence of the following dataset

F <sub>2</sub>		Genotype of maternally inherited X chromosome			Number observed
Class	Phenotype	sc	ec	cv	
1	Scute, echinus, crossveinless	sc	ec	cv	1158
2	Wild-type	sc <sup>+</sup>	ec <sup>+</sup>	cv <sup>+</sup>	1455
3	Scute	sc	ec <sup>+</sup>	cv <sup>+</sup>	163
4	Echinus, crossveinless	sc <sup>+</sup>	ec	cv	130
5	Scute, echinus	sc	ec	cv <sup>+</sup>	192
6	Crossveinless	sc <sup>+</sup>	ec <sup>+</sup>	cv	148
7	Scute, crossveinless	sc	ec <sup>+</sup>	cv	1
8	Echinus	sc <sup>+</sup>	ec	cv <sup>+</sup>	1
Total:					3248

- Briefly describe the genic balance theory of sex determination in *Drosophila*. What is gynandromorph? How it is formed? 6+2+2=10
- Briefly describe the mechanism of conjugation in *Paramecium* with diagram. Write the significance of this process. 6+2+2=10