# 2022

( May/June )

## ZOOLOGY

( Elective/Honours )

**( Cell Biology and Genetics )**

*Marks* : 56

*Time* : 3 hours

*The figures in the margin indicate full marks for the questions*

Answer Question No. **1** and *any* **four** from the rest

**1.** Answer any *three* of the following questions : 4×3=12

*(a)* Explain microtubules and their functions.

*(b)* What are satellite bodies? Mention their roles in chromosomes.

*(c)* Mitosis is an equational division. Justify the statement with the help of diagrams.

*(d)* Explain backcross with the help of crosses.

(e) Describe the genic balance theory of sex determination in Drosophila.

**2.** Mitochondria are powerhouses of cells. Justify and add a note on the ultrastructure of a mitochondrion. 7+4=11

**3.** (a) What is a chromatin? Describe the chemical composition and the organization of chromatin. 2+5=7

(b) Distinguish between euchromatin and heterochromatin. 4

**4.** What is a cell cycle? Elucidate the different phases of a cell cycle with the help of diagrams, and mention its regulation. 2+(6+3)=11

**5.** (a) Why did Mendel choose a pea plant for his experiments? Discuss the observations made in his experiments. 4+3=7

(b) State the Laws of Segregation and Independent Assortment with suitable examples. 4





**6.** (a) Explain multiple alleles with reference to ABO type blood groups in man. 6

(b) A man with blood group A heterozygote marries a woman having blood group B heterozygote. What are the possible genotypes and phenotypes of the offspring? 5

**7.** (a) Describe the different types of chromosomal aberrations in relation to their structures. 6

(b) Explain linkage with suitable example. 5

**8.** Write short notes on any *two* of the following : 5½×2=11

(a) Aneuploidy

(b) Complementary gene interaction

(c) Polytene chromosome

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