Odd Semester, 2020

(Held in March, 2021)

ZOOLOGY

(Honours)

SIXTH PAPER

(Cell and Molecular 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. Write in brief on any *three* of the following : 4×3=12

(a) Characteristics of a genetic code

(b) Split genes and overlapping genes

(c) Inheritance of colour blindness in man

(d) Salient features of antigen

(e) Lyon's hypothesis

2. What is DNA replication? Explain the molecular mechanism of DNA replication in prokaryotes. 2+9=11

3. Define mutation. Categorise the kinds of mutation on the basis of origin. Describe the technique used for detection of sex-linked lethal mutation in Drosophila. 2+3+6=11

4. *(a)* What is sex determination? Discuss the mechanisms involved in determining sex in human. 2+6=8

(b) "Klinefelter's syndrome individuals are phenotypic males but sex chromatin positive." Explain. 3

5. What is non-disjunction? Give an account of the primary and secondary non-disjunction of sex chromosome in Drosophila. 3+4+4=11

6. Define immunity. Discuss the mechanisms of humoral and cell-mediated immune response. 3+4+4=11

7. Write notes on the following :

(a) Principle and application of centrifugation 4+4=8

(b) Principle of electron microscopy 3

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

(a) Genome organization in virus

(b) Mutagenic agents

(c) Down's syndrome

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