

**2023**

**Time - 3 hours**

**Full Marks - 60**

*Answer all groups as per instructions.*

*Figures in the right hand margin indicate marks.*

*Draw labelled diagrams wherever necessary.*

**GROUP – A**

1. Fill in the blanks. (all) [1 × 8
- (a) \_\_\_\_\_ introduced the term 'Mutation'.
  - (b) Complete linkage has been reported in \_\_\_\_\_.
  - (c) The sex-ratio of super female is \_\_\_\_\_.
  - (d) DNA as genetic material was proved by \_\_\_\_\_.
  - (e) \_\_\_\_\_ is an example of Y-linked inheritance.
  - (f) The scientist \_\_\_\_\_ studied free-martin.
  - (g) The transfer of bacterial gene from one bacterium by a phage takes place by the process \_\_\_\_\_.
  - (h) The term \_\_\_\_\_ is used for viruses attacking and influencing bacteria.

[ 2 ]

**GROUP – B**

2. Write notes on any eight of the following within two to three sentences each. [1½ × 8

- (a) Gynandromorph
- (b) Multiple alleles
- (c) Cistron
- (d) Maternal effect
- (e) Vectors
- (f) Point mutation
- (g) Sex-limited character
- (h) Transposon
- (i) Transformation
- (j) Inversion

**GROUP – C**

3. Answer any eight of the following questions within 75 words each. [2 × 8

- (a) What is Test Cross ?
- (b) State Genic Balance Theory.
- (c) Explain Plastid inheritance in *Mirabilis*.

[ 3 ]

- (d) What is conjugation ?
- (e) What is Criss-Cross inheritance ?
- (f) What is sex limited trait ?
- (g) Explain Law of independent assortment.
- (h) Explain incomplete dominance.
- (i) Discuss CLB method.
- (j) What are Lethal alleles ?

**GROUP – D**

*Answer **all** questions within 500 words each.*

4. What is crossing over ? Describe the cytological basis of crossing over. [6]

OR

Write notes on within 250 words each. [3 × 2]

- (a) Somatic cell hybridisation
  - (b) Polygenic inheritance
5. Describe the molecular basis of mutation in relation to UV light and chemical mutagens. [6]

OR

P.T.O.

Write notes on within 250 words each.

[3 × 2

(a) Types of chromosomal aberration

(b) Types of gene mutation

6. Give an account of extra-chromosomal inheritance with examples.

[6

OR

Write notes on within 250 words each.

[3 × 2

(a) Haploidy-Diploidy Mechanism

(b) Mitochondrial mutation in Saccharomyces

7. What are transposable genetic elements ? Give a note on complementation test in bacteriophage.

[6

OR

Write notes on within 250 words each.

[3 × 2

(a) P elements in Drosophila

(b) Transposons in humans