

Total Marks:60

Time : 2.5 hrs.

Note: Attempt all the questions.

All the questions carry equal marks.

- Q1 Answer ANY TWO of the following:** (12)
- 1 Write a note on Biopanning.
 - 2 Explain the use of two factor crosses to determine gene linkage.
 - 3 Diagrammatically explain formation of F-primes.
 - 4 Discuss how a linear chromosome of T4 phage genome generates a circular genetic map.
- Q2 Answer ANY TWO of the following:** (12)
- 1 Explain genetic transformation of *Drosophila* using P element vectors.
 - 2 Diagrammatically explain transposition of Tn3 via the formation of a cointegrate. Discuss the v-oncogenes.
 - 3 Write a note on transposable elements in humans.
 - 4
- Q3 Answer ANY TWO of the following:** (12)
- 1 Diagrammatically explain the early embryonic development in *Drosophila*.
 - 2 Discuss the steps involved in sex determination in *Caenorhabditis*.
 - 3 Discuss the formation of the dorsal ventral axis in *Drosophila*.
 - 4 Programmed cell death is an integral part of development –Justify
- Q4 Answer ANY TWO of the following:** (12)
- 1 How would you screen for cystic fibrosis gene?
 - 2 Discuss the candidate gene method of mapping with respect to Marfan Syndrome.
 - 3 Discuss the diagnosis of prenatal genetic diseases using example of sickle cell anaemia.
 - 4 Discuss the significance of *tat* and *rev* genes to HIV.
- Q5A Define the Following: Any four:** (4)
- 1 Selector genes
 - 2 Totipotent
 - 3 CDKs
 - 4 Homeobox
 - 5 Suicide vectors
 - 6 Mariner elements
 - 7 Specialized transduction
 - 8 Minisatellites
- Q5B Give Significance of Any TWO:** (4)
- 1 Sxl gene
 - 2 DNA microarrays
 - 3 Com X
 - 4 Philadelphia chromosome
- Q5C Give one Example of : ANY four:** (4)
- 1 Model organism
 - 2 Inherited cancer syndrome
 - 3 Naturally transformable Gram positive bacteria
 - 4 Genetically engineered pharmaceutical product now available for genetic testing.
 - 5 Lambda phage vector
 - 6 Retroposon associated with ends of *Drosophila* chromosomes
 - 7 Application of DNA fingerprints
 - 8 Homeiotic genes
