

**Q.P.Code: 06941**

**(3 Hours)**

**[Total Marks:100**

Attempt all questions

Draw diagrams wherever necessary

Figures to the right indicate marks

Q1a Attempt the following: (any two) (12)

- i. Genes can be defined by complementation tests. Comment
- ii. Diagrammatically explain specialized transduction
- iii. Give the differences between composite and non-composite transposon

Q1b Explain the following terms: (any four) (8)

- i. rII mutants
- ii. Double lysogen
- iii. Anti termination signal
- iv. Autonomous elements
- v. Episome
- vi. Operon

Q2a Describe: (any two) (12)

- i. Any one Ti plasmid derived vector system
- ii. Construction and applications of phage lambda as a vector
- iii. Significance of phosphatases and kinases in rDNA technology

Q2b State the significance of: (any four) (8)

- i. Copy number of plasmids
- ii. Taq polymerase
- iii. Isoschizomers
- iv. Expression vectors
- v. RNaseH
- vi. Sticky ends

**TURN OVER**

Q3a Give an account of: (any two) (12)

- i. Vector vaccines with an example
- ii. Steps involved in Sanger's method of DNA sequencing
- iii. Application of rDNA technology in the synthesis of human insulin

Q3b Do as directed: (any eight) (8)

- i. Define genetic immunisation
- ii. One application of DNA typing
- iii. Klenow's fragment lacks ----activity
- iv. Temperature at which primers are extended in PCR is----
- v. --- is the best method for protection against HSV
- vi. SNP stands for----
- vii. Genetic modification of somatic cells to prevent a genetic defect is called-----
- viii. One advantage of live vaccine
- ix. Give one function of linkers
- x. State one application of DNA typing

Q4a. Elaborate on: (any two) (12)

- i. Production of transgenic animals by DNA microinjection method
- ii. Any two methods of artificial gene transfer in plants
- iii. Different forms of IPR protection

Q4b Give role/application of: (any four) (8)

- i. TRIPS
- ii. Golden rice
- iii. Transgenic mice
- iv. Embryonic stem cells
- v. Particle gun
- vi. Cry protein

Q5 Write short notes on: (any four) (20)

- i. Recombinational analysis of rII mutants
- ii. Repressible operons with an example
- iii. Edible vaccines
- iv. Types and applications of PCR
- v. Plant variety protection
- vi. Mode of action and applications of S1 nucleases