

Q.P. Code :01674

[Time: 2½ Hours]

[Marks:75]

Please check whether you have got the right question paper.

- N.B:
1. Attempt **all** questions.
 2. **All questions** carry **equal** marks.
 3. Draw **neat labelled diagrams** wherever necessary.

- Q.1 a. State the application of the following: **(any three)** (03)
- i) Star activity
 - ii) Palindromic sequence
 - iii) Isoschizomers
 - iv) Adapters
 - v) Klenow fragment
 - vi) Phosphodiester bond
- b. Answer of the following: **(any two)** (12)
- i) Give an account of mode of action of reverse transcriptase.
 - ii) Schematically explain random priming.
 - iii) Comment: Nucleases have many applications.
 - iv) Give an account of sources and applications of DNA ligases.
- Q.2 a. Explain of the following terms: **(any three)** (03)
- i) Shuttle vector.
 - ii) vir gene.
 - iii) Low copy number plasmid.
 - iv) Unique restriction site.
 - v) Crown gall.
 - vi) Disarmed plasmid.
- b. Attempt of the following: **(any two)** (12)
- i) pUC19 is an ideal cloning vector. Justify.
 - ii) Diagrammatically describe the cloning of DNA in bacteriophage lambda.
 - iii) Describe: Cointegrate vector as a Ti plasmid derived cloning vector.
 - iv) Discuss: Types and applications of M13 based vectors.
- Q.3 a. Give the importance of the following: **(any three)** (03)
- i) Autoradiogram
 - ii) Reverse transcriptase
 - iii) STR
 - iv) Sequenase
 - v) Taq polymerase
 - vi) Sticky ends

- b. Give an account of the following: **(any two)** (12)
- i) Construction of a cDNA library.
 - ii) Gene sequencing by Maxam and Gilbert's method.
 - iii) Principle and applications of PCR.
 - iv) Screening of genomic library.

- Q.4 a. State the significance of the following: **(any three)** (03)
- i) CHO cells
 - ii) Vaccinia virus
 - iii) HBcAg
 - iv) Cla I
 - v) gD protein
 - vi) RFLP

- b. Discuss the following: **(any two)** (12)
- i) Advantages of genetic immunization over conventional vaccines.
 - ii) Subunit vaccine for herpes simplex virus.
 - iii) Somatic gene therapy.
 - iv) Insulin production using recombinant DNA technology.

- Q.5 Write short notes of the following: **(any three)** (15)
- i) Reverse transcriptase PCR
 - ii) Principle and applications of DNA fingerprinting
 - iii) Types and application of lambda vectors
 - iv) Type II restriction endonucleases
 - v) Diagnosis of Sickle cell anemia
 - vi) Attenuated vaccine
