Q.P. Code :01672

[Time: $2\frac{1}{2}$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. Give an example of the following: **(any three)** (03)

i) Cofactor required for T4 ligase
ii) Source of Alkaline phosphatase
iii) DNase
iv) Method used for probe labelling
v) Enzymatic reaction exhibited by Polynucleotide kinase
vi) Factor affecting restriction enzyme activity

b. Answer of the following: **(any two)** (12)

i) Give an account of nature of cut ends generated by restriction endonucleases.
ii) What are linkers and adapters? State their role in rDNA technology.
iii) Comment: Terminal Transferase has many applications.
iv) Elaborate on the different applications of T4 DNA polymerase.

Q.2 a. Explain the following terms: **(any three)** (03)

i) Plasmid.
ii) λ replacement vector.
iii) Multiple cloning site.
iv) T-DNA.
v) *Ori* site.
vi) Selectable marker.

b. Attempt the following: **(any two)** (12)

i) pBR322 is an ideal cloning vector. Justify.
ii) Give an account of: Lambda phage as a vector.
iii) Explain the construction of M13 phage based vectors.
iv) Describe binary cloning vector with the help of a neat labeled diagram.

Q.3 a. Give the importance of the following: **(any three)** (03)

i) VNTR
ii) Probe
iii) Primer
iv) Oligo dT
v) PCR
vi) ddNTP

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b. Give an account of the following: **(any two)** (12)

i) Construction of genomic DNA library.
ii) Identification of clones in cDNA library.
iii) DNA fingerprinting.
iv) Any two types of PCR.

Q.4 a. State the significance of the following: **(any three)** (03)

i) VP1
ii) gD protein
iii) Islet of Langerhans
iv) Stem cells
v) *asd* gene
vi) Chinese hamster ovary cells

b. Discuss the following: **(any two)** (12)

i) Limitations of traditional methods of vaccine production.
ii) Attenuated vaccine for Cholera.
iii) Germ line gene therapy.
iv) Diagnosis of Sickle cell anemia.

Q.5 Write short notes of the following: **(any three)** (15)

i) Principle and applications of PCR
ii) Features of an ideal cloning vector
iii) Blue white screening
iv) Role of reverse transcriptase in rDNA technology
v) Klenow fragment
vi) Vector vaccines

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