

**Q.P. Code : 02909**

**[Time: 2 $\frac{1}{2}$  Hours]**

**[ Marks:75]**

Please check whether you have got the right question paper.

- N.B: 1. **Attempt all five questions.**  
2. **All questions carry equal marks.**

- Q. 1** A) Answer **Any Two** of the following (10)  
a) Schematically represent cloning gene into pBR322 cloning vector.  
b) Discuss the properties of restriction enzymes.  
c) What is Ti plasmid? Discuss its significance in genetic engineering of plants.  
d) Schematically explain site directed mutagenesis.
- B) Do as directed **Any Five** of the following (05)  
1) Define shuttle vector.  
2) Give long form of YAC.  
3) Give example of organism from which T4 ligase obtained.  
4) Give long form of TPA.  
5) Name bacterium from which EcoRI is obtained.  
6) What is Gene library?  
7) Give significance of Tissue growth factor.  
8) What is MCS?  
9) Give the long form of STRs.  
10) Give the function of Bio-Listic gun
- Q. 2** A) Answer **Any Two** of the following (10)  
a) Diagrammatically represent typical Western blotting apparatus.  
b) Discuss in details three steps of PCR technique  
c) Discuss Northern blot technique.  
d) Discuss with one example local and global sequence alignment.
- B) Do as directed **Any Five** of the following (05)  
1) Define multiple sequence alignment.  
2) Give long form of BLAST-N.  
3) What is Autoradiography?  
4) Give significance of nitrocellulose membrane in Southern blot technique.  
5) Give long form of EMBL.  
6) Give name of the bacterium from which Taq polymerase is obtained.  
7) Give long form of CATH  
8) Give significance of SWISS-PORT.  
9) Define transcriptome.  
10) Give long form of PDB.

**[P.T.O]**

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- Q. 3** A) Answer **Any Two** of the following (10)
- Explain the structure of virus with icosahedral capsid.
  - Write a note on TMV virus
  - Diagrammatically explain entry of HIV into host cell.
  - What are the important characteristics used in classification of viruses?
- B) Do as directed **Any Five** of the following (05)
- What is an enveloped virus?
  - Define capsid.
  - Give significance of viral spike.
  - Name the receptor on the host cell utilized by HIV virus.
  - Give the long form of RdRp.
  - Name the virus associated with Dane particles?
  - Give one example of dsRNA virus.
  - Define cytopathic effect.
  - Name the virus associated with Guarnieri bodies.
  - What is a primary cell culture?
- Q. 4** A) Answer **Any Two** of the following (10)
- Discuss: Hemagglutination assay and Fluorescent focus assay
  - Justify: The CI, CII and CIII proteins establish the lysogenic cycle in Phage lambda
  - Differentiate between: Transformed and normal cells
  - Give an account of: Human DNA tumor viruses
- B) Do as directed **Any Five** of the following (05)
- Give the principle underlying atomic force microscopy
  - Define a plaque
  - Name a fluorescent dye used to label antibodies in the fluorescent focus assay
  - Which assay is used to determine the percentage of infected cells in a culture?
  - The dilution of virus that infects 50% of the test units is known as \_\_\_\_\_.
  - How can a particle count of viruses be carried out by electron microscopy?
  - What is the role of the N protein in lambda phage?
  - What do you mean by Retrovirus?
  - Name a prion disease caused by endocannibalism.
  - Give one difference between viroids and RNA viruses.

**[P.T.O]**

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**Q. 5** Answer **Any Three** the following

**(15)**

- a) Schematically explain screening of cDNA library for specific DNA.
  - b) Discuss applications of PCR.
  - c) Write short note on bioinformatics.
  - d) What are the different types of cell cultures used for cultivation of viruses?
  - e) Justify: Prion diseases are caused by a variant form of a normal human protein.
  - f) Give an account of: Viroid structure and replication
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