

Please check whether you have got the right question paper.

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

- Q. 1 A) Answer any TWO of the following (10)**
- a) Discuss advantages of *Mus musculus* as a model organism in genetics
 - b) Explain the terms- Population genetics, Molecular genetics and Quantitative genetics.
 - c) Draw a well labeled diagram showing cloning of gene into pBR322
 - d) Write a note on cosmids and phage vector.
- B) Answer any FIVE of the following (05)**
- 1) Give the scientific name of Nematode Worm used as model organism in genetics
 - 2) Give the function of Dam methylase
 - 3) Give one example of restriction enzyme when used leaves DNA with sticky ends
 - 4) Give one example of source of DNA ligase
 - 5) Give one example of shuttle vector
 - 6) Define- RNAi
 - 7) Explain- transmission genetics
 - 8) Give the function DNA probe
 - 9) Give significance of cDNA library
 - 10) Give long form of BAC.
- Q. 2 A) Answer any TWO of the following (10)**
- a) Discuss in brief the DNA fingerprinting
 - b) Define PCR. Discuss in brief uses of it in different biological areas
 - c) Discuss briefly any two applications of animal biotechnology
 - d) Write a note on different types of protein databases
- B) Answer any FIVE of the following (05)**
- 1) Give two types sequence alignment
 - 2) Give the use of FASTA
 - 3) Define- Phylogenetic tree
 - 4) Give significance of KEGG
 - 5) Give long form of CATH
 - 6) Define –BLASTX
 - 7) Give the role of Bio-Listic gun
 - 8) Give one example of human genetic disease
 - 9) Give name of the bacterium which causes Gall disease of plants.
 - 10) Define –Gene therapy
- [P.T.O]

- Q. 3 A) Answer any TWO of the following (10)**
- Briefly explain step of penetration of virus into the host cell
 - What is a cell culture? Draw well labeled diagram of CO₂ incubator and give its significance.
 - Comment on- Many characteristics of viruses are used for viral classification
 - Write a note on structure of TMV virus.
- B) Answer any FIVE of the following (05)**
- Give one example of enzyme used in disaggregation of tissue
 - Give one example of cell infected by Rabies virus
 - Give one example of virus which is propagated using embryonated egg
 - Define -Monolayer
 - Give one example of commonly used continuous cell line
 - What do you mean by Budding out mechanism of virus?
 - Give the role of Peplomer
 - Give long form of HbsAg
 - Give one example of virus having Icosahedral capsid
 - HIV virus uses----- coreceptor for entry into T lymphocytes.
- Q. 4 A) Answer any TWO of the following (10)**
- Justify: The anti-terminator proteins N and Q play an important role in determining the fate of phage lambda.
 - Write a note on life cycle of T4 bacteriophage
 - Write a short note on prions
 - Write a note on transformed cancer/ tumor cells.
- B) Answer any FIVE of the following (05)**
- Give the name of the virus that causes cervical cancer
 - Give the function of the M2 protein of influenza virus
 - How are cells permeabilized in the fluorescent focus assay?
 - Name a DNA tumour virus that causes 'infectious mononucleosis'
 - Define-ID₅₀
 - Give significance of transformation assay
 - Give two names of microscopes used for measurement of virus particles
 - Give one example of disease caused by viroids.
 - Give the function of H and N proteins in influenza virus
 - Define -Virus titer.

[P.T.O]

Q. 5 Answer any THREE of the following

(15)

- a) Draw a well labeled diagram of virus causing AIDS
 - b) Write a short note on applications of bioinformatics.
 - c) Write a note on any one screening method for identification and isolation of recombinant cell
 - d) Write a short note on real time quantitative PCR
 - e) Diagrammatically represent life cycle of TMV virus
 - f) Comment on- Restriction enzymes are very useful in rDNA technology.
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