Roll No. [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]   Total No. of Pages : 02

Total No. of Questions : 20

M.Sc. (BT) (2021 Batch)   (Sem.-3)
GENETIC ENGINEERING
Subject Code : MBT301
M.Code : 76728

Time : 3 Hrs.   Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :
1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains SEVEN questions carrying SIX marks each and students have to attempt any FIVE questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Explain following in brief :

1.   DNA probes.

2.   DNA ligation.

3.   Comparison of insertion and replacement vectors.

4.   Inclusion bodies.

5.   Shuttle vectors.

6.   Isolation of mRNA

7.   Jumping libraries.

8.   DNA sequencing.

9.   SiRNA technology.

10. Gene therapy principles and applications.

SECTION-B

11. Explain theory and application of fluorescence insitu hybridization.

12. Compare genetic features of phagemids and cosmids.

13. How do different tags like His-tag, GST-tag and MBP-tag facilitate purification of the recombinant proteins?

14. Give principles and detailed methodology of yeast two hybrid systems.

15. Briefly explain different procedures used to maximize gene expression in the recombinant cells.

16. Write detailed notes on principle and application of DNA sequencing techniques.

17. Discuss the importance of gene knockouts and gene silencing in genetic engineering.

SECTION-C

18. What are gene libraries? How do you prepare cDNA library from mRNA? Discuss various strategies to clone cDNA in the vector of your own choice.

19. Explain principles, procedures and applications of reverse transcriptase and nested PCR.

20. Discuss principles, procedure and applications of DNA foot printing techniques.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.