

Total No. of Pages : 02

Total No. of Questions : 08

M.Tech.(Bio Tech.) (Sem.-2)
APPLIED BIOTECHNOLOGY
Subject Code : MTBT-104
Paper ID : [E0913]

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carry TWENTY marks.

1. a) State the cleavage patterns and biochemical attributes of type II restriction enzymes. (6)
b) Elaborate the stringency parameters related to nucleic acid hybridization techniques. (6)
c) Elaborate the principle, steps and limitations of Northern blot analysis. (8)
2. a) Illustrate the importance of pUC vectors in rDNA technology. (6)
b) Give an account of *E. coli* based expression vector with diagram. (7)
c) Elaborate the cloning strategy of large DNA fragments in cosmid and YAC vector. (7)
3. a) State the salient features of any three thermostable DNA polymerases. (6)
b) Give an account of Real-time PCR. (7)
c) Elucidate the principle and purpose of DNA fingerprinting and DNA footprinting. (7)
4. a) How do you check the quality of a plasmid-based genome library? (5)
b) How do you construct and screen a mouse liver cDNA library? (8)
c) How do you study protein-protein interactions? (7)
5. a) Give an account of different promoters used in yeast-based expression vectors. (6)
b) How do you express the desired genes in insect cells? (8)
c) How do you monitor and purify the recombinant proteins from *E. coli*? (6)

6. a) State the principle of any two high-throughput methods of DNA sequencing. (6)
- b) Analyze the importance of sequencing in medical science with examples. (8)
- c) Write a note on *in vivo* gene therapy with examples. (6)
7. a) Elucidate the mode of action of antisense RNA. (6)
- b) Elaborate one case study with regard to gene knockout approach. (7)
- c) Write a comprehensive note on Golden rice. (7)
8. a) Differentiate critically between mRNA and miRNA. (6)
- b) Outline the steps involved in producing BT cotton. (7)
- c) Give details of microarray technique for transcriptome analyses. (7)

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