

18-10-2019

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27
M.Sc. MICROBIOLOGY- III SEMESTER
SPECIAL SEMESTER EXAMINATION- 2019
MB 9117 – RECOMBINANT DNA TECHNOLOGY

Supplementary candidates only.

Attach the question paper

Time:2 1/2 hours

Max Marks:70

This question paper has 2 printed pages and 4 parts

I. Answer any Five of the following

5x3=15

1. What are the essential features of an expression vectors?
2. Explain the principle of microinjection technology.
3. Mention the steps used for enrichment of eukaryotic mRNA in cDNA preparation.
4. Write a note on insertional inactivation using lac z gene marker.
5. What is a primer? What is its role in PCR?
6. List the parameters that affect in vitro ligation.
7. Mention the application of GM crops.

II. Answer any Five of the following

5x5=25

8. Describe the properties of pUC as a cloning vector.
9. Discuss the importance of electroporation as a transformation technique.
10. Write a note on vectors used in construction of genomic DNA library.
11. Explain the process of southern blotting.
12. Mention the applications of synthetic oligonucleotides
13. What is gene therapy? List the diseases for which gene therapy can be used.

III. Answer any Two of the following

2X10=20

14. Describe *Agrobacterium* mediated gene transfer.
15. How is DNA microarray used to analyze gene expression pattern? Elaborate.
16. Describe the blotting assay for each of the following:
 - a. Gene of interest
 - b. Transcript of interest
 - c. DNA-Protein interaction
 - d. Interaction between RNA and proteins
 - e. Protein post translational modifications

IV. Answer the following

1X10=10

17.

A. Calculate the average distances(in nucleotide pairs) between the restriction sites in organism X for the following restriction enzymes:

1. HaeIII- 5' GGCC 3'

3' CCGG 5'

2. EcoRI-5' GAATTC 3'

3' CTTAAG 5'

B. Calculate the melting temperature for the following primers and suggest a suitable annealing temperature.

1. 5'CGCTCCATCGATCCGCTACC3'

2. 5'CGTTAACCGGAATTCCACACGCATTTC3'

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