Register Number:

Date:

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27
M.Sc. MICROBIOLOGY- III SEMESTER
SEMESTER EXAMINATION - OCTOBER 2019
MB 9118 – RECOMBINANT DNA TECHNOLOGY

Time: 2 1/2 hrs **Max. Marks - 70**

This paper contains **2** printed pages and **4** parts

I. Answer any Five of the following **5x3=15**

1. What features qualify a gene cloning vector to be an ideal one?
2. Illustrate steps involved in selection of recombinants with an example.
3. Define DNA Microarray. List its features
4. Differentiate somatic gene therapy with Germ line gene therapy. Which of the two is more promising?
5. How plants are made transgenic?
6. How is pUC 8 plasmid advantageous over pBR322? Discuss
7. Describe one application of M13 vector.

II. Answer any Five of the following **5x5=25**

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8. Differentiate DNA ligation with that of Digestion. Emphasize on its importance in construction of a Recombinant DNA molecule.
9. Draw structure of a cosmid and describe any two important features of cosmids.
10. Why recombinant enzymes and proteins are less expensive than native ones?
11. Describe the principle and methodology involved in *Agrobacterium* mediated gene transfer.
12. List different types of PCR. Elaborate any one type with its application.
13. The release of genetically altered organisms in the environment can increase human suffering and lead to ecological disasters. Present your views regarding the same.
14. How would you carry out DNA finger printing in criminal investigation?

III. Answer any Two of the following **2X10=20**

15. What signaling sequences governs the expression of cloned genes? Illustrate the expression of cloned genes and purification of proteins in *Yeast cells.*
16. How does cDNA library differs from that of Genomic library? How are Genomic Libraries constructed? Write a note on applications of Genomic library.
17. a. Describe Sanger method of DNA sequencing. 5 marks
    b. How are DNA Primers synthesized chemically? 5 marks

IV. Answer the following **1X10=10**

18. **A.** Two vials labeled A and B were set up for a reaction in water bath at 37°C. Vial A contain 1 Kbp nicked DNA, DNA polymerase I, dNTP's and suitable buffer. Vial B contain 1 Kbp nicked DNA, Klenow fragment, dNTP's and suitable buffer. What results are expected and why? Illustrate.

4 marks

B. Design Forward and Reverse primer of length 20-30 nucleotide bases for the following highlighted DNA fragment for its amplification by PCR. Calculate the melting temperature of FWD and RVS primer and suggest the ideal annealing temperature for amplification**.** 6 marks

5'ctcgcgggcgggcgg**/**gaagcggtcaagacggtatggaacaccgccaatctcgtgcgcaaggagggtttcggcgcggcggtgc
gcagctcgatcgaggagctcgcggactgggctgaggtggagcggcccgacctggcccgggtgaccccggacggccgggtggtga
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