Register no :

Date :7-03-2-2022

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27**

**B.Sc. BIOTECHNOLOGY- VSEM**

**SEMESTER EXAMINATION: October 2021**

(Exams conducted March 2022)

**BT 5218: Genetic Engineering and Bioinformatics**

**Time: 2.5 Hrs Max Marks: 70**

**Note The question paper has three parts and one printed page**

**PART A**

1. **Answer any Ten of the following 10x2=20**
2. How does using Laser achieve DNA transformation?
3. State the advantages of Lambda vectors?
4. What does YAC stand for in relation to a vector?
5. How does sonication achieve DNA transformation?
6. What is the mode of action of S1 nucleases?
7. What is the practical application of adapters in R-DNA Technology?
8. What are SSRs?
9. What is a dideoxy nucleotide triphosphate? Draw the structure?
10. What is PDB?
11. What is Genomics?
12. What is PubMed?
13. What is E-Value?

**PART B**

1. **Answer any Five of the following 5x6=30**
2. Discuss the role of agrobacterium in Rec-DNA transformation.
3. How are viruses used as vectors?
4. What are the advantages of obtaining a Rec DNA product from a eukaryotic cell?
5. Discuss a list of selectable/scorable markers in genetic engineering
6. What is PCR? Write about the applications?
7. What is BLAST? Explain how it works with an example?
8. What is docking? Write about the applications of docking?

**PART C**

1. **Answer the following 2x10=20**
2. a. What is NGS? Explain one of the NGS technologies in detail with a neat

labelled diagram?

**OR**

b. Explain about the Needleman Wunsch algorithm with an example?

1. a. Discuss the construct and advantages of bacterial vectors.

**OR**

1. Construct all possible diagram representations of the restriction map of the plasmid described below after the double digestion. The plasmid is of a size 40 kb. On treating with BamHI the researcher got a single band size of 40kb. On treatment with EcoRI, 3 bands of size 12kb,8kb and 10 kb were seen. A combination of both enzymes gave the band sizes of 6kb, 8kb and 10kb.

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