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| **ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27** |
| **B.Sc. MICROBIOLOGY- VI SEMESTER** |
| **SEMESTER EXAMINATION - APRIL 2019** |
| **MB 6216 – Microbial Technology** |

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

This paper contains **1** printed pageand **4** parts

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

1. Write a note on the action of any two DNA modifying enzymes.
2. Write the feature of pUC8.
3. Write the principle involved in Electroporation of gene transfer in host cells.
4. How probes differ from PCR primers?
5. Write a note on the process of down streaming of amylase.
6. How are tomato plants engineered for their delayed ripening?
7. What is DNA finger printing? List any two applications.

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

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1. What are cosmids? How are they advantageous compare to plasmids?
2. Describe the mechanism of Type II restriction enzyme cleavage pattern.
3. How recombinant DNA molecules are moved into host cells by CaCl2 are mediated gene transfer?
4. How are genes isolated by PCR from the source DNA?
5. What substrates are used for the production of alcoholic beverages and why?
6. How are recombinant vaccines prepared?
7. What are genetically engineered microorganisms? What role they play in bioremediation?

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

1. Describe the steps involved in genetic engineering with a suitable diagram.
2. Describe the production of citric acid.
3. a. What are biosensors? What are their applications? (5)

b. How are cDNA libraries constructed? (5)

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

18. With the knowledge of genetic engineering, how will you proceed with gene editing process? What issue will you address with gene editing technology? How ethical is gene editing process? - question to be changed-out of syllabus

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| **MB 6216 – MICROBIAL TECHNOLOGY** |

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

**This paper contains ONE printed pages and FOUR parts**

**SCHEME OF VALUATION**

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

1. Write a note on the action of any two DNA modifying enzyme.

Any two = 1x2 = marks

1. Write the feature of pUC8.

Any four features – 2 marks

1. Write the principle involved in Electroporation of gene transfer in host cells.

Description – 3 marks

1. How probes differ from PCR primers?

Any three differences – 2 marks

1. Write a note on down streaming of amylase.

Process – 5 marks

1. How are tomato plants engineered for their delayed ripening?

Mechanism – 3 marks

1. What is DNA finger printing? List any two applications.

Defintion – 1mark and applications – 2marks

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

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1. What are cosmids? How are they advantageous compare to plasmids?

Defintion – 1 mark, and advantages – 4 marks

1. Describe the mechanism of Type II restriction enzyme cleavage pattern.

Mechanism – 4 marks and diagram – 1marks

1. How recombinant DNA molecules are moved into host cells by CaCl2 are mediated gene transfer?

Principle – 2marks and process – 3 marks

1. How are genes isolated by PCR from the source DNA?

Description – 5 marks

1. What substrates are used for the production of alcoholic beverages and why?

List the substrates – 2marks and their usage – 3 marks

1. How are recombinant vaccines prepared?

Process with diagram – 5 marks

1. What are genetically engineered microorganisms? What role they play in bioremediation?

Definition – 1 marks and role play – 4 marks

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

1. Describe the steps involved in genetic engineering with suitable diagram.

Steps 7 marks and diagram – 3marks

1. Describe the production of citric acid.

Process – 7 marks and diagram – 3 marks

1. a. What are biosensors? What are their applications? (5 marks)

Definition – 1 mark, applications – 4 marks

b. How are cDNA libraries constructed? (5 marks)

Process – 4 marks and Diagram – 1 mark

**III. Answer the following 1X10=10 marks.**

18. With the knowledge of genetic engineering, how will you proceed with gene editing process? What issue will you address with gene editing technology? How ethical is gene editing process?