QP Code: RD21BTECH247 | Reg. No | | | | | | | | | | | AY 21

# GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Fifth Semester Regular) Examinations, December – 2023

## 21BBTPC35001 - Genetic Engineering and r-DNA Technology

(Biotech)

Time: 3 hrs | Maximum: 70 Marks

**Answer all questions**

**(The figures in the right hand margin indicate marks)**

**PART – A** **(2 x 5 = 10 Marks)**

| Q.1. Answer ***ALL*** questions | CO # | Blooms Level |
|---|---|---|
| a. How bacteria protect its own DNA from restriction enzymes? | CO1 | K2 |
| b. Differentiate between cloning vector and expression vector. | CO1 | K2 |
| c. In a double strand DNA, both the ends are unknown and the middle part of the sequence is known. What type of PCR you can use to amplify the whole DNA? | CO2 | K4 |
| d. List the chemicals used in Maxam and Gilbert method. | CO3 | K4 |
| e. Which disease was first treated using gene therapy? Write the name of patient treated first. | CO4 | K3 |

**PART – B** **(15 x 4 = 60 Marks)**

| Answer ***ALL*** questions | Marks | CO # | Blooms Level |
|---|---|---|---|
| 2. a. Diagrammatically explain about Polynucleotide kinase and Alkaline phosphatise. | 7 | CO1 | K2 |
| b. Explain the structure and cloning mechanism by using YAC? | 8 | CO1 | K2 |
| (OR) | | | |
| c. Explain the mechanism and functions of DNA ligase and terminal transferase? | 7 | CO1 | K2 |
| d. What is restriction enzyme? Discuss different types of restriction enzymes and its nomenclature? | 8 | CO1 | K2 |
| 3.a. What is genomic DNA library? Explain the preparation of genomic DNA library? | 7 | CO2 | K2 |
| b. Discuss any three techniques used to transfer the recombinant DNA to host cells. | 8 | CO2 | K2 |
| (OR) | | | |
| c. Define Microarray. Explain principle and manufacturing process of DNA chips?. | 7 | CO2 | K2 |
| d. Write the principle and steps of PCR. | 8 | CO2 | K2 |
| 4.a. Write the principle and techniques of DNA foot printing with applications. | 7 | CO3 | K2 |
| b. Define RNAi. Explain the mechanism of generation and action miRNA. | 8 | CO3 | K2 |
| (OR) | | | |

| | | | | |
|---|---|---|---|---|
| c. | Write any five strategies for expression of heterologous gene expression in prokaryotic cells. | 7 | CO3 | K3 |
| d. | Discuss the process of random mutagenesis. | 8 | CO3 | K2 |
| 5.a. | Define Molecular markers. Write the principle and techniques of RFLP. | 7 | CO4 | K2 |
| b. | Highlight the major findings of Human genome project. | 8 | CO4 | K4 |
| | (OR) | | | |
| c. | Write the principle and techniques of AFLP. | 8 | CO4 | K3 |
| d. | Enlist in details about the steps and major techniques of HGP. | 7 | CO4 | K4 |

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