

## M.Sc Sem.-2 Examination

## P - 408 - Microbiology

## Gene Regulation and Recombinant DNA Technology

Time : 2-00 Hours]

June 2022

[Max. Marks : 50

**Instructions:**

- All questions in Section 1 carry equal marks. Attempt any **THREE** questions in section 1
- All questions in Section 2 are **compulsory** and each carries **1 mark**

**Section 1**

- Q1** A. Explain the structure of the lambda genome, provide basic functionality of important genes found in its genetic map and discuss the roles of N and Q proteins. **7**  
 B. Explain at length catabolite repression in E. coli cell for glucose **7**
- Q2** A. Explain the lytic induction of Lambda phage and discuss in detail the functionality of cro protein **7**  
 B. Explain negative control of Lac operon **7**
- Q3** A. Write a note on types of restriction endonucleases. **7**  
 B. Write about the linkers and adapters. **7**
- Q4** A. Explain cDNA library preparation **7**  
 B. Describe in detail the methods of DNA sequencing **7**
- Q5** A. Write a note on  $\lambda$  phage as vector. **7**  
 B. Write a note on reporter genes and their functions **7**
- Q6** A. Explain pUC18 vector. **7**  
 B. Write a note on YAC vector **7**
- Q7** A. Define an array and discuss various types of microarrays. **7**  
 B. Write short notes on RAPD and RFLP **7**
- Q8** A. Explain northern hybridization. **7**  
 B. Explain DNA foot printing. **7**

**Section 2**

- Q9** 1 What is Allolactose and highlight its role? **1**  
 2 List out genes found in Lac Operon? **1**  
 3 Write any two properties of cDNA library. **1**  
 4 What are type I restriction endonucleases. **1**  
 5 Describe any three properties of a good vector. **1**  
 6 Define transfection **1**  
 7 Enlist advantages of microarrays **1**  
 8 Enlist applications of DNA chips **1**