

**MSc Sem.-2 Examination****408****Biotechnology****May-2025****Time : 2-30 Hours]****[Max. Marks : 70**

- Q-1** Explain the genetic regulation in Lambda phage. **14**  
OR
- Q-1 A.** Define the term Operon. What are the key components and functions of Arabinose operon in prokaryotic gene regulation. **07**  
**B.** What type of trp operon is? Describe the role of various genes involved in trp operon explain its negative control. **07**
- Q-2** Write an exhaustive note on restriction endonucleases **14**  
OR
- Q-2 A.** What is cDNA ? Explain cDNA library preparation. **07**  
**B.** Describe the method of isolation of RNA. **07**
- Q-3** Write in details on the methods of introduction of r-DNA into host cells. **14**  
OR
- Q-3 A.** What is artificial chromosome ? write a note on YAC vector. **07**  
**B.** Define vector and explain pBR322 in detail. **07**
- Q-4** Write in details on Microarrays and its applications. **14**  
OR
- Q-4 A.** Explain southern hybridization. **07**  
**B.** Discuss steps involved in DNA fingerprinting in detail. **07**
- Q-5** Write any seven of the followings in brief. **14**
1. What is the function of CII-CIII complex?
  2. What can trigger lytic induction of lambda ( $\lambda$ ) phage.
  3. Explain the term constitutive genes.
  4. Write on reverse transcriptase
  5. Write in brief on type I and type II restriction endonucleases.
  6. Describe any three properties of a good vector.
  7. Write on the pulse applied in electroporation?
  8. What are the advantages of DNA chips.
  9. Explain the membrane used for northern hybridization?
  10. What is RFLP?
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