

**M Sc. Biotechnology  
Second Semester  
Genetic Engineering  
(MBT-07)**

**Duration: 3Hrs.**

**Full Marks: 70**

**(PART-B: Descriptive)**

**Duration: 2 hrs. 40 mins.**

**Marks: 50**

**1. Write short notes on: (any five)**

**2×5=10**

- a) DNA ligases
- b) Cosmid
- c) Dot blot
- d) npt II
- e) Polymerase III
- f) M13
- g) Blunt end ligation

**2. Give the appropriate answer for the following questions: (any five)**

- a) What do you mean by an adaptor? Point out the main difference between adaptor and linker. **1+2=3**
- b) What do you mean by BAC? What is the advantage of YAC over BAC? **2+1=3**
- c) Explain transformation method for inserting external gene into one suitable vector. **3**
- d) Mention the important steps of cDNA library construction with suitable enzymes. **3**

- e) What is the contribution of dot blot in genetic engineering? 3
- f) What is nick translation? 3
- g) What is reporter gene? What is significance of reporter gene? 1+2=3

**3. Illustrate the following (any five):** 5×5=25

- a) Basic principle of RT PCR
- b) Southern blotting mechanism
- c) RAPD
- d) Role of dideoxy nucleotides in DNA sequencing.
- e) Characteristics of a good vector
- f) Restriction enzyme II
- g) Ti plasmid construction

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9. Klenow enzymes are made from  
 a) Pol I                      b) Pol II                      c) Pol III                      d) None of the above
10. The enzyme which cut exactly at the palindrome sequence is  
 a) Type I                      b) Type II                      c) Type III                      d) Type VI
11. In partial digestion, the main enzyme is  
 a) Restriction enzyme                      b) Ligase                      c) Polymerase                      d) Modifying enzyme
12. Shuttle vectors are of great importance, because  
 a) Can be used in two different hosts                      b) Can be used only for one host  
 c) Cost is very low                      d) Is very attractive
13. Largest DNA fragment can be inserted in  
 a) Plasmid                      b) Cosmid                      c) Phagmid                      d) BAC
14. T DNA is the part of Ti plasmid in which  
 a) Target gene is inserted                      b) Resistant gene is inserted  
 c) Ori is inserted                      d) Replication site is inserted
15. Short gun method is used in the construction of  
 a) Genomic library                      b) cDNA library                      c) Both                      d) None
16. Western blotting is the hybridization technique for  
 a) Protein                      b) DNA                      c) RNA                      d) Nucleotides
17. The sequences in homopolymer tailing technique contains  
 a) Same sequences                      b) Two different sequences  
 c) Three different sequences                      d) Four different sequences
18. The phosphate group present at the end can be removed by  
 a) Phosphatase                      b) Kinase                      c) Polymerase                      d) RE
19. AFLP is the combination of  
 a) RAPD and RFLP  
 b) RAPD and dot blot  
 c) Dot blot and colony hybridization  
 d) RAPD and RFPL
20. Liposome is made from  
 a) Lipids  
 b) Proteins  
 c) Carbohydrates  
 d) Vitamins

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