

**B.Sc. MICROBIOLOGY  
SIXTH SEMESTER  
RECOMBINANT DNA TECHNOLOGY  
BMB-602  
[USE OMR SHEET FOR OBJECTIVE PART]**

**SET  
B**

Duration: 3 hrs.

Full Marks: 70

**( Objective )**

Time: 30 mins.

Marks: 20

*Choose the correct answer from the following:*

*1 × 20 = 20*

- Which are the Restriction Endonucleases?
  - HaeIII*
  - HaeIII*
  - HaeIV*
  - None of these
- Plasmids are:
  - ss circular DNA molecules
  - ss linear DNA molecules
  - ds circular DNA molecules
  - None of these
- Who invented Biolistic method?
  - Johnson
  - Kary Mullis
  - Stanford
  - Sanford
- What is annealing temperature of DNA in PCR?
  - 57°C
  - 55°C
  - 56°C
  - 54°C
- Taq* DNA polymerase is isolated from:
  - Thymus aquaticus*
  - Thermus aquaticus*
  - Both a and b
  - All of these
- The principle of "Sanger's Sequencing method" relies on:
  - Use of chemicals for base cleavage
  - Use of dNTPs for chain termination
  - Use of ddNTPs for chain termination
  - All of the above
- Genetically engineered bacteria is used for the production of:
  - hGH
  - Human insulin
  - Thyroxine
  - Human hormones
- The first transgenic plant to be produced in India is:
  - BT Brinjal
  - Tobacco
  - Golden Rice
  - BT Cotton
- Which of the following is not an application of protein engineering?
  - Modification of natural proteins
  - Synthesis of chimeric proteins
  - Multiplication of natural proteins
  - Construction of novel proteins
- Which of the following technique is of no use in protein engineering?
  - Protein sequencing
  - Lyophilization
  - X-ray crystallography
  - Gene cloning

11. Which is the most important enzyme in the rDNA technology?
  - a. DNA ligases
  - b. Restriction Endonucleases
  - c. Alkaline Phosphatase
  - d. All of these
12. Which is NOT a cloning vector?
  - a. Plasmid
  - b. pBR322
  - c. pUE
  - d. None of these
13. Bacteriophage  $\lambda$  is:
  - a. Fungus
  - b. Virus
  - c. Bacteria
  - d. Actinomycetale
14. Which chemical is used for coating the DNA in biolistic method?
  - a. Acidosiloxane
  - b. Amylosiloxane
  - c. Aminosiloxane
  - d. All of these
15. What is the denaturation temperature of DNA in PCR?
  - a. 93°C
  - b. 97°C
  - c. 94°C
  - d. 95°C
16. The first genomic libraries were cloned in.....
  - a. Plasmid & Phage
  - b. Human
  - c. Bacteria
  - d. Plants
17. Normally a genomic library is made by.....
  - a. T4 Phage
  - b.  $\lambda$  Phage
  - c. T3 Phage
  - d. T6 Phage
18. A piece of DNA or RNA used to detect specific nucleic acid sequence by hybridization is called:
  - a. Plasmid
  - b. Endonucleases
  - c. Vector
  - d. Probe
19. Transgenic organisms are produced by:
  - a. Chromosomal aberrations
  - b. Genetic mutations
  - c. Addition, deletion or modification of genes
  - d. Genetic transformation by bacteria
20. Bacteria protect themselves from viruses by fragmenting viral DNA with:
  - a. Restriction Endonucleases
  - b. Restriction Exonucleases
  - c. Ligase
  - d. Gyrase

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**( Descriptive )**

Time : 2 hr. 30 mins.

Marks : 50

[ Answer question no.1 & any four (4) from the rest ]

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|---|-----------|
| 1. What is Bacteriophage? Give detail account on the life cycle of Bacteriophage $\lambda$ . Add on its vector properties.                | 1+6+3=10  |
| 2. What is Ti Plasmid? Describe on organization of Ti plasmid and the transfer and integration of T-DNA.                                  | 1+3+6=10  |
| 3. Write notes on:<br>a) Chemical Gene transfer methods<br>b) SDS PAGE  | 5+5=10    |
| 4. Structurally elaborate on the particle bombardment gene transfer methods. Add on the factors as well as advantages and disadvantages.  | 6+2+2=10  |
| 5. What is DNA Library? What are main types of DNA library? Give a brief account on preparation and uses of various types of DNA library. | 1+2+7= 10 |
| 6. Write a detailed note on Sanger's method of DNA sequencing and its applicability.  | 10        |
| 7. Write a summarized note on application of recombinant DNA technology approaches in human welfare.                                      | 10        |
| 8. What is transgenics? Write particulars about BT Cotton, BT Brinjal and Golden Rice.  | 4+6=10    |

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