

**B.Sc. MICROBIOLOGY
SIXTH SEMESTER
RECOMBINANT DNA TECHNOLOGY
BMB – 602**

(Use Separate Answer Scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

[PART-A: Objective]

Time : 20 min.

Marks : 20

Choose the correct answer from the following:

1 × 20 = 20

1. Which are the most important enzymes in the rDNA technology
 - a. DNA ligases
 - b. Restriction Endonucleases
 - c. Alkaline Phosphatase
 - d. All of these
2. Which are the Restriction Endonucleases
 - a. *Hind*III
 - b. *Hind*IV
 - c. EcoR4
 - d. None of these
3. Which is NOT a cloning vector
 - a. Plasmid
 - b. pBR322
 - c. pUD
 - d. None of these
4. Plasmids are
 - a. *ds* circular DNA molecules
 - b. *ss* linear DNA molecules
 - c. *ss* circular DNA molecules
 - d. All of these
5. Bacteriophage λ is
 - a. Virus
 - b. Fungus
 - c. Bacteria
 - d. None of these
6. Who invented Biolistic method
 - a. Sanford
 - b. Kary Mullis
 - c. Stanford
 - d. Johnson
7. Which chemical is used for coating the DNA in biolistic method
 - a. Aminosiloxane
 - b. Amylosiloxane
 - c. Acidossiloxane
 - d. All of these
8. What is annealing temperature of DNA in PCR
 - a. 55°C
 - b. 57°C
 - c. 56°C
 - d. 54°C
9. What is the denaturation temperature of DNA in PCR
 - a. 95°C
 - b. 97°C
 - c. 94°C
 - d. 93°C

10. *Taq* DNA polymerase is isolated from
 a. *Thermus aquaticus* b. Both a and b
 c. *Thymus aquaticus* d. All of these
11. The first genomic libraries were cloned in _____
 a. Plasmid & Phage b. Human
 c. Bacteria d. Plants
12. Replica plating technique of screening used in _____
 a. DNA-DNA hybridization b. colony PCR
 c. Colony hybridization d. all of the above
13. Normally a genomic library is made by-----
 a. T4 Phage b. λ Phage
 c. T3 Phage d. T6 Phage
14. 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
15. Transgenic organisms are produced by
 a. chromosomal aberrations b. Genetic mutations
 c. Addition, deletion or modification of genes d. Genetic transformation by bacteria
16. The first transgenic plant to be produced is
 a. Brinjal b. Tobacco
 c. Golden Rice d. BT Cotton
17. Bacteria protect themselves from viruses by fragmenting viral DNA with
 a. Endonuclease b. Restriction Exonuclease
 c. Ligase d. Gyrase
18. Genetically engineered bacteria is used for the production of
 a. hGH b. Human Insulin
 c. Thyroxine d. Human hormones
19. Which of the following is not an application of protein engineering?
 a. Modification of natural proteins b. Synthesis of chimeric proteins
 c. Multiplication of natural proteins d. Construction of novel proteins
20. Which of the following technique is of no use in protein engineering?
 a. Lyophilization b. Protein sequencing
 c. X-ray crystallography d. Gene cloning

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(PART-B : Descriptive)

Time : 2 hrs. 40 min.

Marks : 50

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

1. Give details on the DNA modifying enzymes and their applications with appropriate examples with figures? 10
2. What is cloning vector? Gives details on definition and properties of Plasmid vectors? 1+9=10
3. Write notes on the followings 5+5=10
 - a. Linkers & Adaptors
 - b. Electroporation
4. Give details on principles, techniques, key factors and types of PCR? 10
5. Write notes on the followings 5+5=10
 - a. Agrobacterium mediated gene transfer
 - b. Liposome mediated gene transfer
6. 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
7. Write about recombinant DNA technology product of human therapeutic interest. 10
8. What is BT transgenics? Write particulars about BT Cotton and BT Brinjal. 10

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[3]