REV-01
BBT/12/15

2022/12

SET B

B.Sc. BIOTECHNOLOGY
FIFTH SEMESTER
RECOMBINANT DNA TECHNOLOGY
BBT-502

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

Objective

Time: 30 mins. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. Which are the most important enzymes in the rDNA technology?
   a. Restriction Endonucleases b. DNA ligases
   c. Alkaline Phosphatase d. All of these

2. Genetically engineered bacteria are used for the production of:
   a. hGH b. Human insulin
   c. Steroids d. Human hormones

3. Replica plating technique of screening used in……..
   a. DNA-DNA hybridization b. Colony hybridization
   c. Colony PCR d. All of the above

4. Plant cells can easily generate into an entire plant because:
   a. Embryo is totipotent b. Plants are totipotent
   c. Stem cells are pluripotent d. They divide actively

5. The protein crystals of *B. thuringiensis* contain toxic ……..protein.
   a. Bactericidal b. Fungicidal
   c. Insecticidal d. Antibiotic

6. Agropines are derived from:
   a. Amino acid b. Carbohydrates
   c. Sugar d. All of these

7. Which proteins are involved in the production of ss T-DNA?
   a. *Vir* B b. *Vir* D1/D2
   c. *Vir* A d. None of these

8. Restriction enzyme cleavage site present in:
   a. Linkers b. Adapters
   c. Both a & b d. All of these

9. Phosphodiester bond is linked by:
   a. RE b. Ligase
   c. Pol I d. Pol II

10. What is the denaturation temperature of DNA in PCR?
    a. 90^0C b. 95^0C
    c. 89^0C d. 25^0C

11. Normally a genomic library is made by.....
    a. Phage T4
    b. T3 Phage
    c. Phage λ
    d. Phage T6

12. *Taq* DNA polymerase was isolated from.....
    a. *Thermus aquaticus*
    b. *Thymus aquaticus*
    c. Not necessarily from only (a) and (b)
    d. Both (a) and (b)

13. A piece of DNA or RNA used to detect specific nucleic acid sequence by hybridization is called:
    a. Plasmid
    b. Vector
    c. Probe
    d. Marker

14. Insect tolerant gene from *Bacillus thuringiensis* is introduced using plasmid of:
    a. Agrobacterium tumefaciens
    b. Haemophilus influenza
    c. Escherichia coli
    d. Arabidopsis thaliana

15. The controversy regarding the use of BT plants is that it:
    a. Can contaminate groundwater and environment
    b. Is a potential allergen to humans
    c. Is potentially harmful to monarch butterflies
    d. Both (a) and (c)

16. Opines are derived from:
    a. Sugar
    b. Amino acid
    c. Fat
    d. None of these

17. The entry of bacterium into the plant tissues is facilitated by:
    a. Acetosyringone
    b. Hydroxyacetosyringone
    c. Both a & b
    d. All of these

18. The size of the Ti Plasmid gene:
    a. 200kb
    b. 250kb
    c. 201kb
    d. None of these

19. pBR322 cloning vector is named after:
    a. Bolivar & Rodriguez
    b. Bolivar & Rodricues
    c. Bolid& Rodriguez
    d. None of these

20. DNA is formed by joining:
    a. Gene and vector
    b. Plasmid and vector
    c. Plasmid and phage
    d. BAC and YAC

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Descriptive

Time : 2 hr. 30 mins. Marks : 50

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

1. What is *Agrobacterium*-mediated gene transfer and its applications? Give details on the organization and integration of T-DNA. 2+4+4=10
2. Give detailed accounts of molecular tools of genetic engineering. 10
3. 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
4. What is a recombinant vaccine? Write about its production procedure and advantages. 2+8=10
5. Give notes on the following: 5+5=10
   a) Electroporation
   b) Liposome-mediated gene transformation
6. Principle, mechanism, and applications of Polymerase chain reaction (PCR). Add on its application. 10
7. Give notes on the following: 5+5=10
   a) Plasmids
   b) Artificial chromosome
8. What is BT transgenics? Write particulars about BT Cotton and BT Brinjal. 10

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