REV-01
BMB/18/23

2024/05

SET A

B.Sc. MICROBIOLOGY
SIXTH SEMESTER
RECOMBINANT DNA TECHNOLOGY
BMB-602

[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 of the following enzymes acts as security for the success of rDNA technology?
   a. DNA ligases
   b. Restriction Endonucleases
   c. Alkaline Phosphatase
   d. All of these

2. Which are the Restriction Endonucleases?
   a. *NotI*
   b. *DNA polymerase*
   c. *EcoRIE*
   d. None of these

3. Which of the following enzyme is used to remove nucleotides from 3'-end of DNA?
   a. Exonuclease III
   b. Exonuclease I
   c. Exonuclease II
   d. All of these

4. pBR vectors is discovered by:
   a. Bolivar and Rodriguez
   b. Bolivar and Rodriguaz
   c. Boliver and Rodriguez
   d. All of these

5. Bacteriophage λ is:
   a. Pro Virus
   b. Virus
   c. Lentivirus
   d. Actinomycetale

6. Who invented gene gun method?
   a. Johnson
   b. Kary Mulles
   c. Stanford
   d. None of these

7. Which chemical is used for coating the DNA in biolistic method?
   a. Acidosiloxane
   b. Amylosiloxane
   c. Acetoselaxane
   d. Aminosiloxane

8. Which of the following is the most largest capacity vector?
   a. HACs
   b. BACs
   c. YACs
   d. None of these

9. What is the denaturation temperature of DNA in PCR?
   a. 93^{0}C
   b. 97^{0}C
   c. 95^{0}C
   d. 96^{0}C

10. Genes are present in:
    a. DNA
    b. Nucleus
    c. Chromosome
    d. All of these

11. Which are the most important enzymes in the rDNA technology?
    a. DNA ligases
    b. Alkaline Phosphatase
    c. Restriction Endonucleases
    d. DNA polymerase

12. Genetically modified microbes are used for the production of:
    a. Human insulin
    b. hGH
    c. Human hormones
    d. Testosterons

13. Which DNA is restricted to making a genomic library?
    a. Plasmid
    b. Chromosomal DNA
    c. Phage
    d. Plant

14. Which of the following properties is improved by site directed mutagenesis?
    a. Physical property
    b. Kinetic property
    c. Integrity
    d. None

15. *Taq* DNA polymerase is isolated from:
    a. *Thermus aquaticus*
    b. *Thymus aquaticus*
    c. *Theomargarita*
    d. All of these

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

17. The controversy regarding the use of transgenic plants is that it:
    a. Can contaminate groundwater and environment
    b. Is a potential allergen to humans
    c. Is potentially harmful to ecosystem
    d. Both a and c

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. Bacteria protect themselves from viruses by fragmenting viral DNA with:
    a. Endonuclease
    b. Restriction Exonuclease
    c. Ligase
    d. Gyrase

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

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Descriptive

Time : 2 hr. 30 mins. Marks : 50

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

1. Structurally elaborate on the particle bombardment gene transfer methods. Add on the factors as well as advantages and disadvantages. 6+2+2=10

2. Write notes on: 5+5=10
a)Plasmid
b)Alkaline phospatase

3. Write notes on: 5+5=10
a) Linkers and Adapters
b) Western hybridization

4. 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. 10

5. Write notes mentioning salient points on following: (*any two*) 5+5=10
a) Recombinant vaccines
b) Transgenics
c) Gene therapy

6. What is Bacteriophage? Give detail accounts on the life cycle and emphasize of the most productive life cycle. How it is considered for being used as vector? 1+6+3=10

7. DNA sequencing by Sanger's method: Describe its principle, procedure and utilities. 3+5+2=10

8. Write about recombinant DNA technology product of human therapeutic interest. 10

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