

**B.Sc. BIOTECHNOLOGY
FIFTH SEMESTER [SPECIAL REPEAT]
RECOMBINANT DNA TECHNOLOGY
BBT-502**

**SET
A**

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

(Objective)

Choose the correct answer from the following:

1 × 20 = 20

- Biological gene transfer is mediated by:
a. Ti plasmid
b. Ri plasmid
c. Both a and b
d. None
- 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
- Genetically engineered bacteria are used for the production of:
a. hGH
b. Steroids
c. Human Insulin
d. Human hormones
- Which of these is an activity of Reverse transcriptase?
a. RNA dependent DNA polymerase
b. RNA cleavage from hybrid
c. Polymerase activity on DNA template
d. All of the above
- pBR322 cloning vector is named after:
a. Bolivar & Rodriguez
b. Bolivar & Rodricues
c. Bolid & Rodriguez
d. None of these
- Which of the following act as chain terminator?
a. Exogenous
b. DNA
c. Dideoxynucleotides
d. Deoxynucleotides
- What is the holiday junction?
a. Formation of a crossing over complex
b. The site of strand break
c. The site of heteroduplex DNA formation
d. The site of strand invasion
- The entry of bacterium into the plant tissues is facilitated by:
a. Acetosyringone
b. Hydroxyacetosyringone
c. Both a & b
d. None of these
- Which kinds of DNA are easier to prepare for PCR mutagenesis?
a. Linear
b. Single-stranded
c. Circular
d. Double-stranded
- Normally a genomic library is made by.....
a. Phage T4
b. T3 Phage
c. Phage λ
d. Phage T6

11. Opines are derived from:
 - a. Sugar
 - b. Amino acid
 - c. Fat
 - d. None of these
12. Which protects the ss TDNA from cytoplasmic enzyme attack?
 - a. *Vir E & Vir D2*
 - b. *Vir B & Vir D1*
 - c. Both a & b
 - d. All of these
13. Insect tolerant gene from *Bacillus thuringiensis* is introduced using plasmid of:
 - a. *Agrobacterium tumefaciens*
 - b. *Arabidopsis thaliana*
 - c. *Escherichia coli*
 - d. *Haemophilus influenza*
14. 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
15. The size of the Ti Plasmid gene:
 - a. 200kb
 - b. 250kb
 - c. 201kb
 - d. None of these
16. Restriction enzyme cleavage site present in:
 - a. Linkers
 - b. Adapters
 - c. Both a & b
 - d. All of these
17. If Eco R I denote *E. coli*, than Hind III denote what?
 - a. *Haemophilus influenzae*
 - b. *Thermus aquaticus*
 - c. *Bacillus amyloliquefaciens*
 - d. *Haemophilus aegyptius*
18. *Taq* DNA polymerase is isolated from:
 - a. *Thermus aquaticus*
 - b. *Thymus aquaticus*
 - c. Both a & b
 - d. All of these
19. Which are the most important enzymes in the rDNA technology?
 - a. DNA ligases
 - b. Alkaline Phosphatase
 - c. Restriction Endonucleases
 - d. All of these
20. What is the denaturation temperature of DNA in PCR?
 - a. 90°C
 - b. 95°C
 - c. 89°C
 - d. 25°C

(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

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

1. Give detailed accounts of molecular tools of genetic engineering. 10
2. Write a distinctive note on "site directed mutagenesis". 10
3. You have provided a human serum sample. You have to detect whether a specific viral infection is there or not. What type of thermal cycler you will opt and why? What is a thermal cycler? Write about the basic principle behind the functioning of a thermal cycler. 2+2+6=10
4. What do you understand by nucleotide sequencing and its utilities? Briefly outline the Sanger's method of DNA sequencing. 3+7=10
5. Give brief introduction on vector mediated gene transfer. Discuss in details about the most studied and applied vector mediated gene transfer with appropriate figures and mechanisms. 2+8=10
6. Give in detail presentation on the most productive cycle that uses for gene transfer of Bacteriophage λ . Justify their usage as vector. 7+3=10
7. Write notes on: 5+5=10
 - a) DNA cutting enzymes
 - b) DNA joining enzymes
8. Write a distinctive short note on genetic engineering method for production of human growth hormone and insulin. 10

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