

F - 778

M.Sc. (Third Semester)
Examination, Dec.-Jan., 2021-22

Botany
Paper Third

(Biotechnology and Genetic Engineering of Plants and Microbes)

Time : Three Hours]

[Maximum Marks : 80

Note: Attempt all sections as directed.

Section- A
(Multiple Choice Questions)

1. Cutting and joining of the DNA are which techniques?

- (a) DNA degradation (b) DNA replication
(c) DNA manipulation (d) DNA synthesis

2. The first restriction endonuclease discovered was:

- (a) EcoRI (b) EcoRII
(c) Hind II (d) Hind III

3. Which vector carries longest foreign DNA fragments?

- (a) M 13 based vector (b) Lambda based vector
(d) Plasmid (d) Hybrid vector

4. The vector designed to replicate in two different species are called:

- (a) Plasmid (b) Shuttle vector
(c) Transfer vector (d) All of these

5. Why are the copy numbers are important in cloning experiment?

- (a) Maximum expression (b) Ease of manipulation
(c) Cost efficiency (d) None of these

6. Which of the following thing was identified as the transforming principle?

- (a) DNA (b) RNA
(c) Proteins (d) Carbohydrates

7. An organism containing a gene which doesn't belong to it and is derived from somewhere else then the organism is said to be:

- (a) Transformed (b) Transgenic
(c) Modified (d) Mutant

8. The ability of cells to take up DNA fragments from surrounding is called:

- (a) Transfection (b) Transformation
(c) Transduction (d) Conjugation

9. Chemicals used for gene transfer method is/are:

- (a) Polyethylene glycol (b) Dextran
(c) Calcium Chloride (d) All of these

10. Introduction of DNA into cells by exposing to high voltage electric pulse is:

- (a) Electroporation (b) Electrofusion
(c) Electroporation (d) Electrolysis

11. Virulence trait of *Agrobacterium tumefaciens* is borne on:

- (a) chromosomal DNA (b) tumour inducing plasmid DNA
(c) Both chromosomal and plasmid DNA (d) cryptic plasmid DNA

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12. The PCR technique was developed by:

- (a) Kohler (b) Altman
(c) Milstein (d) Kary Mullis

13. *Thermus aquaticus* is the source of:

- (a) Vent polymerase (b) Primase enzyme
(c) Taq polymerase (d) Both a and c

14. Reverse transcription PCR uses:

- (a) RNA as a template to form DNA (b) mRNA as a template to form cDNA
(c) DNA as a template to form ssDNA (d) All of the above

15. Which of the following is the chemical nucleotide sequencing method?

- (a) Sanger method (b) Maxam Gilbert method
(c) Edmans method (d) Automated Sequencing method

16. Collection of microscopic DNA spots attached to solid surface are:

- (a) Ortholog (b) Paralog
(c) Microarray (d) None of these

17. The effects of protein on an entire organism is described in?

- (a) Phenotypic function (b) Cellular function
(c) Molecular function (d) Structural function

18. Proteomics refers to the study of:

- (a) Set of proteins in a specific region of the cell (b) Biomolecules
(c) Set of proteins (d) The entire set of expressed proteins in the cell

19. The DNA fingerprinting technique is invented by:

- (a) Alex Brown (b) Alex Jefferys
(c) Bill Jonas (d) Leone Mas

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20. The process where DNA fragments are transferred to nylon sheet on the gel is called:

- (a) Northern Blotting (b) Southern Blotting
(c) Western Blotting (d) Nitro Blot

Section-B

(Very Short Answer Type Questions)

Note: Attempt all questions.

Each 2 marks

Write answer of the following:

1. Write function of DNA ligase.
2. C-DNA stands for?
3. How many types of restriction endonuclease present?
4. Name of nitrogen fixing microbes.
5. Which is known as natural genetic engineer?
6. Name types of DNA sequencing methods.
7. Write method of gene tagging.
8. What is genomics?

Section- C

(Short Answer Type Questions)

Note: Attempt all questions.

Each 3 marks

Write short note on the following

1. What are cosmids?
2. Define Shuttle vectors with example.
3. Write characteristics of vectors.
4. Explain direct DNA transfer methods.
5. What is DNA fingerprinting?
6. Write about Maxam- Gilbert method of DNA sequencing.
7. What are molecular markers?
8. Write about transposon.

Section –D
(Long Answer Type Questions)

Note: Attempt all questions.

1. Write an explanatory notes on the DNA modifying enzymes.

OR

Write a detailed note on c-DNA library construction.

2. What are the different strategies for development of transgenies with examples.

OR

What is bacterial transformation? Explain in detail.

3. Write main steps of Polymerase chain reaction in detail.

OR

Explain chemical synthesis of gene.

4. Write about the importance of bioinformatics.

OR

What is protein profiling and its significances.