

(6 pages)

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M.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2019.

Fourth Semester

Microbiology

BIOTECHNOLOGY

(For those who joined in July 2016 and afterwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. DNA ligase used in recombinant DNA technology is obtained from?
  - (a) *E.coli* only
  - (b) *E.coli* and ligase encoded by T<sub>4</sub> phage
  - (c) *Saccharomyes*
  - (d) Retroviruses

2. Restriction fragment length polymorphisms (RFLPs)
  - (a) Are used to determine the position of restriction sites in genome
  - (b) Are used in physical mapping.
  - (c) Are used in genetic mapping
  - (d) Usually occurs multiple (more than 2) alleles in a genome.
3. Phagemid vectors are
  - (a) Combination of plasmid and phage lambda
  - (b) Combination of phages and cosmid
  - (c) Phages carrying properties of plasmids
  - (d) All of the above
4. Autonomously replicating sequence (ARS) is a characteristic feature of
  - (a) Plasmid vectors
  - (b) Phase vectors
  - (c) *E coli* vectors
  - (d) Yeast vectors
5. Choose the correct statement for genomic libraries
  - (a) Genomic libraries include the representation of the whole genome of the organism.
  - (b) Sequences such as telomeres are also represented
  - (c) Telomeres can be readily cloned
  - (d) More number of recombinants required to represent the genome in the library.

6. To avoid ligation of separate DNA fragments which of the enzyme is used?  
(a) Phosphatase (b) Kinase  
(c) Ligase (d) Endonuclease
7. Transgenic plants are produced by using Ti plasmids from the  
(a) *Agrobacterium tumefaciens*  
(b) *E.coli*  
(c) Bacteriophage  
(d) *Agrobacterium varians*
8. If the goal were to create a plant resistant to an insecticide, which cell-based plant technology would be most effective?  
(a) Clonal propagation (b) Hybridization  
(c) Protoplast fusion (d) Mutant selection
9. Production of transgenic animals require transfection of  
(a) Eggs or embryo (b) Stem cells  
(c) Red blood cells (d) All of these
10. In transgenic animals, what is a foster mother?  
(a) From which ES cells are derived  
(b) From which embryo is derived  
(c) In to which embryo is implanted  
(d) Whose genes are used

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write about PCR and its applications.  
Or  
(b) Explain DNA finger printing and its application.
12. (a) Explain phasmids and its advantages.  
Or  
(b) Write about gene cloning vectors for yeast
13. (a) What are c DNA libraries and write about the vectors used in c DNA libraries  
Or  
(b) Write about the methods of DNA hybridization.
14. (a) Note on insect resistant transgenic plants.  
Or  
(b) Comment on transgenic plant products.
15. (a) Write about transgenic poultry and its application.  
Or  
(b) Comment on transgenic fishes.

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write a detailed essay on different methods of DNA sequencing

Or

- (b) Explain in detail about

(i) RFLP

(ii) RAPD

(iii) AFLP

17. (a) Write a detailed essay on bacterial plasmid vectors.

Or

- (b) Explain in detail about phage vectors.

18. (a) Discuss about gene libraries and applications.

Or

- (b) Explain the yeast plasmid recombinant and its types.

19. (a) Write a detailed essay on viral resistant transgenic plants.

Or

- (b) Explain about the physical methods of gene transfer in plants.

20. (a) Write about transgenic mice and explain the retroviral methods or gene transfer.

Or

- (b) Explain transgenic sheep, goat and the production of wool.