

(7 pages)

Reg. No. :

Code No. : 7860

Sub. Code : WBOM 33

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2024.

Third Semester

Botany — Core

RECOMBINANT DNA TECHNOLOGY AND
INDUSTRIAL APPLICATIONS

(For those who joined in July 2023 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following statements is true regarding DNA cloning?
 - (a) Recombinant DNA is formed when bacterial cell reproduces asexually
 - (b) Plasmids are used often because they are extremely complex
 - (c) DNA ligase recognizes one or two DNA fragments before cutting occurs
 - (d) DNA target sequences are recognized and cut by restriction enzymes

2. What is a transgene?
 - (a) Viral vector gene
 - (b) Exogenous genetic material
 - (c) Endogenous genetic material
 - (d) Bacterial gene
3. The first significant DNA sequence to be obtained was that of _____.
 - (a) Lambda
 - (b) Plasmid
 - (c) Lactose
 - (d) Mammals
4. A plasmid can be considered as a suitable cloning vector if
 - (a) it can be readily isolated from the cells
 - (b) it possesses a single restriction site for one or more restriction enzymes
 - (c) insertion of foreign DNA does not alter its replication properties
 - (d) all of the above
5. Gel electrophoresis separates nucleic acid molecule based on _____.
 - (a) charge on molecules
 - (b) size of the molecules
 - (c) nature of the molecules i.e. whether DNA or RNA
 - (d) chemical properties of the nucleic acids

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6. Which membrane is used in blotting?
(a) Agarose (b) Sucrose
(c) Polythene (d) Nylon
7. Which one of the following is water soluble vitamin?
(a) Vitamins E (b) Vitamins K
(c) Vitamins A (d) Vitamins C
8. The plant cells can be lysed by using _____ enzyme.
(a) Lipase (b) Chitinase
(c) Ligase (d) Cellulase
9. Which fungi are produced tetracyclines?
(a) *Penicillium notatum*
(b) *Streptomyces aureofaciens*
(c) *Cephalosporin acremonium*
(d) All the above
10. Which among the following is not a bacteriostatic antibiotic?
(a) Tetracyclines (b) Sulfonamides
(c) Cephalosporins (d) None of the above

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11. Which of the following is use in the production of recombinant hepatitis B vaccine?
(a) Yeast cells (b) Bacterial cell
(c) Plant cell (d) Animal cell
12. What is the most common site of melanoma in men?
(a) Back (b) Scalp
(c) Limbs (d) Face
13. How many stages are there in the life cycle of a silkworm?
(a) 3 (b) 4
(c) 5 (d) 6
14. The purpose of heat treatment on milk is _____.
(a) Kill pathogenic microorganism
(b) Heat milk
(c) Evaporation
(d) Taste enhancement
15. Which one does not bind to the 50S ribosomal subunit?
(a) Lincosamides (b) Macrolides
(c) Chloramphenicol (d) Tetracyclines

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PART B — (5 × 4 = 20 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

16. (a) Describe the characteristic features and types of vectors.

Or

- (b) Explain the production of cloned gene products from GMO.

17. (a) What is RNA interference? RNA interference pathway?

Or

- (b) Explain genomic and C-DNA library. What is the difference between genomic and CDNA library?

18. (a) What are the process of production of antibiotics and uses of antibiotics?

Or

- (b) Describe the structure and properties of β -Glucocerebrosidase.

19. (a) Write a short note on the production of Hepatitis B vaccine.

Or

- (b) Explain how insulin can be produced using recombinant DNA technology.

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20. (a) What are the new technologies in sericulture?

Or

- (b) Give a short note microbial production of vitamin B12.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 500 words.

21. (a) Describe the methods of gene transfer in plants.

Or

- (b) Give details about the methods of transfection.

22. (a) Describe the methods used for genome sequencing. What is the need of genome sequencing?

Or

- (b) What are the different blotting methods for genetic engineering? Explain in detail.

23. (a) Give an account on industrial production of vitamin C.

Or

- (b) What antibiotics are produced by microbes? Give a details account based on your syllabus.

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24. (a) What are recombinant hormones? Explain the production of human growth hormone by recombinant DNA.

Or

- (b) Write the classification and mechanism of action of anticancer medicine.

25. (a) How do you increase the efficiency of production of milk in Cattle?

Or

- (b) Explain the following :
(i) Fungal α -amylase
(ii) Cheese ripening.
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