

S.No. 3804

16 SMBEMB 2

(For candidates admitted from 2016–2021 Batch)

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Part III — Microbiology — Major Based Elective

RECOMBINANT DNA TECHNOLOGY

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20)

Answer ALL questions.

1. Genomic library
2. Plasmid DNA
3. Ligases
4. Topoisomerases
5. YACs
6. Microinjection
7. pBR322
8. Cosmid
9. DNA amplification
10. RAPD

PART B — (5 × 5 = 25)

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

11. (a) Elaborate the major steps involved on gene cloning.

Or

- (b) Examine the roles detergents, chloroform, sodium salts, EDTA and isopropyl alcohol in plasmid DNA isolation.

12. (a) Assess the role of type II restriction endonucleases and its application.

Or

- (b) Describe the structure of Phage vectors and its application.

13. (a) Elucidate - pUC and its features, limitations and applications.

Or

- (b) Evaluate- BAC's and its importance.

14. (a) Illustrate screening of recombinants by immunological methods.

Or

- (b) Justify – Bacteriophage λ DNA Packaging *in vitro*.

15. (a) Criticize an overview on procedure involved in the DNA microarray and its applications.

Or

- (b) Design the flowchart for heterologous expression of insulin using rDNA technology.

PART C — (3 × 10 = 30)

Answer any THREE questions.

16. Discuss about DNA modifying enzymes.

17. Referring to pBR322, analyze the significance of the *amp* and *tet* gene in the context of creating recombinant DNA.

18. Describe the construction of cDNA library with neat diagram.

19. Evaluate the efficiencies and deficiencies of RFLP and RAPU markers.

20. Illustrate about southern blot and add a note on its applications.