

19. (a) Define sterilization. Discuss about moist heat and dry heat and HTST methods with suitable examples.

Or

- (b) Explain about the agar diffusion method evaluating the antimicrobial potency of disinfectants and antiseptics.

20. (a) Elaborate on the bacterial genetic system with regard to transformation.

Or

- (b) Elaborate on the analysis of microbial communities in microhabitats using FISH.

PART C — (3 × 10 = 30)

Answer any THREE questions.

21. Discuss about the types and classification of microbes. Give an account of the isolation, identification and diagrams of the ultrastructure of microbes (any two).
22. Elaborate on the techniques for identification and genotyping of micro-organisms (any five).
23. Discuss about the influence of physical and chemical factors on microbial growth and physiology.
24. Discuss about the various types of staining techniques in detail and their application.
25. What is the role of operons? Explain about the gene regulation in prokaryotes by lac operon.

S.No. 6132

P 22 BTCC 12

(For candidates admitted from 2022–2023 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Biotechnology

MICROBIOLOGY

Time : Three hours

Maximum : 75 marks

PART A — (20 Marks)

Answer ALL questions.

- I. (A) Multiple Choice Questions (5 × 1 = 5)
1. By pasteurization
- (a) All the microorganisms can be removed
- (b) Only pathogenic forms can be removed
- (c) Only non-pathogenic forms can be removed
- (d) All of these are correct
2. Acridine dyes are more effective against
- (a) Gram positive (b) Gram negative
- (c) Mycoplasmas (d) Rickettsiae
3. The most active stage in the sigmoid curve of bacteria in which maximum growth is attained
- (a) Lag phase (b) Stationary phase
- (c) Decline phase (d) Log phase

4. Phycobiont is
  - (a) The algal part in Lichens
  - (b) The fungal part in Lichens
  - (c) Laustoria formation
  - (d) None of these
5. DGGE technique uses a DNA denaturant comprising of
  - (a) a mixture of urea and formaldehyde
  - (b) a mixture of urea and formamide
  - (c) a mixture of uric acid and formaldehyde
  - (d) a mixture of uric acid and formamide
- (B) Fill in the blanks (5 × 1 = 5)
  6. \_\_\_\_\_ are structure required for bacterial conjugation.
  7. A bacterium which utilizes inorganic material as energy source is \_\_\_\_\_
  8. Penicillin resistant bacteria produce \_\_\_\_\_ enzyme
  9. Which inactivates penicillin by hydrolysing the C—N bonds.
  10. The viruses that attack bacteria are called \_\_\_\_\_
- II. Answer ALL the following (5 × 2 = 10)
  11. PFGE.
  12. Phenol Coefficient

13. HTST
14. Flagellar staining
15. Metagenomics

PART B — (5 × 5 = 25)

Answer ALL the questions, Choosing either (a) or (b).

16. (a) Give an account of the experiment of Pasteur.

Or

- (b) Discuss about microbe-microbe association with suitable examples.

17. (a) Explain about the Bergey's system of classification of microbes.

Or

- (b) Define culture medium. Mention the types of media and their purpose with examples.

18. (a) Discuss about the influence of growth factors like amino acids, vitamins, nucleotides and nucleosides on the growth of microbes.

Or

- (b) Explain about the quantitative measurement of bacterial growth by cellmass, cell number and cell activity.