

QP Code: P25B001

Reg. No :

Name :

ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

II SEMESTER (CBCSS-PG) DEGREE EXAMINATION, MARCH 2025

M Sc Biology

BIO2CO4 : MICROBIOLOGY

2024 Admission Onwards

Time:3 Hours

Maximum Weightage:30

Part A

*Short answer type questions: Answer **any four** questions. Weightage 2 for each question.
(4x2 = 8 Weightage)*

1. What are Louis Pasteur's major contributions to the field of microbiology? [BTL1]
2. What are the basic principles of taxonomy? [BTL1]
3. Define about phylogenetic classification. [BTL1]
4. Analyze the mechanisms of microbial drug resistance and their impact on treatment strategies. [BTL3]
5. Suppose you are a healthcare worker in a community where cholera is spreading. How would you identify and manage patients showing symptoms of cholera? Explain the key symptoms you would look for and the steps you would take to treat them. [BTL3]

6. Analyze the industrial process for the production of Vitamin B12, highlighting the role of microbial fermentation and optimization strategies. [BTL4]
7. Explain the steps involved in the microscopic examination of microorganisms, starting from sample preparation to observation under the microscope. [BTL5]

Part B

*Short essay-type questions: Answer **any four** questions. Weightage 3 for each question.
(4x3 = 12 Weightage)*

8. What is a pure culture? Explain the various methods used for isolating a pure culture. [BTL1]
9. Summarize the Pentose Phosphate Pathway, highlighting its key steps, functions, and significance. [BTL2]
10. Describe the steps to manage a suspected case in a public health setting. What are swine flu & bird flu? Comment on the causative agents and their mode of transmission among humans, birds and animals. [BTL3]

Turn Over

11. Choose and explain the key steps involved in peptidoglycan synthesis and its importance in bacterial cell wall formation. [BTL3]
12. Analyze the characteristics that distinguish the major classes of fungi and discuss their ecological roles and medical significance. [BTL4]
13. Examine the principles behind microbial spoilage of food and describe the different types of microbial spoilage that can occur in various food products. [BTL4]

14. Explain the semi-fluid mosaic model of the cell membrane. Elaborate on the internal system of a bacterial cell, including their structure, function, and role in the overall activities of a cell . [BTL5]

Part C

*Long essay-type questions: Answer **any two** questions. Weightage 5 for each question.
(2x5 = 10 Weightage)*

15. What are the steps involved in wastewater treatment? Explain the processes used at each stage to remove contaminants and to improve water quality? [BTL1]
16. Define the physical methods of disinfection and discuss their effectiveness in controlling microbial contamination. [BTL1]
17. Apply your understanding of the nutritional types of bacteria to explain how they obtain energy and nutrients in different environments, and discuss their significance. [BTL3]
18. How are the different mechanisms of gene transfer in bacteria used in genetic engineering? [BTL4]
