

PRACTICE SET
End Semester Examination, Dec-2025

Program: BMLT
Semester: III
Course: Microbiology-I
Course Code: 42ABMT302

Course Outcomes	Description
CO1	Perceive the historical development of microbiology and its key contributors (e.g., Antoine van Leeuwenhoek, Louis Pasteur, and Robert Koch).
CO2	Understand how to grow and control micro-organisms.
CO3	Understand bacterial classification, cell structure, nutrient uptake mechanisms, and growth.
CO4	Define and distinguish between terms like disease, epidemic, endemic, and pandemic, and explain their significance in public health.
CO5	Describe the morphology, cell wall composition, and internal structures of fungal cells, distinguishing them from bacterial and human cells.

Section- A:

(30 x 05 = 150)

1. Define microbiology and describe its importance in health and disease. [Module- I, CO1, Remember, LOT]
2. Explain the contributions of Louis Pasteur and Robert Koch in microbiology. [Module- I, CO1, Understand, LOT]
3. Differentiate between autotrophic and heterotrophic microorganisms. [Module- I, CO1, Apply, LOT]
4. Describe the difference between Gram-positive and Gram-negative bacteria. [Module- I, CO1, Apply, LOT]
5. Analyze the historical development of microbiology in the Bhartiya Knowledge System (BKS). [Module-I, CO1, Analyze, HOT]
6. Classify microorganisms with suitable examples. [Module- I, CO1, Understand, LOT]
7. Define sterilization and name its types. [Module- II, CO2, Remember, LOT]
8. Describe the principle of Gram staining. [Module- II, CO2, Understand, LOT]
9. Analyze the advantages and limitations of physical, chemical sterilization methods. [Module-II, CO2, Analyze, HOT]
10. Describe the principle of acid- fast staining. [Module- II, CO2, Understand, LOT]
11. "How would you design a suitable culture medium for isolating a specific pathogenic bacterium from a mixed clinical sample? [Module- II, CO2, Create, HOT]
12. Explain the process of isolation of pure culture. [Module- II, CO2, Apply, LOT]
13. Label and describe the structure of a bacterial cell. [Module- III, CO3, Remember, LOT]
14. Explain the function of cell wall and plasma membrane. [Module- III, CO3, Understand, LOT]
15. Differentiate between active and passive nutrient uptake. [Module- III, CO3, Apply, LOT]
16. Analyze how structure of bacterial cell contributes to its pathogenicity. [Module- III, CO3, Analyze, HOT]
17. Define mesosome and its role in bacterial physiology. [Module- III, CO3, Apply, LOT]
18. Describe bacterial flagella and its function. [Module- III, CO3, Understand, LOT]
19. Define epidemic, endemic, and pandemic with examples. [Module- IV, CO4, Remember, LOT]
20. Explain the causes and symptoms of tuberculosis. [Module- IV, CO4, Understand, LOT]
21. Analyze the role of lab diagnosis in controlling bacterial epidemics. [Module- IV, CO4, Analyze, HOT]
22. Describe diagnostic tests for diphtheria. [Module- IV, CO4, Apply, LOT]
23. Write short notes on urinary tract infections. [Module- IV, CO4, Understand, LOT]

24. Explain about “Air transmitted bacterial diseases”. [Module- IV, CO4, Understand, LOT]
25. List different classes of fungi with one example each. [Module- V, CO5, Remember, LOT]
26. Differentiate between superficial and systemic fungal infections. [Module- V, CO5, Apply, LOT]
27. List different types of fungal infections. [Module- V, CO5, Remember, LOT]
28. Analyze why immune compromised patients are more prone to fungal infections. [Module- V, CO5, Analyze, HOT]
29. Evaluate the role of laboratory diagnosis in distinguishing Candidiasis from other fungal infections. [Module- V, CO5, Evaluate, HOT]
30. Differentiate between superficial and systemic fungal infections. [Module- V, CO5, Apply, LOT]

Section- B:

(15 x 10 = 150)

31. Design comparative chart showing the differences among types of bacteria based on cell structure and nutrition. [Module- I, CO1, Create, HOT]
32. Explain the role of microorganisms in environment and industry. [Module- I, CO1, Apply, LOT]
33. Evaluate the importance of contributions made by Leeuwenhoek, Pasteur, and Koch in shaping microbiology. [Module- I, CO1, Evaluate, HOT]
34. Explain in detail the principles and methods of sterilization. [Module- II, CO2, Understand, LOT]
35. Evaluate different staining techniques for bacterial identification. [Module- II, CO2, Evaluate, HOT]
36. Design an experiment to demonstrate the effect of temperature and pH on microbial growth. [Module- II, CO2, Create, HOT]
37. Discuss various classifications of bacteria according to Bergey’s system. [Module- III, CO3, Understand, LOT]
38. Create a detailed diagrammatic model of a bacterial cell indicating all structures and their functions. [Module- III, CO3, Create, HOT]
39. Explain the process of bacterial growth and its mathematical expression. [Module- III, CO3, Apply, LOT]
40. Develop a diagnostic flowchart for respiratory bacterial infections. [Module- IV, CO4, Create, HOT]
41. Describe the pathogenic mechanisms and laboratory diagnosis of *Mycobacterium tuberculosis*. [Module-IV, CO4, Apply, LOT]
42. Design a diagnostic and control strategy to manage urinary tract infections in a hospital setting. [Module- IV, CO4, Create, HOT]
43. Evaluate the importance of identifying opportunistic fungal infections in immune compromised patients. [Module- V, CO5, Evaluate, HOT]
44. Discuss the classification of fungi and their pathogenic importance. [Module- V, CO5, Understand, LOT]
45. Evaluate the effectiveness of current diagnostic techniques in differentiating pulmonary fungal infections from bacterial infections. [Module- V, CO5, Evaluate, HOT]

Section- C:

(10 x 20 = 200)

46. Analyze the development of microbiology as a science from ancient to modern period (BKS to modern). [Module- I, CO1, Analyze, HOT]
47. Explain in detail the classification of microorganisms with diagrams and examples. [Module- I, CO1, Understand, LOT]
48. Design a culture strategy using selective and differential media to isolate and identify a pathogenic bacterium from a polymicrobial sample. [Module- II, CO2, Create, HOT]
49. Evaluate how the chemical composition of bacterial cell walls influences the results of Gram and Acid-fast staining, and justify why these stains are diagnostic tools. [Module- II, CO2, Evaluate, HOT]
50. Analyze how differences in bacterial cell structure affect nutrient uptake and growth. [Module- III, CO3, Analyze, HOT]
51. Design an experimental plan to study bacterial cell wall synthesis inhibition by antibiotics. [Module- III, CO3, Create, HOT]
52. Explain about Intestinal infections: Enteric fever, and cholera. [Module- IV, CO4, Remember, LOT]
53. Analyze the interrelationship between infection, immunity, and disease spread. [Module- IV, CO4, Analyze, HOT]
54. Describe in detail the structure, reproduction and classification of fungi. [Module- V, CO5, Understand, LOT]
55. Analyze the role of fungi in human health and disease in terms of good and bad. [Module- V, CO5, Analyze, HOT]

Summary Sheet

CO Wise

CO	Q. No.	Marks
CO1	1,2,3,4,5,6,31,32,33,46,47	100
CO2	7,8,9,10,11,12,34,35,36,48,49	100
CO3	13,14,15,16,17,18,37,38,39,50,51	100
CO4	19,20,21,22,23,24,40,41,42,52,53	100
CO5	25,26,27,28,29,30,43,44,45,54,55	100
Total		500

Unit Wise

Unit	Q. No.	Marks
Module- I	1,2,3,4,5,6,31,32,33,46,47	100
Module- II	7,8,9,10,11,12,34,35,36,48,49	100
Module- III	13,14,15,16,17,18,37,38,39,50,51	100
Module- IV	19,20,21,22,23,24,40,41,42,52,53	100
Module- V	25,26,27,28,29,30,43,44,45,54,55	100
Total		500

Blooms Taxonomy Level (BTL) Wise

BTL	Q. No.	Marks
LOT	1,2,3,4,6,7,8,10,12,13,14,15,17,18,19,20,22,23,24,25,26,27,30, 32, 34, 37, 39, 41, 44, 47, 52, 54	235
HOT	5, 9, 11, 16, 21, 28, 29, 31, 33, 35, 36, 38, 40, 42, 43, 45, 46, 48, 49, 50, 51, 53, 55	265
Total		500

Prepared by: - Ms. Muskan Kumari

Reviewed By- Mr. Satya P. Himanshu

Disclaimer: - This is a Practice Set. The Question in End term examination will differ from the Practice set. This Practice set is meant for practice only.