PRACTICE SET
End Semester Examination, Dec-2025

Program: BMLT
Semester: I
Course: Remedial Biology
Course Code: 42ABMT004

Course Outcomes	Description
CO1	Understand fundamental biological concepts related to cell biology, genetics, microbiology, and human physiology that form the basis of medical laboratory practices.
CO2	Understand the structure and function of prokaryotic and eukaryotic cells, including organelles, cell membrane, and mechanisms of transport across membranes.
CO3	Explain basic genetic principles, including DNA/RNA structure, gene expression, inheritance patterns, and mutations relevant to disease diagnostics.
CO4	Demonstrate awareness of biosafety, sterilization, and disinfection principles critical for safe laboratory practices.
CO5	Apply biological principles to understand disease mechanisms and laboratory diagnostic procedures.

Section- A: **(30 x 5 = 150)**

1. Define cell biology and name the types of cells. **[Module- I, CO1, Remember, LOT]**
2. Describe the structure and function of mitochondria.**[Module- I, CO1,Understand, LOT]**
3. Explain the process of mitosis.**[Module- I, CO1, Apply, LOT]**
4. Differentiate between prokaryotic and eukaryotic cells.**[Module- I, CO1, Apply, LOT]**
5. Discuss how structure and function are interrelated in cell organelles.**[Module-I, CO1, Analyze, HOT]**
6. Define cell and name its basic components. **[Module- I, CO1, Remember, LOT]**
7. Define microbiology and name its branches. **[Module- II, CO2, Remember, LOT]**
8. Describe sterilization and disinfection. **[Module- II, CO2, Understand, LOT]**
9. Create a sterilization flowchart for lab safety. **[Module-II, CO2,Create, HOT]**
10. Write the importance of microorganisms in daily life.**[Module- II, CO2, Understand, LOT]**
11. Analyze the significance of aseptic techniques in laboratories.**[Module- II, CO2, Analyze, HOT]**
12. Explain the term “pathogenic microorganism.”**[Module- II, CO2, Apply, LOT]**
13. Define gene, allele, and genotype. **[Module- III, CO3, Remember, LOT]**
14. Describe Mendel’s law of segregation. **[Module- III, CO3, Understand, LOT]**
15. Explain the structure of DNA.**[Module- III, CO3, Apply, LOT]**
16. Analyze the importance of Mendelian genetics in disease inheritance.**[Module- III, CO3, Analyze, HOT]**
17. Describe dominant and recessive traits with examples. **[Module- III, CO3, Apply, LOT]**
18. Explain the role of mutation in genetics. **[Module- III, CO3, Understand, LOT]**
19. Define antigen and antibody.**[Module- IV, CO4, Remember, LOT]**
20. Describe innate and adaptive immunity.**[Module- IV, CO4, Understand, LOT]**

21. Analyze the role of immune communication in disease defense.**[Module- IV, CO4, Analyze, HOT]**
22. Explain antigen-antibody response briefly.**[Module- IV, CO4, Apply, LOT]**
23. Write short notes on immune cells. **[Module- IV, CO4, Understand, LOT]**
24. Demonstrate the structure of lymphoid organs. **[Module- IV, CO4, Apply, LOT]**
25. Define microscope. **[Module- V, CO5, Remember, LOT]**
26. Explain staining techniques. **[Module- V, CO5, Apply, LOT]**
27. Describe care and maintenance of a microscope. **[Module- V, CO5, Understand, LOT]**
28. Analyze the role of biosafety in clinical labs.**[Module- V, CO5, Analyze, HOT]**
29. Evaluate accuracy of biochemical testing methods. **[Module- V, CO5, Evaluate, HOT]**
30. Describe blood smear preparation.**[Module- V, CO5, Apply, LOT]**

Section- B: **(15 x 10 = 150)**

31. Evaluate the mechanisms of passive and active transport. **[Module- I, CO1, Evaluate, HOT]**
32. Apply your knowledge of biomolecules to explain their role in the human body. **[Module- I, CO1, Apply, LOT]**
33. Create a concept map connecting biomolecules and cell functions. **[Module- I, CO1, Create, HOT]**
34. Explain classification and structure of microorganisms. **[Module- II, CO2, Understand, LOT]**
35. Evaluate physical and chemical methods of sterilization. **[Module- II, CO2, Evaluate, HOT]**
36. Create a detailed layout of a biosafe microbiology lab. **[Module- II,CO2, Create, HOT]**
37. Explain DNA and RNA structure and function. **[Module- III, CO3, Understand, LOT]**
38. Create a family pedigree showing genetic inheritance of a trait. **[Module- III, CO3, Create, HOT]**
39. Apply Mendel's laws of inheritance to predict the outcome of a monohybrid or dihybrid cross. **[Module- III, CO3,Apply, LOT]**
40. Design an experiment to demonstrate antigen-antibody reaction. **[Module- IV, CO4, Create, HOT]**
41. Describe the components and types of immune system.**[Module-IV, CO4, Understand, LOT]**
42. Evaluate adaptive immunity in protecting the body. **[Module- IV, CO4, Evaluation, HOT]**
43. Evaluate the **importance of biochemical tests (Benedict's,)** in identifying biomolecules in clinical diagnostics.**[Module- V, CO5, Evaluate, HOT]**
44. Describe simple and differential staining methods.**[Module- V, CO5, Apply, LOT]**
45. Design a **step-by-step lab protocol** ensuring **microscope maintenance, staining, and bimolecular Testing** with proper biosafety measures.**[Module- V, CO5, Create, HOT]**

Section- C: **(10 x 20 = 200)**

46. Evaluate importance of cell division in growth and heredity. **[Module- I, CO1, Evaluate, HOT]**
47. Explain the **cell organelles** such as mitochondria, endoplasmic reticulum, Golgi apparatus, ribosomes, and lysosomes and discuss their **functions**.**[Module- I, CO1, Apply, LOT]**
48. Propose an experiment to isolate and culture microorganisms safely. **[Module- II, CO2, Create, HOT]**
49. Analyze how different culture methods influence the bacterial growth curve. **[Module- II, CO2, Analyze, HOT]**
50. Analyze the **role of Mendelian genetics in the Indian Knowledge System (IKS)**. Compare how ancient Indian concepts of heredity relate to or differ from Mendel's principles of inheritance. **[Module- III,CO3, Analyze, HOT]**
51. Evaluate the **impact of genetic mutations and mapping** on understanding human genetic disorders. Describe how tools such as the **Ames test** and **gene mapping** techniques help in detecting mutations. **[Module- III, CO3, Evaluate, HOT]**
52. Discuss innate and adaptive immunity in detail with examples.**[Module- IV, CO4, Apply, LOT]**
53. Analyze the role of different immune cells (T-cells, B-cells, macrophages, dendritic cells, etc) in a viral

infection.**[Module- IV, CO4, Analyze, HOT]**

54. Explain the principle, parts, and proper use of a compound microscope and procedure of simple Staining technique. **[Module- V, CO5, Understand, LOT]**
55. Design an experimental procedure to identify unknown biomolecules present in a given sample using basic biochemical tests such as Benedict's, Biuret.**[Module- V, CO5, Create, 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**

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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.