JHARKHAND Rai University
RANCHI

PRACTICE SET
End Semester Examination, December-2025

Program: BMLT
Semester: III
Course: Hematology– II
Course Code: 42AMBT304

Course Outcomes	Description
CO1	Understand the various methods involve in blood collection and identifying the morphology of normal and abnormal RBCs and their causes.
CO2	Explain the physiological meaning, reference ranges, and diagnostic relevance of Mean Corpuscular Volume, Mean Corpuscular Hemoglobin, and Mean Corpuscular Hemoglobin Concentration.
CO3	Describe and perform the sickle cell preparation test, including slide preparation, staining, and microscopic identification of sickled red blood cells.
CO4	Explain the mechanism of coagulation, including vascular, platelet, and coagulation factor involvement, leading to clot formation.
CO5	Describe the genetic basis, inheritance patterns, and clinical manifestations of Hemophilia and polycythemia with their causes.

SECTION – A: (30 X 05 = 150)

1. Define venipuncture and capillary blood collection. **(Unit-I, CO1, LOT, Remember)**
2. List precautions to be taken during blood collection. **(Unit-I, CO1, LOT, Understand)**
3. Explain the procedure for whole blood collection. **(Unit-I, CO1, LOT, Apply)**
4. Describe the morphology of target cells and sickle cells. **(Unit-I, CO1, HOT, Analyze)**
5. Compare normal and abnormal RBC morphology with examples. **(Unit-I, CO1, HOT, Evaluate)**
6. Differentiate between physiological and pathological variations of RBCs. **(Unit-I, CO1, HOT, Analyze)**
7. Define MCV, MCH, and MCHC. **(Unit- II, CO2, LOT, Remember)**
8. State the reference ranges and diagnostic value of MCHC. **(Unit- II, CO2, LOT, Understand)**
9. Explain the method of estimation of Eosinophil count. **(Unit- II, CO2, LOT, Apply)**
10. Describe the significance of Reticulocyte count in anemia. **(Unit- II, CO2, HOT, Analyze)**
11. Calculate MCV and MCH given the Hb, PCV, and RBC count values. **(Unit- II, CO2, LOT, Apply)**
12. Interpret changes in red cell indices in microcytic and macrocytic anemia. **(Unit- II, CO2, HOT, Evaluate)**
13. Define bone marrow aspiration. **(Unit- III, CO3, LOT, Remember)**
14. Explain the clinical significance of bone marrow examination. **(Unit- III, CO3, LOT, Understand)**
15. Outline the steps for preparation of bone marrow smear. **(Unit- III, CO3, LOT, Apply)**
16. Discuss the laboratory findings of sickle cell anemia. **(Unit- III, CO3, HOT, Analyze**)
17. Evaluate the role of sickle cell preparation in diagnosis. **(Unit- III, CO3, HOT, Evaluate)**
18. Differentiate between normal and sickled RBCs under the microscope. **(Unit- III, CO3, HOT, Analyze)**

19. List the coagulation factors involved in blood clotting. **(Unit- IV, CO4, LOT, Remember)**
20. Describe the intrinsic and extrinsic pathways of coagulation. **(Unit- IV, CO4, LOT, Understand)**

21. Explain the principle and procedure of bleeding time and clotting time tests. **(Unit- IV, CO4, LOT, Apply)**
22. Discuss the mechanism of clot formation. **(Unit- IV, CO4, HOT, Analyze)**
23. Evaluate the causes and types of Purpura. **(Unit- IV, CO4, HOT, Evaluate)**
24. Compare Prothrombin time and clot retraction tests. **(Unit- IV, CO4, HOT, Analyze)**
25. Define anemia and classify its types. **(Unit- V, CO5, LOT, Remember)**
26. Explain the physiological variations of haemophilia. **(Unit- V, CO5, LOT, Understand)**
27. Describe the causes and clinical features of leukaemia. **(Unit- V, CO5, LOT, Apply)**
28. Analyze the genetic basis and inheritance of haemophilia. **(Unit- V, CO5, LOT, Analyze)**
29. Differentiate between PolycythemiaVera and secondary polycythaemia. **(Unit- V, CO5, LOT, Evaluate)**
30. Discuss the relationship between anemia and bone marrow dysfunction. **(Unit- V, CO5, LOT, Evaluate**)

SECTION – B: (15 X 10 = 150)

31. Describe the procedure for whole blood collection and its clinical importance. **(Unit-I, CO1, LOT, Understand)**
32. Differentiate between various morphological abnormalities of RBCs with causes. **(Unit-I, CO1, HOT, Analyze)**
33. Evaluate the impact of improper blood collection on test results. **(Unit-I, CO1, HOT, Evaluate)**
34. Discuss in detail the calculation and clinical interpretation of RBC indices. **(Unit-II, CO2, LOT, Apply)**
35. Compare different methods of Eosinophil count estimation. **(Unit-II, CO2, LOT, Analyze)**
36. Evaluate the diagnostic utility of Reticulocyte count in anemia classification. **(Unit-II, CO2, LOT, Evaluate)**
37. Explain the process of sickle cell preparation test and interpretation. **(Unit-III, CO3, LOT, Apply)**
38. Analyze the correlation between bone marrow findings and hematological disorders. **(Unit-III, CO3, HOT, Analyze)**
39. Evaluate the clinical significance of bone marrow examination. **(Unit-III, CO3, HOT, Evaluate)**
40. The steps involved in blood coagulation mechanism with a neat diagram. **(Unit-IV, CO4, LOT, Understand)**
41. Analyze various hemorrhagic disorders and their laboratory diagnosis. **(Unit-IV, CO4, HOT, Analyze**)
42. Evaluate the role of coagulation factors in thrombotic disorders. **(Unit-IV, CO4, HOT, Evaluate)**
43. Discuss the causes and classification of anemia in detail**. (Unit-V, CO5, LOT, Understand)**
44. Analyze the differential diagnosis between hemophilia and leukemia. **(Unit-V, CO5, HOT, Analyze)**
45. Evaluate the genetic and physiological variations in polycythemia. **(Unit-V, CO5, HOT, Evaluate)**

SECTION – C: (10 X 20 = 200)

46. Critically evaluate the techniques of blood collection and their limitations. **(Unit-I, CO1, HOT, Evaluate)**
47. Design a standard protocol for identifying abnormal RBC morphology in a diagnostic lab. **(Unit-I, CO1, HOT, Create)**
48. Analyze the relationship between red cell indices and different types of anemia. **(Unit-II, CO2, HOT, Analyze)**
49. Develop a detailed laboratory report format for Eosinophil and Reticulocyte count estimation. **(Unit-II, CO2, HOT, Create)**
50. Evaluate the diagnostic significance of sickle cell preparation in relation to genetic disorders.

(Unit-III, CO3, HOT, Evaluate)

51. Propose an improved method for bone marrow aspiration minimizing patient discomfort. **(Unit-III, CO3, HOT, Create)**
52. Analyze coagulation pathway abnormalities and their impact on hemorrhagic disorders. **(Unit-IV, CO4, HOT, Analyze)**
53. Create a diagnostic algorithm for bleeding disorders based on coagulation test results. **(Unit-IV, CO4, HOT, Create)**
54. Critically evaluate the pathophysiology and laboratory diagnosis of leukemia. **(Unit-V, CO5, HOT, Evaluate)**
55. Design a case-based diagnostic approach for hemophilia and polycythemia. **(Unit-V, CO5, HOT, Create)**

SummarySheet

COWise

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	13,14,15,16,1,18,37,38,39,50,51	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**

UnitWise

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	13,14,15,16,1,18,37,38,39,50,51	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**

BloomsTaxonomyLevel(BTL)Wise

BTL	Q.No.	Marks
LOT	1,2,3,7,8,9,11,13,14,15,19,20,21,25,26,27,28,29,30,31,34,35,36,37,40,43	165
HOT	4,5,6,10,12,16,17,18,22,23,24,32,33,38,39,41, 42,44,45,46,47,48,49,50,51,52,53,54,55	335
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.