



(University of Choice)

**MASINDEMULIROUNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

SECOND YEAR SECOND SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF MEDICAL LABORATORY SCIENCES &
BACHELOR OF MEDICAL BIOTECHNOLOGY**

COURSE CODE: BML 223

COURSE TITLE: CLINICAL HEMATOLOGY

DATE: 22/04/2022

TIME: 8.00 A.M. – 10.00 A.M.

INSTRUCTIONS TO CANDIDATES

This paper is divided into three sections, **A B** and **C**, carrying respectively: Multiple Choice Questions (**MCQs**), Short Answer Questions (**SAQs**) and Long Answer Questions (**LAQs**). Answer ALL questions.

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over.

SECTION A: MULTIPLE CHOICE QUESTIONS (MCQs)

1. The first drop of blood is wiped away after performing a skin puncture to:
 - a) remove any pathogens that are present
 - b) increase blood flow to the area
 - c) remove the last traces of alcohol
 - d) remove any excess tissue fluid

2. Leukemia may be suspected when a manual hematocrit determination reveals
 - a) Hemolysis
 - b) Icteric plasma
 - c) A high hematocrit
 - d) A heavy buffy coat
3. The following cells help in the clotting of blood
 - a) Thrombocytes
 - b) Myelocytes
 - c) Metamyelocytes
 - d) Erythrocytes
 - e) Granulocytes
4. The following are causes of neutrophilia;
 - a) Anemia
 - b) Polycythemia
 - c) Bacterial infection
 - d) Excessive bleeding
 - e) blood transfusion
5. The following are involved in the mesoblastic phase of haemopoiesis
 - a) Liver
 - b) kidneys
 - c) Mesenchyme
 - d) Yolk sac
 - e) spleen
6. Orange granules are seen in;
 - a) Eosinophils
 - b) Basophil
 - c) Neutrophil
 - d) Monocytes
 - e) Metamyelocytes

7. The following diluting fluids contain saponins;
 - a) Toisson's
 - b) Turk's
 - c) HeyemsBaar's
 - e) Kristenson's

8. Reticulocytosis is present in ;
 - a) Haemolytic anaemia
 - b) Iron deficiency anaemia
 - c) Malaria parasite infections
 - d) Aplastic anaemia
 - e) Bacterial infection
9. The following contain delta globulin chain;
 - a) Haemoglobin – H
 - b) Haemoglobin – C
 - c) Haemoglobin- A₂
 - d) Haemoglobin– F
 - e) HbF

10. The outer layer of cell membrane contain;
 - a) Cholesterol
 - b) Transferin
 - c) Antibodies
 - d) Glycoproteins
 - e) Carbohydrates

11. Anaemia is characterized by:-
 - (a) Deficiency of haemoglobin concentration
 - (b) Pregnancy in young women.
 - (c) The age and sex of an individual only.
 - (d) Over production of blood elements

12. The most effective measure to prevent in the laboratory is;
 - a) wearing face mask
 - b) Washing hands frequently with detergent
 - c) Using bulbed pipettes
 - d) Wearing a laboratory coat
 - e) Wearing gloves all the time while in the laboratory

13. Blood for an RBC count must be prepared from:
- EDTA blood
 - citrated blood
 - heparinized blood
 - oxalated blood
 - clotted blood
14. The following contain delta globulin chain;
- Haemoglobin – H
 - Haemoglobin – C
 - Haemoglobin- A₂
 - Haemoglobin– F
15. Separated serum that is dark yellow to amber in color is termed:
- lipemic
 - jaundiced
 - icteric
 - hemolyzed
16. The following are normal haemoglobin values for adult male;
- 16g/dl
 - 10g/dl
 - 29g/dl
 - 11g/dl
 - 20g/dl
17. In electrophoresis the fastest hemoglobin is/are
- HB A
 - HB S
 - HB F
 - HB A₂
18. A normal adult haemoglobin has
- Two alpha and two gamma
 - Two alpha and two beta
 - 2 gamma and 2 delta
 - 2 alpha and 2 delta
19. In P.B.F reporting the target cells are found in-
- Megaloblastic anemia.
 - Haemolytic anemia
 - Aplastic anemia
 - Iron deficiency anemia
20. At the time of diagnosis of chronic blood loss, the red blood cells may be described as
- Microcytic ,hypochromic
 - Macrocytic,hyperchromic
 - Normocytic normochromic
 - Macrocytic hypochromic

Section B: Answer ALL questions from this section.

- Define the following
 - Sickle cell trait
 - Sideroblast
 - Pappenheimer bodies
 - Heinz bodies
 - Howell –Jolly bodies (5Mks)
- Describe the cyanmethaemoglobin method of haemoglobin estimation (5Mks).
- Explain the role of platelets and blood vessel in haemostasis and coagulation (5Mks)
- Describe hemoglobinopathies (5mks)
- Explain the difference between HbF and HbA_{1c} (4mks)
- Explain the laboratory test to determine the extrinsic coagulation pathways (6Mks)

Section C: Answer ALL questions from this section.

1. Describe the causes, pathogenesis and laboratory findings in Iron deficiency anemia (20Mks)
2. Describe the laboratory findings acute and chronic myeloid leukemia (20Mks)
3. Describe laboratory techniques used to determine activated partial thromboplastin time and INR test in clinical hematology (20mks)