



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)
UNIVERSITY EXAMINATIONS (MAIN PAPER)
2023/2024 ACADEMIC YEAR**

FIRST YEAR FIRST SEMESTER EXAMINATIONS

**FOR THE DIPLOMA
IN
MEDICAL LABORATORY SCIENCES**

COURSE CODE: DML 111

**COURSE TITLE: FOUNDATIONS OF MEDICAL
LABORATORY SCIENCE**

DATE: 5TH DECEMBER 2023

TIME: 8.00-10.00AM

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. **DO NOT WRITE ON THE QUESTION PAPER**

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 (20 Marks)

1. Which one of the following is also called erythroblast?
 - A. Normoblast
 - B. Promoblast
 - C. Reticulocytes
 - D. Pluripotent cell
2. A clinician orders a lab test not necessary for a suspected diagnosis to get a commission from his friend who owns a private lab. Which one of the following medical ethics did he violate?
 - A. Non-maleficence
 - B. Autonomy
 - C. Confidentiality
 - D. Beneficence
3. Which one of the following is not a group-forming stage?
 - A. Storming
 - B. Forming
 - C. Adjourning
 - D. Advancing
4. What is the percentage of reticulocytes in circulating RBCs?
 - A. 1%
 - B. 5%
 - C. 10%
 - D. 2%
5. Which one of the following is a property of a multipotent cell?
 - A. Can replenish
 - B. Can die after one week
 - C. It is not viable
 - D. It does not multiply
6. What is the meaning of the term hematuria in the medical laboratory?
 - A. Presence of blood in stool
 - B. Presence of blood in urine
 - C. Presence of blood in saliva
 - D. Bleeding of blood from the knee
7. At what stage of erythrocytosis does the hemoglobin synthesis begins?
 - A. Erythroblast stage
 - B. Normoblast stage
 - C. Promoblast
 - D. Pre-erythroblast
8. In which year did Landsteiner discover blood groups?
 - A. 1901
 - B. 1905
 - C. 1890
 - D. 1920
9. In the human embryo, the yolk sac is the first site of blood formation. Later in embryonic life, _____ becomes the most important red blood cell-forming organ.
 - A. The liver

- B. The bone marrow
 - C. The spleen
 - D. The kidney
10. Who is not a member of the healthcare team?
- A. Pedestrian
 - B. Pathologist
 - C. Neuro-surgeon
 - D. Pediatrician
11. Which of the following is not a component of governance structure?
- A. Transparency
 - B. Accountability
 - C. Probity
 - D. Confidentiality
12. Which one of the following is not why we perform a test in the laboratory?
- A. Exclude diagnosis
 - B. Disease screening
 - C. To estimate how long a patient can live
 - D. Select and monitor treatment
13. Which one of the following is not an analytical procedure?
- A. Photometry
 - B. Photography
 - C. Fluorometry
 - D. Electrophoresis
14. Which one is not a source of variation in laboratory test value?
- A. Diet
 - B. Fasting
 - C. Skin colour
 - D. Analytical method
15. Which one of the following is not a source of error at the analytical phase?
- A. Incorrect specimen volume
 - B. Incorrect volume of specimen
 - C. Present of interfering substances
 - D. Collection at the wrong time
16. What is the difference between accuracy and precision
- A. Accuracy is the extent to which mean measurement is close to true value while precision is the reproducibility of a laboratory determination when it is run repeatedly under identical conditions.
 - B. Accuracy is the extent to which mean measurement is far to true value while precision is the reproducibility of a laboratory determination when it is run repeatedly under separate conditions
 - C. Accuracy is the ability of a test to detect the smallest amount of analyte in a solution or sample while precision is the reproducibility of a laboratory determination when it is run repeatedly under identical condition

- D. Accuracy is the extent to which mean measurement is close to true value while precision is the ability of a test to detect the smallest amount of analyte in a solution or sample
17. Which one of the following is a component of complete blood count test?
- Hemoglobin level
 - The tumor nature of a cell
 - Blood electrolytes
 - Life span of blood cells
18. What name is given to the liver macrophages?
- Kupffer cells
 - Dendritic cells
 - Monocytes
 - Microglia
19. Which organ produces erythropoietin hormone (EPO)?
- Liver
 - Bone marrow
 - Spleen
 - Kidney
20. Which of the following does not explain why people living in high-altitude areas have high erythrocyte count?
- Reduced oxygen availability; hence, the body adapts by producing many RBCs to ensure sufficient oxygen delivery to tissues and organs.
 - Hypoxia causes stimulation of the production of erythropoietin, hence facilitating the production of many erythrocytes.
 - To counteract the effects of hypoxia, the body stimulates a process called erythropoiesis
 - People in high-altitude areas drink a lot of milk that helps in erythropoiesis.

SECTION B: Short Answer Questions (40 Marks)

- Explain 4 principles of medical ethics (8 Marks)
- Explain 4 laboratory safety measures in the laboratory (8 marks)
- Describe the structure and organization of the local medical laboratory services (8marks)
- Outline the laboratory professional etiquette (8marks)
- Explain the origin of medical laboratory science (8marks)

SECTION C: Long Answer Questions (60 Marks)

- Explain 10 roles of medical laboratory science in the field of medicine. (20 Mark)
- Differentiate between the following terms as used in medical laboratory science;
 - Quality assurance and quality control (4 marks)
 - Accuracy and precision (4 marks)
 - Specificity and sensitivity (4marks)
 - Control and standard (4marks)
 - Apoptosis and necrosis (4marks)
- Explain 5 consequences of delayed diagnosis and misdiagnosis from the laboratory (10 marks).
 - Briefly explain 5 steps in group formation (10 marks)