(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2018/2019 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 HAEMATOLOGY**

DATE: **TIME:**

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 5 Printed Pages. Please Turn Over.

SECTION A: MULTIPLE CHOICE QUESTIONS (20 MARKS)

Q1. Which of the following is a lympho-morphologic change in reactive states?
a) Decrease in cytoplasm relative to the nucleus
b) Increase in cytoplasm relative to the nucleus
c) Increase in nucleus relative to the cytoplasm
d) Decrease in size

Q2. The International Normalized Ratio (INR) was developed for the purpose of
a) Monitoring heparin therapy
b) Monitoring oral anticoagulant therapy
c) Screening for intrinsic clotting system abnormalities
d) Standardizing the monitoring of warfarin therapy

Q3. Which of the following is associated with normocytic normochromic anaemia?
a) Iron deficiency
b) Primaquine
c) Pregnancy
d) Sickle cell disease

Q4. Which of the following moves furthest to the anode on cellulose acetate electrophoresis of normal haemoglobin at pH 8.6?
a) Haemoglobin A
b) Haemoglobin D
c) Haemoglobin A_2
d) Haemoglobin S

Q5. During haemostasis, prostacyclin
a) Cleaves prothrombin into thrombin
b) Causes vasodilation
c) Stimulates platelet aggregation
d) Activates fibrinolysis

Q6. Which of the following is a cause of secondary neutropaenia in adults?
a) Congenital
b) Anti-hypertensive drugs
c) Part of general pancytopaenia
d) Familial

Q7. Which of the following sign is associated with anaemia?
a) Insomnia
b) Palmer pallor
c) Fever
d) Angina

Q8. According to the FAB classification, the L2 stage is characterized by:
a) Large heterogenous blasts with prominent nucleoli
b) Small homogenous blasts with scanty nucleoli and higher nucleus to cytoplasm ratio
c) Large homogenous blasts with scanty nucleoli and higher nucleus to cytoplasm ratio
d) Large blasts with basophilic vacuolated cytoplasm

Q9. In microcytic hypochromic anaemia
a) Red cells are larger with normal staining
b) Red blood cell count is increased
c) Haemtocrit and mean corpuscular haemoglobin are normal
d) Red cells are smaller with a pale large central pallor

Q10. In iron deficiency anemia there is characteristically
a) An atrophic gastritis
b) A low mean corpuscular volume
c) A reduced total iron binding capacity
d) Megaloblastic changes in the bone marrow

Q11. A laboratory finding of agranulocytosis
a) Complete absence of peripheral blood granulocytes and their precursors in the bone marrow
b) Acute bacterial infections
c) Myeloproliferative disorders
d) Increased numbers of granulocytes in blood and bone marrow

Q12. A laboratory finding of aplastic anaemia
a) Pancytopaenia
b) Erythrocytosis
c) Bone marrow hypercellularity
d) Reticulocytosis

Q13. Which of the following is a vitamin K-dependent coagulation factor?.
a) Thromboplastin
b) Stuart Prower factor
c) Hageman factor
d) Proaccelerin

Q14. Which of the following is a cause of hereditary haemolytic anaemia?
a) Anti-erythrocyte IgM
b) Spherocytosis
c) Henna
d) Burns

Q15. Which of the following is a mechanism underlying antithrombin III mediated inhibition of coagulation?
a) Inhibition of Christmas factor
b) Inactivation of anti-haemophilic factor
c) Inhibition of thrombin
d) Inhibition of plasmin

Q16. Which of the following is a cause of basophilia?
a) Hodgkin's disease
b) Hypothyroidism
c) Lymphoma
d) Bacterial infections

Q17. Which of the following is a characteristic of infectious mononucleosis?
a) Caused by herpes simplex virus
b) Decreased atypical mononuclear cells in peripheral blood
c) High titers of heterophile antibodies
d) Peak incidence at ages 20–25 years

Q18. Which of the following is a laboratory finding in leukaemia?
a) Cutaneous haemorrhagic lesions
b) More than 90% blasts in bone marrow aspirates
c) Splenomegaly
d) Enlarged cervical lymph nodes

Q19. Alpha platelet granules contain?
a) Serotonin
b) Protein S
c) Adenosine diphosphate
d) Calcium

Q20. The beta-chain variant affecting the sixth amino acid is caused by?
   a) Substitution of lysine for glutamic acid
   b) Deletion of valine
   c) Inversion of glutamic acid
   d) Substitution of valine for glutamic acid

SECTION B: SHORT-ANSWER QUESTIONS (40 MARKS)

1. Define the following terms (5 marks).
   a) Polycythaemia
   b) Leukemoid reaction
   c) LAP test
   d) Lymphocytosis

2. Outline the causes of macrocytic anaemia (8 marks)

3. State any 8 laboratory findings in haemolytic anaemia (5 marks).

4. Explain the role of Philadelphia chromosome in the pathogenesis of chronic myeloid leukaemia (8 marks).

5. Describe the causes of neutrophilia (8 marks).

SECTION C: LONG-ANSWER QUESTIONS (40 MARKS)

1. Describe laboratory tests for blood coagulation (20 marks).

2. Discuss the laboratory tests for the diagnosis of haemoglobinopathies (20 marks).