KISII UNIVERSITY

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCE
SECOND SEMESTER 2022/2023
[JAN – APRIL, 2023]

MELS 242: ADVANCED HAEMATOLOGY

STREAM: Y2 S2 **TIME: 3 HOURS**

DAY: MONDAY,9:00-12:00 P.M. **DATE: 27/03/2023**

INSTRUCTIONS

1. ***Do not write anything on this question paper.***
2. ***Answer ALL questions in Section A and B (Compulsory). In section C, Answer question ONE (Compulsory) and any other one question.***

SECTION A (ANSWER ALL QUESTIONS)-20 MARKS

1. Which of the following is not considered a post-analytic variable?
   a. Delta checks
   b. Proper anticoagulant used
   c. Specimen check for clots
   d. Critical results called
2. Of the following formulas, which formula indicates the correlation check between hemoglobin and hematocrit?
   i. (Hgb ÷ Hct) × 100
   ii. Hgb× 3 = Hct
   iii. Hct = MCV× RBC
   iv. (Hgb ÷ RBC) × 100

3. Which red blood cell inclusions originate as a result of denatured hemoglobin?
   a. Howell-Jolly bodies

b. Heinz bodies
c. Pappenheimer bodies
d. Malarial parasites

4. Epsilon and zeta chains are part of which of the following haemoglobins?
a. Hgb Portland
b. Hgb F
c. Hgb A
d. Hgb A_2

5. List two sets of laboratory data that can distinguish Iron Deficient Anaemia (IDA) from beta thalassemia trait.
a. Serum iron and RBC
b. Hemoglobin and hematocrit
c. WBC and RDW
d. Red blood cell indices and platelets

6. A patient presents with a microcytic, hypochromic anemia with ragged-looking red blood cells in the peripheral smear and a high reticulocyte count. A brilliant cresyl blue preparation reveals inclusions that look like pitted golf balls. These inclusions are suggestive of?
a. Hgb H disease.
b. Beta thalassemia major.
c. Hereditary hemochromatosis.
d. Beta thalassemic trait.

7. A macrocytosis that is not megaloblastic in origin can be seen in all of the following except?
a. Chemotherapy
b. Postsplenectomy
c. Thyroid conditions
d. Reticulocytosis

8. Which one of the following substances is necessary for vitamin B12 to be absorbed?
a. Transferrin
b. Erythropoietin
c. Intrinsic factor
d. Cubilin

9. In the osmotic fragility test, normal red blood cells haemolyze at which level?
a. 0.65%
b. 0.45%
c. 0.20%
d. 0.30%

10. One of the least severe clinical manifestations of G6PD deficiency is:
a. Acute hemolytic anemia.
b. Favism.

c. Neonatal jaundice.
d. Congenital nonspherocytic hemolytic anemia.

11. Which red blood cell morphology is formed as a result of Heinz bodies being pitted from the red blood cell?
a. Acanthocytes
b. Bite cells
c. Burr cells
d. Stomatocytes

12. Autosplenectomy is characteristic of?
a. Sickle cell trait
b. Hgb C disease
c. Thalassemia
d. Sickle cell anemia.

13. Which one of the following features distinguishes a monocyte from a lymphocyte?
a. Nucleoli
b. Abundant gray-blue cytoplasm
c. Irregularly shaped flattened nucleus
d. Large blue-black granules

14. A 17-year-old boy is admitted to the hospital for a fever of unknown origin. His WBC is 20.0 ×109/L. All of the following can be seen on his peripheral smear except?
A. Toxic granulation
B. Reactive monocytes.
C. Increased band neutrophils
D. Döhle bodies

15. Migration to extramedullary sites is a feature of which of the following leukemias?
a. Acute progranulocytic leukemia
b. Acute myelocytic leukemia
c. Acute monocytic leukemia
d. Acute lymphocytic leukemia

16. The BCR: ABL fusion gene leads to?
a. Increased LAP activity
b. Increased tyrosine kinase activity.
c. Organomegaly
d. Increased platelet count.

17. A round-shaped nucleus with fragile, spiny projections similar to cytoplasm best describes?
a. Sézary cells.
b. Lymphoblasts.
c. Hairy cells.
d. Smudge cells.

18. Which of the following is the predominant red blood cell morphology in patients with MDSs?
   a. Schistocytes
   b. Macrocytes
   c. Target cells
   d. Bite cells

19. Receptors found on the platelets are called?
   a. Glycoproteins.
   b. Vwf.
   c. Fibrinogen.
   d. Beta-thromboglobulin.

20. Chronic idiopathic thrombocytopenia purpura (ITP):

   a. Is found in children.
   b. Usually remits spontaneously within several weeks.
   c. Affects males more commonly than females.
   d. Involves the immune destruction of platelets.

SECTION B-STRUCTURED QUESTIONS (ANSWER ALL QUESTIONS)-20 MARKS

1. Briefly discuss Activated Partial Thromboplastin Time (5 marks)
2. Discuss the Kinin system as related to haemostasis (5 marks)

3. Briefly explain the common clinical findings in acute leukemia putting in consideration the pathogenesis (5 marks)
4. Discuss stomatocyte as one of the abnormal red blood cells.

SECTION C (QUESTION ONE IS COMPULSORY THEN CHOOSE ANY OTHER

1. Describe acute myeloid leukemia with emphasis on symptoms and peripheral blood and bone marrow findings. (15 marks)
2. (a) Discuss disseminated intravascular coagulation (DIC) with bias to the clinical symptoms and laboratory profile (10 marks)
   (b) List five laboratory features of megaloblastic anaemias (5 marks)

3.

a) Briefly discuss Hodgkin's lymphoma (10 marks)

b) Briefly elaborate the differential diagnosis of macrocyte (5 marks)