MASINDE MULIRO UNIVERSITY

UNIVERSITY EXAMINATIONS
BSc. IN MEDICAL LABORATORY SCIENCES
MAY-AUGUST2017/18SEMESTER
BML223:CLINICAL HAEMATOLOGY
TIME: 2 HOURS

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 question.**

SECTION A (ANSWER ALL QUESTIONS)-20 MARKS

1. The following are components of haemostatic mechanism except?
   A. Blood vessels
   B. Leucocytes
   C. Platelets
   D. Fibrinolytic system
   E. Natural Inhibitors
2. The following are symptoms of anaemia
   A. Tiredness
   B. Pallor of the mucus membrane
   C. Difficulty in breathing
   D. Thurst
   E. Cardiac failure
3. The factor which increases the sedimentation rate the most is:
   A. Factor VIII
   B. Factor IX
   C. Prothrombin
   D. Fibrinogen
   E. Calcium
4. As a rough estimation, how should hemoglobin and hematocrit value compare?
   A. Hematocrit should equal hemoglobin
   B. Hematocrit should be 3 times the hemoglobin
   C. Hemoglobin should be 3 times hematocrit
   D. Hemoglobin should be 11 times the hematocrit
5. The four layers observed, after centrifuging on bone marrow, from top to bottom are:
   A. Plasma, platelets, WBCs and RBCs
   B. Plasma, RBCs, WBCs and platelets
   C. Fat, plasma, nucleated cells and RBCs
   D. Plasma, fat, nucleated cells and RBCs
   E. None of the above
6. Hb S
   A. Is fully soluble when deoxygenated
   B. Polymerize and form tactoids or crystals when deoxygenated
   C. Sickles when fully oxygenated
   D. Is composed of 2 Beta chains and 2 Delta chains
   E. None of the above
7. When blood picture is exegerated with circulating myeloblasts it is called?
   A. Leukaemoid reaction
   B. Leukaemia
   C. Anaemia

D. Pancytopenia.
E. Thrombocytopenia.

8.Which of the following is true about Aplastic anaemia.
A. The haemopoietic tissue is completely obliterated by the fatty tissue
B. It due to deficiency of iron
C. It is due to deficiency of vitamin B12
D. It is due to underproduction of Erythropoietin
E. It is due to acute blood loss

9. Which of the following coagulation factor is responsible for Hamophilia A
A. Factor VIII
B. Factor V
C. Factor IX
D. Factor II
E. Factor V

10. In the osmotic fragility test, the reagent used is:
A. Distilled water
B. Hypotonic NaCl solution
C. Hypertonic NaCl solution
D. Isotonic NaCl solution
E. Sodium carbonate solution

11. Anaemia due to acute blood loss is typically
A. Microcytic
B. Macrocytic
C. Normocytic
D. Megaloblasic
E. Poikilocytic

12. A person with eosinophilia, or greater than normal numbers of eosinophils, is most likely suffering from _____.
A. allergies or internal parasites
B. anemia
C. an autoimmune disease
D. diabetes
E. HIV

13. Which one is the correct order for the steps of hemostasis.
A. Blood coagulation, platelet plug formation, blood vessel spasm, fibrinolysis
B. Platelet plug formation, blood coagulation, blood vessel spasm, fibrinolysis
C. Blood vessel spasm, platelet plug formation, blood coagulation, fibrinolysis
D. Blood vessel spasm, blood coagulation, platelet plug formation, fibrinolysis
E. None of the above

14.Reticulocytes are best demonstrated using which of the following stains?
A. Giemsa stain
B. Carbol fuchsin
C. Brilliant cresyl blue
D. Sudan black.
E. Eosin.

16. Which white blood cell is not phagocytic?
A. neutrophil
B. monocyte
C. lymphocyte
D. eosinophil
E. basophil

17. Deficiency of Christmas factor causes?
A. Thrombocytopenia
B. Haemophilia A

C. Hemaophilia B
D. Disseminated intravascular haemolysis
E. Von Willebrand disease

18. The following laboratory test will demonstrate haermolyticanaemia due to red cell membrane defects.
A. Reticulocyte count.
B. Erythrocyte sedimentation rate(ESR)
C. Peripheral blood film examination
D. Haemoglobin estimation on cord blood to determine anaemia
E. Complete blood count

19. 2% sodium metabisulphite is used to
A. Change Hb A to Hb S
B. Lyse re blood cells
C. Test for sickle cells in blood
D. Oxygenate red cell.
E. Preserve red cells

20. Which one of the following test assesses the integrity of the common pathway in the coagulation cascade?
A. Thrombin time(TT)
B. Activated partial thromboplastin time(APTT)
C. Prothrombin time(PT)
D. Bleeding time
E. Platelet aggrigometry

SECTION B-STRUCTURED QUESTIONS (ANSWER ALL QUESTIONS)-40MARKS

1) Outline the mechanism of anaemia [5 marks]
2) "Peripheral blood film is a a golden store of Haematological information especially in the qualitativeassessmentof blood picture." Briefly discuss this statement [5 marks]
3) Briefly outline the phenomenon involved in ESR [5 marks]
4) Briefly discuss the mechanism of Iron Deficiency Anaemia
5) List 5 laboratory findings of acute myeloid leukaemia [5 marks]
6) Briefly classify leukemia [10 marks]

SECTION C (QUESTION ONE IS COMPULSORY THEN CHOOSE ANY OTHER QUESTION)-40 MARKS

Mr. Blessings is an anaemic adult male who has been brought to a nearby Sub-county hospital in his village. In this facility, an automated haematology analyzer had a breakdown, otherwise, the Laboratory officer on duty managed to estimate Hb level, PCV and red cell count using cyanmethaemoglobin method by calorimeter, microhaematocrit (capillary) method and haemocytometry respectively. The results were as follows:

i. Hb 8.1 g/L
ii. PCV 34%
iii. RBC $2.5X10^{12}/L$

To make a comprehensive clinical decision, you are required by the clinician to calculate the following red cell indices using the above primary cell measurement:

(a) I) MCV
II) MCH
III) MCHC

(b) Based on mean cell volume (MCV) obtained from your above finding, classify this type of anaemia and list its 2 possible causes [20 marks]

1) Discuss haemolyticanaemiaunder the following sub headings
   a. Classification of Haemolyticanaemia [10 marks]
   b. Laboratory diagnosis of Heamolyticanaemias [10 marks]

2) With an aid of a clearly labeled diagram/s describe briefly stage by stage the intrinsic and extrinsic coagulation pathways [20 marks]