



**KISII UNIVERSITY**  
**UNIVERSITY EXAMINATIONS**

**SECOND YEAR EXAMINATION FOR THE AWARD OF THE DEGREE  
OF BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES**  
**FIRST SEMESTER, 2016/2017**  
**(JANUARY - APRIL, 2017)**

**MELS 241: HEMATOLOGY I**

**STREAM: Y2 S1**

**TIME: 3 HOURS**

**DAY: TUESDAY, 2.00-5.00 PM**

**DATE: 09/05/2017**

**INSTRUCTIONS**

**1. Do not write anything on this question paper.**

**SECTION A (ANSWER ALL QUESTIONS)-20 MARKS**

1. Neutrophilic left shift is defined as.....
  - A. The presence of increased number of circulating neutrophils with nonsegmented nucleus.
  - B. Increased number of circulating toxic granulated monocytes
  - C. Presence of increased number of circulating segmented neutrophils
  - D. Extreme neutrophil destruction due to immune mechanisms
  - E. Marked neutrophilia
2. The term used for decreased number of platelets is?
  - A. Thrombocytosis
  - B. Thrombocytopenia
  - C. Lymphocytosis
  - D. Thrombocytopenia
  - E. Megakaryocytosis
3. Which characteristic of red blood cells is an adaptive feature for its movement in the circulatory system?
  - A. Shape
  - B. Size
  - C. Haemoglobin component.
  - D. Volume
  - E. Weight
4. Thrombocytes have a lifespan of
  - A. 110-120 days
  - B. 7-10 days
  - C. 35 days
  - D. 60 days
  - E. 40 days
5. Which of the following is not a requirement of haemopoiesis
  - A. Iron
  - B. Amino acids
  - C. Vitamin K
  - D. Erythropoietin
  - E. Energy

6. The following are methods of Haemoglobinometry except
  - A. Cyanmethaemoglobin
  - B. Oxyhaemoglobin
  - C. Alkaline haematin
  - D. Haemoglobinometric
  - E. Acid haematin
7. Which of the following is not a Romanosky stain
  - A. Leishman
  - B. Giemsa
  - C. PAS
  - D. May-Grunwald Giemsa.
  - E. Wrights stain.
8. Which of the following is not a requirement for erythropoiesis.
  - A. Erythropoietin
  - B. Amino acids
  - C. Magnesium
  - D. Iron
  - E. Copper
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. Which one of the following is not a haemopoietic growth factor?
  - A. GM-CSF
  - B. M-CSF
  - C. N-CSF
  - D. Thrombopoietin
  - E. Erythropoietin
11. Which of the following is not a course of thrombocytopenia
  - A. Bacterial infections
  - B. Bone marrow failure
  - C. Some viral infections
  - D. Destruction of platelets by immune antibodies
  - E. Massive transfusion
12. Which one of the following is the first site of foetal haemopoiesis?
  - A. Bone marrow
  - B. Yolk sac
  - C. Spleen
  - D. Liver
  - E. Long bones
13. Reticulocytes are
  - A. Immature lymphocytes
  - B. Mature red blood cells
  - C. Hypersegmented polymorph
  - D. Juvenile red blood cells
14. Which of the following dyes are used for the demonstration of reticulocytes?
  - A. Giemsa stain

- B. Carbol fuchsin
  - C. Brilliant cresyl blue
  - D. Sudan black.
  - E. Eosin.
15. Romanosky stains differentiate
- A. Haemoglobin A and S
  - B. Haemoglobinopathies
  - C. Haemoglobin C and F
  - D. Basophilic and acidophilic components of the cell
  - E. Cell membrane and cytoplasm
16. Variation in size of red blood cell is called?
- A. Anisocytosis
  - B. Poikilocytosis
  - C. Hyperchromasia
  - D. Polychromasia
  - E. Anisopoikilocytosis
17. Which of the following is a cause of neutrophilia?
- A. Bacterial infections
  - B. Agranulocytosis
  - C. Emotional stress
  - D. Low platelet count
  - E. Thrombocytosis
18. Which of the following is true about haemoglobin F?
- A. It is unable to give oxygen readily
  - B. It is able to bind 2,3 DPG
  - C. Contains alpha and beta globin chains
  - D. Contains alpha and gamma globin chains
  - E. Contains alpha and delta globin chains
19. Which one of the following is an RBC count diluting fluid?
- A. Hyems fluid
  - B. 1 % ammonium oxalate
  - C. Turks solution
  - D. Baars fluid
  - E. Physiological saline
20. Precursors of platelets are called
- A. Myeloblasts
  - B. Thrombocytes
  - C. Megakaryocytes
  - D. Megablasts
  - E. Plasmablast

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

- 1) Briefly describe the morphology of a normochromic normocytic red cell [5 marks]
- 2) List <sup>five</sup> qualities of a good anticoagulant [5 marks]
- 3) Outline how the ESR phenomenon occurs during testing [5 marks]
- 4) Write short notes on thrombocytes as a blood component [5 marks]

**SECTION C (QUESTION ONE IS COMPULSORY THEN CHOOSE ANY OTHER QUESTION)-30 MARKS**

- 1) Suppose you have a haemoglobin standard of **15 g/dl**, using serial dilutions of **3** and a required volume of **6 mls**, use an illustration and a sketch to show how you would generate a haemoglobin curve for use in your laboratory. [15 marks]
- 2) Discuss the anticoagulant of choice of the following tests explaining their mode of actions
  - i. Complete blood count
  - ii. Osmotic fragility test
  - iii. Coagulation studies
  - iv. Packed cell volume [15 marks]
- 3) Give a detailed account of 5 laboratory tests used to assess the integrity of coagulation pathways giving their reference ranges [15 marks]