



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2020/2021
SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE (MEDICAL LABORATORY SCIENCE)
HML 202 HEMATOLOGY I

DATE: MONDAY 19TH JULY 2021

TIME: 8.00 A.M - 10.00 A.M

INSTRUCTIONS:

SECTION A: ANSWER ALL QUESTIONS: (FOUR MARKS EACH)

1. List four hematopoietic growth factors highlighting their functions (4 marks)
2. List four types of red blood cell inclusions (4 marks)
3. Describe factors likely to affect erythrocyte sedimentation rate readings (4 marks)
4. Describe how erythropoietin accelerates red cell production (4 marks)
5. Explain four conditions that may lead to tissue hypoxia (4 marks)

SECTION B: ANSWER ANY ONE QUESTION: (20 MARKS EACH)

6. a) Describe the structure of hemoglobin (8 marks)
b) Discuss the synthesis of heme and globin moieties of hemoglobin (12 marks)
7. Problems are likely to occur when staining blood films. Discuss three problems, illustrating their causes, appearance and correction measures (20 marks)

SECTION C: ANSWER ALL QUESTIONS BY ENCIRCLING THE CORRECT ANSWER: (1/2 MARK EACH)

1. One molecule of hemoglobin carries _____ molecules of oxygen.
 - a) 4
 - b) 3
 - c) 2
 - d) 1
2. _____ ml of oxygen is transported per deciliter of blood.
 - a) 20ml
 - b) 40ml
 - c) 10ml
 - d) 50m
3. On collecting blood, what solution is added to it for preservation?
 - a) sodium citrate
 - b) potassium citrate
 - c) sodium phosphate
 - d) potassium phosphate
4. How much blood does the normal body have in reserve and where is it stored?
 - a) 150 ml stored in liver
 - b) 10 ml stored in gall bladder
 - c) 100 ml stored in the spleen
 - d) 15 ml stored in the heart
5. Blood is stained with _____ stain.
 - a) Methylene blue
 - b) Safranin
 - c) Leishman stain
 - d) Carbol fuchsine
6. Where are the platelets produced?
 - a) In Liver
 - b) In Spleen
 - c) In Gall Bladder
 - d) In Megakaryocytes

7. How to distinguish eosinophils from basophils?
- a) Eosinophils have a bilobed nucleus and basophils have a single round nucleus
 - b) Eosinophils are granulated while Basophils are non granulated
 - c) Eosinophils have a single nucleus and basophils have a trilobed nucleus
 - d) Eosinophils stain blue while basophils stain pink
8. What is the ratio of basophils to eosinophils?
- a) 4:1
 - b) 1:4
 - c) 2:1
 - d) 1:2
9. Where are Kupffer cells found?
- a) Brain
 - b) Lungs
 - c) Liver
 - d) Spleen
10. The leaving of neutrophils from the blood vessels to act on the site of injury is called as _____
- a) Histosis
 - b) Diapedesis
 - c) Amoeboid Movement
 - d) Flagellation
11. The non – cellular components of blood consist of
- i) Fibrin ii) Thrombin iii) Sodium iv) Plasma v) Thrombocytes vi) Phagocytes vii) creatinine viii) Water ix) hormones x) enzymes
- a) i, iii, x
 - b) i, ii, iii, iv, vii, viii, ix
 - c) ii, iii, vii, ix
 - d) viii, ix, x
12. Where are the RBCs destroyed?
- a) Liver
 - b) Pancreas
 - c) Stomach
 - d) Intestines

13. What is the lifespan of platelets?

- a) 1 – 7 days
- b) 8 – 12 days
- c) 14 days
- d) 1 month

14. How are mature and non – matured RBCs distinguished?

- a) Mature RBCs are biconcave while non – mature RBCs are round
- b) Mature RBCs have mitochondria while non – mature RBCs do not have mitochondria
- c) Mature RBCs have nucleus while non – mature RBCs do not have nucleus
- d) Mature RBCs have haemoglobin while non – mature RBCs do not have haemoglobin

15. Graveyard of RBC is _____

- a) Spleen
- b) Liver
- c) Kidney
- d) Thymus

16.Hematopoietic stem cells (HSCs) are the stem cells that give rise to other blood cells.

- a) Mesodermal cells
- b) Ectodermal cells
- c) Endodermal cells
- d) Hematopoietic stem cells (HSCs)

17. are the cells that give rise to other blood cells.

- a) Mesodermal cells
- b) Ectodermal cells
- c) Endodermal cells
- d) Hematopoietic stem cells (HSCs)

18. T cells mature in _____

- a) bone marrow
- b) thymus
- c) spleen
- d) lymph

19. Which of the following controls the release of hematopoietic cells from bone marrow?

- a) Osteoblasts
- b) Endothelial cells
- c) Sympathetic neurons
- d) Reticular cells

20. Which of the following is not part of the mononuclear phagocyte system?

- a) Mesangial cells
- b) Endothelial cells
- c) Kupffer cells
- d) Macrophage