



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

CERTIFICATE IN MEDICAL LABORATORY SCIENCES

AML: 1105 : HAEMATOLOGY I

SPECIAL SUPPLEMENTARY EXAMINATION

SERIES: AUGUST 2017

TIME: 2 HOURS

DATE: 19 Sep 2017

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **TWO** Section(s). Attempt ALL questions.

Circle the correct answer in section A.

Section A

1. Sky blue cytoplasm is characteristically found in the following blood cell
 - a. Eosinophils
 - b. Monocytes
 - c. Lymphocytes
 - d. Neutrophils
2. Sodium citrate anticoagulant is the best for the following haematological examination
 - a. Red cell count
 - b. Erythrocyte sedimentation rate
 - c. Coagulation studies
 - d. Packed cell volume

3. When blood is collected in anticoagulant, the fluid extracted from it is known as?
 - a. Fibrinogen
 - b. Serum
 - c. Plasma
 - d. Plasminogen
4. Dyes used for staining blood films are basically prepared from the following
 - a. Gentian violet
 - b. Methyl red
 - c. Eosin
 - d. Methylene blue
5. Monocyte maturation occurs in all of the following except?
 - a. Liver
 - b. Bone
 - c. Circulation
 - d. Bone marrow
6. The following is true concerning haematology
 - a. It is the study of cell
 - b. It is the study of plasma
 - c. It is the study of blood cells
 - d. It is the study of haem
7. The hormone released from the liver unique for the platelet regeneration is referred to as?
 - a. Estrogen
 - b. Erythropoietin
 - c. Thrombopoietin
 - d. Testosterone
8. Which is the precursor cell of the thrombocytic cell line
 - a. Megaloblast
 - b. Megakaryoblast
 - c. Pronormoblast
 - d. Lymphoblast

9. Which one of these features does not help to distinguish a neutrophil from an eosinophil
 - a. Number of lobulations
 - b. Orange granules
 - c. Granule size
 - d. Size
10. Pink cytoplasm is characteristically found in the following blood cells
 - a. Basophil
 - b. Monocytes
 - c. Red cells
 - d. Neutrophils
11. When blood is left to clot, the fluid extracted from it is known as?
 - a. Fibrinogen
 - b. Serum
 - c. Plasma
 - d. Serotonin
12. Romanowsky stains contain the following except?
 - a. Alcohol
 - b. Water
 - c. Eosin
 - d. Methelene blue
13. The cytoplasm of a mature red cell is composed of the following
 - a. Nucleus
 - b. Nucleoli
 - c. Stroma
 - d. Haemoglobin
14. The red colour of blood is derived from the following
 - a. Haem
 - b. Lipids
 - c. Globin
 - d. All blood cells

15. The following characteristic is found only in Monocytes
- Lobulation
 - Crenation
 - Granulation
 - Vacuolation
16. The anticoagulant heparin may be employed as follows
- In blood for film making
 - When testing for osmotic fragility t
 - To inactivate calcium
 - To precipitate calcium
17. During the maturation of the cells of the erythroid series the following changes occur
- The nucleoli increase in size
 - The cell volume decreases
 - Increase in the number of ribosome
 - Chromatin is not removed from cell
18. The statements below are true of the pluripotent myeloid stem cell except
- It represent only 0.03% of total bone marrow
 - Does not give rise to all the blood cell lines
 - Gives rise to 10^{10} RBCs and 10^9 WBCs a day in adult life
 - Differentiates into burst forming unit
19. The following are maturation stages of an erythrocyte except
- Pronormoblast
 - Promyelocyte
 - Orthochromatic normoblast
 - Reticulocyte
20. One of the principle sites of blood cell maturation is?
- Kidney
 - Spleen
 - Liver
 - Lymph nodes

21. Decrease in the number of platelets is referred to as
- Thrombocytopenia
 - Erythrocytopenia
 - Thrombocytosis
 - Reticulocytosis
22. The hormone released from the kidney unique for the erythroid regeneration is referred to as?
- Estrogen
 - Erythropoietin
 - Thrombopoietin
 - Testosterone
23. Examples of Romanowsky stains include the following except?
- Wright's
 - Leishman's
 - Fields stain
 - Giemsa
24. Abnormal size in erythrocyte morphology is referred to as?
- Poikilocytosis
 - Anisocytosis
 - Anisopoikilocytosis
 - Erythrocytosis
25. Macrocytosis may be found in the following conditions except?
- Iron deficiency anaemia
 - Folate deficiency
 - Lead poisoning
 - Alcoholism
26. Red cells with increased staining appearing in the area of central pallor are referred to as?
- Mexican hat cells
 - Acanthocytes
 - Elliptocytes
 - Ovalocytes

27. Megaloblastic anaemia is characterized by the following abnormal cells except?
- Tear drop cells
 - Ovalocytes
 - Macrocytes
 - Target cells
28. Stomatocytosis may not be found in the following conditions
- Alcohol excess
 - Hereditary Spherocytosis
 - Hereditary elliptocytosis
 - Iron deficiency anaemia
29. The following statements are not true concerning Cabot rings
- They appear as rings or figures of eight
 - Cabot rings are found in lead poisoning
 - They occur as a result of dyserythropoiesis
 - They are a manifestation of Protozoan infections
30. A polychromatic stain is one that has the following properties
- Gives multiple colours
 - Contains only eosin
 - Contains only methylene blue
 - Does not stain neutral components
31. When a stain is too pale, which of the following course of action is recommended
- Report the results as obtained
 - Stain a second slide
 - Obtain more blood from the patient
 - Discard and refuse to suggest any course of action
32. The largest pool of iron in the body is found in the?
- Circulating RBC
 - Liver
 - Ferritin
 - Myoglobin

33. Reticulocytes when stained by Romanowsky stains appear?
- Normochromic
 - Polychromic
 - Metachromic
 - Orthochromic
34. An absolute increase in reticulocyte count has the following significance
- An increase in RBC production
 - A decrease in RBC production
 - A marked increase in normal staining cells
 - A normal RBC pattern
35. Stain deposits may be removed from Leishman stained films with the following except?
- Washing with distilled water
 - Washing with buffered water at pH 6.5
 - Washing with diluted Leishman stain
 - Washing with buffered distilled water at pH 7.2
36. In haemopoiesis the following cells are found in the progenitor stage of cell development except
- Burst forming units
 - Metamyelocytes
 - Colony forming units
 - Pluripotential stem cells
37. The following Blood cells may be found in tissues other than blood except
- Macrophage
 - Osteoclasts
 - Histocytes
 - Reticulocyte
38. At 5% dilution of Giemsa stain the correct staining period for blood cells would be?
- 5 – 10mins
 - 15 – 30mins
 - 30 – 120mins
 - 2 – 24hrs

39. The buffer used in wrights stain is normally
- pH 6.5
 - pH 7.2
 - pH 6.8
 - pH 7.0
40. When using the Giemsa-Leishman panoptic stain the following is false
- Fixation is achieved upon staining with MayGrunwald stain
 - Fixation may be achieved by use of absolute alcohol
 - Different staining and differentiation times are used for blood and bone marrow specimen
 - Giemsa stain is used at a concentration of 5%

SECTION B

Question 41

- Outline the procedure for staining with Leishman stain solution (12mks)
- Describe the modes of action of anticoagulants used in haematology (8mks)

Question 42

With the aid of diagrams, Illustrate characteristic features of five blood cells (20mks)

Question 43

Define the following terms giving examples of associated conditions (20mks)

- Anisocytosis
- Poikilocytosis
- Macrocytosis
- Neutrophilia
- Red cell inclusion bodies