



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

**UNIVERSITY EXAMINATION FOR:**

**DIPLOMA IN MEDICAL LABORATORY SCIENCES**

**AML 2106 : HAEMATOLOGY I**

**SPECIAL SUPPLEMENTARY EXAMINATION**

**SERIES:** Select series 2017

**TIME:** Choose hours HOURS

**DATE:** Pick Date 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.**

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### **Section A**

1. Which one of the following cells have no ability to proliferate and self-replicate?
  - a. Primordial cells
  - b. Totipotent cells
  - c. Pronormoblast
  - d. Pluripotent cells
2. Production of blood occurs in the following except?
  - a. In the epiphysis of long bones
  - b. In the yellow marrow
  - c. In flat bones
  - d. In the liver
3. The following is not a cell of the lymphoid lineage
  - a. Lymphoblast
  - b. T-lymphocyte
  - c. Macrophage
  - d. B-lymphocyte

4. Which of the following growth factor is specific for the maturation of eosinophils
  - a. Interleukin-3
  - b. M-CSF
  - c. Interleukin-5
  - d. Thrombopoietin
5. The following is not part of the phlebotomy tray
  - a. Syringe
  - b. 0.5% chlorhexidine
  - c. 70% hypochlorite
  - d. Self-sealing bags
6. Adverse effects resulting from phlebotomy include the following except?
  - a. Loss of consciousness
  - b. Pain at site of venipuncture
  - c. Anxiety
  - d. Bacteremia
7. Which of the following is false concerning indications for blood collection
  - a. Heel pricks are a common procedure in neonates
  - b. Blood is not obtained to aid in therapeutic purposes
  - c. Capillary sampling is done for diagnostic purposes for all ages
  - d. Scalp veins are used for paediatric blood collection
8. The following are infection prevention strategies during phlebotomy except?
  - a. Do not wash gloves for reuse
  - b. Do not overfill the sharps container
  - c. Recap needle with both hands
  - d. Do not use a puncturing device more than once
9. Safe cleanup procedure for blood spillage in the haematology lab includes the following except?
  - a. Put on protective wear
  - b. Mop up liquid using paper towels into infectious waste container
  - c. Disinfect before removing any blood from the spill site
  - d. Use appropriate bleach solution recommended for surface of spillage
10. The following is true concerning blood collection
  - a. A small gauge needle does not damage red blood cells when drawing
  - b. Closed system blood collection has been found to be the safer
  - c. Needle gauge for transfusion blood is the same gauge as that for drawing blood
  - d. None of the above is true
11. The following is not an anticoagulant used in blood collection
  - a. Trisodium citrate
  - b. Heparin
  - c. Sodium Chloride
  - d. Alsever's solution
12. Which of the following is not Bone marrow collection methods
  - a. Needle aspiration
  - b. Bone marrow curettage
  - c. Percutaneous biopsy
  - d. Bone marrow trephine

13. Remnants of RNA are not visible in the following cell
- Erythrocyte
  - Reticulocyte
  - Rubricyte
  - B and C
14. What is poikilocytosis?
- Variation in red cell staining
  - Variation in red cell shape
  - Aberration in red cell size
  - Presence of blood in urine
15. The following is false concerning microcytosis
- Red cells are smaller in diameter
  - Microcytosis is observed in iron deficiency anaemia
  - Microcytic cells are larger than the small lymphocyte
  - Microcytic cell size are smaller than the small lymphocyte nucleus
16. Acanthocytosis may occur in the following disease conditions except?
- Post splenectomy
  - Kidney disease
  - Liver disease
  - Starvation
17. What is schistocytosis?
- Sickled cells
  - Ovalocytes
  - Microangiopathic haemolytic anaemia
  - Red cell fragmentation
18. The following cells do not produce cytokines
- T-lymphocytes
  - Macrophages
  - Reticular cells
  - Reticulocytes
19. The following is one of the eosinophil functions
- Anaphylaxis
  - Modification of allergic reactions
  - Engulf bacteria
  - Transport of allergens
20. Maturation of monocytes takes place in the following
- Blood
  - Marrow
  - Bones
  - A & B
21. Lymphocyte maturation occurs in the following except?
- Bone marrow
  - Blood
  - Lymph nodes
  - Spleen

22. The following is not a condition associated with target cells in peripheral blood film
- Obstructive liver disease
  - Aplastic anaemia
  - Thalassemia
  - Post splenectomy conditions
23. Globins that make up heme are formed in the following organelle
- Nucleus
  - Cytoplasm
  - Ribosome
  - Mitochondrion
24. Inappropriate handling of blood prior to transfer to the lab may cause the following except?
- Haemolysis
  - Cell disintegration
  - Patient infection
  - Partial coagulation
25. Sodium citrate anticoagulant is the best for the following haematological examination
- Red cell count
  - Coagulation studies
  - Packed cell volume
26. Which of the following is the largest blood cell
- Monocyte
  - Lymphocyte
  - Basophil
  - Erythrocyte
27. When blood is collected in anticoagulant, the fluid extracted from it is known as?
- Fibrinogen
  - Serum
  - Plasma
  - Plasminogen
28. Dyes used for staining blood films are basically prepared from the following except
- Gentian violet
  - Azure B
  - Eosin
  - Methylene blue

29. The hormone released from the liver unique for the platelet regeneration is referred to as?
- Estrogen
  - Erythropoietin
  - Thrombopoietin
  - Testosterone
30. The following is true concerning the effects of anticoagulants on white blood cells
- EDTA may suppress platelet degranulation
  - Heparin induces leucocyte and platelet clumping
  - Neutrophil activity is lowered in EDTA
  - EDTA may diminish monocyte activity
31. The enzyme responsible for the addition of the  $Fe^{++}$  is known as?
- Iron decarboxilase
  - Protoporphyrinogen oxidase
  - Haemosynthetase
  - Porphyrin synthase
32. During the life-span of granulocytes, they are found within four different pools. These include the following except?
- The marginating/digitating pool
  - Maturation and storage pool
  - Segmentation pool
  - Mitotic pool
33. The following property is not used to classify leucocytes
- Life span
  - Site of origin
  - Type of defense
  - Shape of nucleus
34. The following protozoa may be found in red blood cells except
- Babessia
  - Plasmodium
  - Leishmanial amastigotes
  - Anaplasma
35. In erythropoiesis, in which of the following stages does nucleus extrusion occur?
- Reticulocyte
  - Orthochromatic erythroblast
  - Polychromatic normoblast
  - Basophilic normoblast
36. Blood sampling systems include the following except?
- Winged butterfly system with syringe
  - Vacuum extraction system
  - Needle and blood bag system
  - Butterfly system with vacuum extraction

37. The following growth factor acts on multipotential progenitor cells and committed progenitor cells
- Stem cell factor
  - Erythropoietin
  - Flt-L
  - Thrombopoietin
38. The following is true concerning heparin anticoagulant activity
- Chelates calcium ions in the blood
  - Precipitates calcium from the blood
  - It binds to thrombin to inhibit coagulation
  - Binds to antithrombin to inhibit coagulation
39. An absolute increase in neutrophils count is known as?
- Eosinophilia
  - Neutrophilia
  - Neutropenia
  - Neutrocytosis
40. Bone marrow is the major site of haemopoiesis during the following period
- Second trimester
  - Third trimester
  - First trimester
  - Final trimester

## SECTION B

- 41.
- Describe venous blood collection **10mks**
  - List down five red cell abnormal shapes and conditions associated with each **10mks**
42. Discuss potential sources of risk during phlebotomy and how these can be avoided  
**20mks**
43. Describe the following
- The procedure for leishman staining **12mks**
  - Functional definition of the following **8mks**
    - Polycythemia
    - Leucopenia
    - Anaemia
    - Reticulocytosis