



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Applied and Health Sciences

DEPARTMENT OF MEDICAL SCIENCES

DIPLOMA IN MEDICAL LABORATORY SCIENCES
(DMLS)

AML 2107: HAEMATOLOGY I

SPECIAL/SUPPLEMENTARY: EXAMINATIONS

SERIES: OCTOBER 2013

TIME: 2 HOURS

INSTRUCTIONS:

You should have the following for this examination

- *Answer booklet*

This paper consists of **TWO** sections.

Answer all questions in **Section A** and **B**. $\frac{1}{2}$ marks deducted for any wrong answer in **Section A**.

- d) 2 – 24 hrs
 - e) 45min
7. When using Giemsa may Grunward panopfic stain
- a) Fixation is achieved upon staining with may Grunewald stain
 - b) Fixation is achieved by use of absolute alcohol
 - c) Different staining and differentiation times are used for blood and bone marrow specimen
 - d) Giemsa stain is used at a concentration of 2%
 - e) All the above
8. Given that the total number of cells counted is 24 in each corner square and a dilution factor of 20, what is the WBC count
- a) 4.8×10^9 cell/ltr
 - b) 4.8×10^{11} cell/ltr
 - c) 4.8×10^{10} cell/ltr
 - d) 4.8×10^{12} cells /ltr
 - e) 4.8×10^6 cell/ltr
9. Percentage normal value for monocytes is
- a) 0 – 1%
 - b) 40 – 60%
 - c) 2 – 10 %
 - d) 20 – 40%
 - e) 30 – 70 %
10. Male normal values for Rbc count is
- a) $4.5 – 6.5 \times 10^6$ cell/mm³
 - b) $3.9 – 5.6 \times 10^6$ cell/mm³
 - c) $2.6 – 5.2 \times 10^6$ cell/mm³
 - d) $2.6 – 6.0 \times 10^6$ cells/mm³
 - e) $5.0 – 8.9 \times 10^6$ cells/mm³
11. Stain deposits may be removed from leishman stained films with the following except?
- a) Washing with dist-H₂O
 - b) Washing with buffered water at pH 6.5
 - c) Washing with diluted leishman stain
 - d) Washing with buffered distilled water at pH 7.2
 - e) None of the above
12. A grey-blue cytoplasm with a “ground-glass” appearance is found most often in
- a) Myeloblast
 - b) Lymphocytes
 - c) Basophils
 - d) Monocyte
 - e) Neutroplils
13. Functions of Red blood cells include the following
- a) Respiration
 - b) Breathing

- c) Production of oxygen
- d) Production of haemoglobin
- e) Transportation of oxygen

14. Cellular element which manifest less anticoagulant changes

- a) Erythrocytes
- b) Monocytes
- c) Lymphocytes
- d) Neutrophils
- e) Platelets

15. Monocytes are the only

- a) Lobulated cells
- b) Crenated cells
- c) Vacuolated cells
- d) Non-granulated cells
- e) Non-nucleated cells

16. Giemsa staining technique

- a) Takes the shortest times
- b) Requires prior fixation
- c) Cannot be done manually
- d) Gives superior staining results
- e) Can only be done on bone marrow aspirates

17. The primitive precursor of cell of lymphocyte series is:-

- a) Megaloblast
- b) Normoblast
- c) Lymphoblast
- d) Pro lymphoblast
- e) Prolymphoblast

18. Red blood cell in the circulation follows shape

- a) Round
- b) Oval
- c) Biconcave
- d) Square
- e) Pentagon

19. The cytoplasm of a mature red blood cell is chiefly composed of

- a) Nucleus
- b) Nucleois
- c) Strom
- d) Haemotogly
- e) Haemapoxen

20. The fluid portion of clotted blood does not contain

- a) Globulin

- b) Water
 - c) Inorganic salts
 - d) Albumin
 - e) Fibrinogen
21. A red blood cell assumes colour because of
- a) Globin
 - b) Immunoglobins
 - c) Lipids
 - d) Haem
 - e) Glucose
22. The second last stage of the maturation of rbc is
- a) Erythrocytes stage
 - b) Reticulocytes stage
 - c) Rubriblaste
 - d) Pro erythroblast
 - e) Erythroblast
23. Which of the following anticoagulants gives is farm blue colouration to the background when the filk is stained with romanowsky
- a) Citrate
 - b) Hepane
 - c) Sequestrate
 - d) Potassium oxalate
 - e) Sodium fluoride
24. During the maturation of the cells of the erythrocytic series I the following changes occur
- a) The nucleoli increase in size
 - b) Increase in the number of ribosomes
 - c) Decrease in the amount of haemoglobin in the cytoplasm
 - d) None of the above
25. In intra uterine haematopoeisis the follow phases are included except
- a) Medulolymphatic phase
 - b) Hepatosplenothymic phase
 - c) Extra medullary haemopoiesis
 - d) Myeloid phase
 - e) Mesoblastic phase
26. The recommended concentration of EDTA for route haematological work is
- a) 1.50 + 0.25 mg/ml
 - b) 2.25 + 0.05 mg/ml
 - c) Above 2 mg/ml
 - d) 1 + 0.25 mg/ml
 - e) Below 1mg/ml
27. Reticulocyte have the following in the cytoplasm
- a) Nucleus

- b) Polyribosome
 - c) Remnants of golgi apparatus
 - d) Lobes
 - e) Azyrophinic granules
28. Uncontrolled abnormal proliferation of the leucocytes cells of the body
- a) Is polythaemia vera
 - b) Is termed leukaemia
 - c) Is termed anaemia
 - d) Could lead to the compensatory rise in red cell peripheral blood.
29. These are phases of haemopoiesis in the embryo
- a) Mesoblastic phase
 - b) Erythropoetic phase
 - c) Hepatic phase
 - d) Embryonic phase
 - e) All the above
30. Which of the following Wbc is associated with say fever
- a) Neutrophil
 - b) Monocytes
 - c) Eosinophyis
 - d) Basinophyis
 - e) Lymphocyts
31. Sign of immaturity of red blood cells demonstrated during staining is termed;
- a) Polychromasia
 - b) Reticulocytosis
 - c) Anaemia
 - d) Erythrblastemia
 - e) Prisochromasia
32. The haemoglobin that are confined to embryonic life are:
- a) Hb A2
 - b) Hb A
 - c) Hb F
 - d) Hb Nyanza
 - e) Hb port land
33. The first phase of haemopoiesis in utero is refered to as
- a) Hepatic phase
 - b) Myeloblast phase
 - c) Medullary phase
 - d) Mesoblastic
 - e) Embroyonic phase

34. The developmental process of erythrocytes until maturity takes
- 40 days
 - Seven days
 - 120days
 - 7 months
 - 120 hours
35. Lymphocytes are mainly produced in
- The bone marrow
 - Liver
 - Lymphoid tissue
 - Spleen
 - Thymus
36. Normal erythrocytes are;
- Neutrophilic
 - Acidophilic
 - Basophilic
 - Microcytic
 - Normocytic
37. Causes of neutrophilic leucocytosis include;
- Viral infection
 - Agranulocytosis
 - Bacterial infections
 - Emotional stress
 - T.B
38. When there is reticulocytosis there is a corresponding
- Microcytosis
 - Orthochromasia
 - Poikilocytosis
 - Hypochromasia
 - Increased bone marrow activity
39. Eosinophilic leucocytosis is found in peripheral smear in;
- Parasitic infections
 - Allergic diseases
 - Whooping cough
 - Bacterial infection
 - Viral infection

SECTION B

1. Discuss haemopoiesis process in an adult **(20marks)**
2. Write short notes on
 - a) EDTA
 - b) Romanowsky stains
 - c) Lymphocyte with aid of diagram
 - d) Red blood cells
3.
 - a) Discuss on the sources of errors in staining **(5marks)**
 - b) Differentiate between thick and thin blood film **(5marks)**
 - c) List the causes of haemolysis and their remedy **(10marks)**