



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN MEDICAL LABORATORY SCIENCES

AML 2207 : HAEMATOLOGY II

SPECIAL/ SUPPLIMENTARY EXAMINATIONS

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

DATE: Pick Date Sep 2018

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, calculator, examination pass and student ID

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

Circle the correct answer in section A.

1. The decrease in Red Cell Mass is known as?
 - a. Leukemia
 - b. Polycythemia
 - c. Anaemia
 - d. Haemochromatosis
2. The following disorders of decreased Red cell Mass are associated with the bone marrow
 - a. Hyper proliferative disorders
 - b. Bone marrow fibrosis
 - c. Blood loss
 - d. Haemolytic disorders

3. Which of the following is a method for blood cell counting
 - a. Hemometer
 - b. Haemocytometer
 - c. Sahli
 - d. Spencer
4. The following Aplastic conditions are inherited as autosomal recessive conditions
 - a. Pure red cell aplasia
 - b. Fanconi's syndrome
 - c. Diamond blackfan anaemia
 - d. Anaemia of chronic renal disease
5. 75% of circulating cobalamin is in the form of
 - a. Methylcobalamin
 - b. Transcobalamin
 - c. Adenosylcobalamin
 - d. Plasma cobalamin
6. Oval Macrocytes with virtually no area of central pallor is observed in?
 - a. Hemolytic anaemias
 - b. Megaloblastic anaemias
 - c. Blood loss anaemias
 - d. Anaemia due to chronic renal disease
7. The Megaloblastic anaemia due to Castle's intrinsic Factor
 - a. Is common among blood group A persons
 - b. Is common among blood group B persons
 - c. Is also referred to as pernicious anaemia
 - d. Is not a congenital disorder
8. The following is not a characteristic of the granular leukocytes
 - a. Visible nucleoli
 - b. Granular cytoplasm
 - c. Are motile
 - d. Have an average cell size of 10 – 15µm
9. Lymphocyte function includes the following except
 - a. Immune response
 - b. Viral attack
 - c. Tissue debris phagocytosis
 - d. Antigen presentation
10. The irreversible change caused by HbS polymerization results in _____ cells
 - a. Dacryocytes
 - b. Drepanocytes
 - c. Keratocytes
 - d. Acanthocytes

11. The following are anaemias due to bone marrow failures except
 - a. Fanconi's syndrome
 - b. Diamond-blackfan anaemia
 - c. Anaemia of chronic renal disease
 - d. Myelophthisic anaemia
12. Which of the following is an inclusion body found in leucocytes
 - a. Howell Jolly Bodies
 - b. Dohle Bodies
 - c. Heinz Bodies
 - d. Basophilic Stippling
13. Signs of immaturity of red blood cells demonstrated during staining with Romanowsky stains is termed as
 - a. Anisochromasia
 - b. Polychromasia
 - c. Reticulocytosis
 - d. Anaemia
14. The diluting fluid for White blood cell count is
 - a. Baar's fluid
 - b. Turk's fluid
 - c. Ascorbic acid
 - d. Hayem's fluid
15. When the plasma appears Icteric during performance of haematocrit
 - a. Indicates exclusive drug use
 - b. There may be massive destruction of RBC's
 - c. Can be normal colour
 - d. Jaundice is present
16. Which of the following is true concerning the buffy coat?
 - a. It is a gray layer on top of red blood cells after centrifugation
 - b. Contains RBC's and platelets
 - c. Contains leucocytes and platelets
 - d. Contains packed cells
17. In differential count, the normal adult lymphocyte range:
 - a. 25 – 75%
 - b. 25 – 45%
 - c. 45 – 75%
 - d. 6 - 10%
18. During the maturation of the cells of the erythrocytic series:
 - a. the cell volume decreases
 - b. the nucleoli increase in size
 - c. the nuclear chromatin is retained
 - d. there is decrease in the number of ribosomes

19. Under normal circumstances the following cells are seen in peripheral circulation:
- promyelocyte
 - myelocyte
 - myeloblast
 - neutrophil
20. The following are Romanowsky stains except
- Wrights
 - Chromotrope
 - Giemsa
 - May-Grunwald
21. Percentage normal values for Monocytes is
- 0-1%
 - 40-60%
 - 2-10%
 - 20-40%
22. The following are functions of blood except
- Regulatory
 - Secretory
 - Distribution
 - Protective
23. Foetal haemoglobin is made up of
- Two alpha chains and two beta chains
 - Two gamma chains and two delta chains
 - Two alpha chains and two gamma chains
 - Two beta chains and two delta chains
24. Before birth the following is true of blood formation
- Blood formation occurs only in the bone marrow
 - Mature red blood cells may be found
 - Mature red blood cells are absent
 - The liver and spleen are involved in blood formation
25. The enzyme that is responsible for the insertion of iron into the porphyrin structure is known as?
- Ferrochelatase
 - Haemosynthetase
 - ALA dehydrase
 - Succinyl CoA

26. HbA₂ has the following globin chains
- 2 α 2 γ
 - 2 λ 2 δ
 - 2 α 2 δ
 - 2 β 2 γ
27. The basophilic granules
- Often obscure the nucleus
 - Do not help in tissue permeability
 - Release is not receptor mediated
 - Prevent blood coagulation
28. MCHC is calculated using the following values
- Hb and PCV and given in g/dl
 - Hb and PCV and given in %
 - Hb and RBC count given in %
 - PCV and RBC count and given in %
29. Blood makes up to what percentage of body weight
- 50-80%
 - 6-8%
 - 1-2%
 - 70-95%
30. The following is the correct MCV value given that Hgb = 12gms/dl, Hct = 36 and TRBCs = 4.2X 10¹²cells/l
- 85pg
 - 85fl
 - 33pg
 - 28pg
31. What is the erythrocyte volume fraction given that MCV = 92fl, TRBCs = 3.8X10¹²C/litre
- 34pg
 - 34fl
 - 34%
 - 3.496%

32. The following are characteristics of HbA except
- It has electrophoretic mobility
 - It is soluble in water
 - Resists denaturation by alkalis
 - It is easily denatured by acids
33. Approximately 28% of total RBC volume is made up of
- Lipids
 - H₂O
 - Antigens
 - Hemoglobin
34. A heme pocket occurs
- Only in the α -globulin chains
 - Only in the β -globulin chains
 - In each of the 2pairs of globulin chains
 - In λ -chains only
35. The central area of the improved Neubauer is divided into 25 squares. The area of each of these small squares is;
- 0.04mm³
 - 0.02mm²
 - 0.04mm²
 - 0.04 μ m²
36. Given that the total number of cells counted in each corner square is 21WBCs and a dilution factor of 20 was used the WBCs count is
- 4200cells/ltr
 - 4200cells/mm²
 - 4200cells/ μ m²
 - 8.4 x 10⁹cells/ltr
37. Normal errors in blood counts include the following except?
- Inherent errors
 - Random errors
 - Faulty counting techniques
 - Interstitial fluid
38. The following is true of polycythemia except?
- It may preclude leukaemia
 - 2^o polycythemia maybe due to stress
 - Relative erythrocytosis is a malignancy
 - True polycythemia may be a malignancy

39. The following statements are false regarding ESR except?
- a. Landau-Adams is a macro-ESR method
 - b. There are no automated ESR methods
 - c. Automated ESR methods take less than one hour to read
 - d. The Westergren method is a micro-ESR method
40. Diluents for Platelets include the following
- a. Formal citrate
 - b. Ammonium oxalate
 - c. Drabkin's solution
 - d. Toisson's fluid

Section B

41. Outline the procedure for Leishman staining and give the expected normal ranges for a differential blood count 20mks
42. Discuss the following
- a. Erythrocyte volume Fraction 10mks
 - b. Sickle cell anaemia 10mks
43. List down the following 4mks@
- a. Four enzymes involved in heme formation
 - b. The globin chains associated with four types of Haemoglobins
 - c. Four microcytic anaemia conditions
 - d. Amino acids found on the globin chain
 - e. Normal range values for ESR by winthrobe and westergren tube methods