THE KENYA POLYTECHNIC UNIVERSITY COLLEGE

SCHOOL OF HEALTH SCIENCES AND TECHNOLOGY

DEPARTMENT OF BIOMEDICAL LABORATORY SCIENCES AND TECHNOLOGY

DIPLOMA IN MEDICAL LABORATORY SCIENCES

END OF YEAR II EXAMINATION

HAEMATOLOGY

TIME: 3 HOURS

INSTRUCTIONS

This paper consists of TWO SECTIONS: A and B.

Answer ALL questions in SECTION A and B.

Circle the letters of ALL correct answers in each multiple choices questions

Any wrong answer for multiple choices will be penalized (0.5 marks)

SECTION (40 marks)

1. The following is sources of error in ESR estimation Except:
   (a) Use of clotted blood sample
   (b) Performing test at 4oC
   (c) Setting the test immediately after collecting blood sample
   (d) Use of detergent to clean glass tubes.
2. The cause of LOW ESR is;
   (a) Polycythaemia
   (b) Physiological pregnancy
   (c) Intention with tuberculosis
   (d) Malignancy tumors
3. The anticoagulant of choice for blood counts and peripheral blood film is;
   (a) Tri-sodium citrate
   (b) Heparin
   (c) EDTA sequestrine
   (d) Oxalates
4. The diluting fluid uses in counting of while blood cell is;
   (a) 1% ammonium oxalates
   (b) Formal citrate
   (c) Baars fluid
   (d) Turks solution
5. The following are normal Hemoglobin EXCEPT;
   (a) HB A
   (b) HB A_2
   (c) HB F
   (d) HB C
6. Drabkins solution is composed of the following EXCEPT;
   (a) Potassium cyanide
   (b) Potassium carbonate
   (c) Sodium bicarbonate
   (d) Distilled water
7. The reasons for forming packed cells volume is
   (a) Aids in Differential count
   (b) Diagnosis of Leukemia
   (c) Gives information on Mean Cell Volume
   (d) Assist in calculation of blood indices
8. Normal adult male Hemoglobin value is:
   (a) 11.5 – 16.5gm%
   (b) 15.5 – 22.5gm%
   (c) 13.5 – 18.0gm%
   (d) 9.5 – 13.5gms%

9. The romanwasky stain which is water soluble is:
    (a) Giemsa stain
    (b) Leishman stain
    (c) Field stain
    (d) Weights stains
10. A bone marrow impaired conditions leads to:
    (a) Hemolytic anemia
    (b) Aplastic anemia
    (c) Iron deficiency anemia
    (d) Megaloblastic anemia
11. The cause of megaloblastic anemia is;
    (a) Deficiency of Vitamin B12
    (b) Deficiency of Iron
    (c) Bleeding ulcers
    (d) Use of radio-active material
12. The precursor cells of monocyte is
    (a) Pronormoblast
    (b) Myeloblast
    (c) Lymphoblast
    (d) Monoblast
13. The term used to describe both size and shape in peripheral blood film is:
    (a) Anisocytosis
    (b) Poikilocytosis
    (c) Aniso – poikilocytosis
    (d) Polychomasia
14. The following factors are found in the fibrinogen group.
    (a) Factor VII
    (b) Factor II
    (c) Factor V
    (d) Factor VII
15. The following coagulation factors need vitamin K for their synthesis EXCEPT:
    (a) Factor XI
    (b) Factor VIII
    (c) Factor X
    (d) Factor VII
16. The cause of anemia is;
    (a) Early pregnancy
    (b) Deficiency of nutrients
    (c) Use of family planning pills
    (d) Massive exercise

17. In Hemoglobin electrophorensis the slowest moving HB is;
    (a) Hemoglobin A
    (b) Hemoglobin F
    (c) Hemoglobin S
    (d) Hemoglobin A_2
18. An increased MCV is indicative of;
    (a) Iron deficiency anemia
    (b) Megaloblestic anemia
    (c) Aplestic anemia
    (d) Thelassamia
19. The normal values of packed cell volume for adult men is;
    (a) 36 – 47%
    (b) 44 – 64%
    (c) 40- 54%
    (d) 31 – 44%
20. Anemia can be caused by;
    (a) The age and sex of an individual.
    (b) Deficiency of white blood cells.
    (c) Deficiency number of red blood cells.
    (d) Deficiency number of platelets.
21. Which of the following is found in Hereditary hemolytic anemia :
    (a) G6PD enzyme
    (b) Sickle cells
    (c) Pyruvate Kinase (PK)
    (d) Macrocytes
22. Osmotic fragility test is increased in
    (a) Sickle cell diseases
    (b) Thalassaemia
    (c) Hemolytic diseases of the new born (HDNB)
    (d) Hemoglobin A_2
23. The factor IX is also referred to as;
    (a) Hageman factor
    (b) Christmas factor
    (c) Labile factor
    (d) Contact factor
24. A decrease in platelets is referred to as;
    (a) Thrombocytosis
    (b) Thrombocytopaenia
    (c) Adequate
    (d) Microphilic

25. The following is/are inclusions in whole blood cells;
    (a) Auer rods
    (b) Malaria parasites
    (c) Heinz bodies
    (d) Howell jelly bodies
26. A normal size, shape and color of ABC is associated with;
    (a) Aplastic anemia
    (b) Megaloblastic anemia
    (c) Hemolytic anemia
    (d) Megaloblestin anemia.
27. The following are methods of Hemoglobin estimation EXCEPT;
    (a) Acid haematin
    (b) Oxy-hemoglobin
    (c) Alkaline Haematin
    (d) Mean cell volume.
28. The causes of aplastic anemia is;
    (a) Nutrients deficiency
    (b) Use of radio-active material
    (c) Lack of calcium and folic acid
    (d) Over production of red blood cells.
29. Sources of Vitamin B12 is;
    (a) Spinach
    (b) Kidney
    (c) Eggs
    (d) Yeast
30. In classification of anemia the following is used EXCEPT;
    (a) MCH
    (b) MCHC
    (c) PCV
    (d) MCV
31. The tests used to detect abnormalities in vascular system is;
    (a) Duke method
    (b) Prothrombin time index
    (c) Clotting time
    (d) Koalin cephacin clotting time (KCCT).
32. A suitable test to determine a progress in management of tuberculosis is;
    (a) Packed cell volume
    (b) Erythrocyte sedimentation rate
    (c) Hemoglobin estimation
    (d) Sick ling test

33. When counting whole blood cells in Neubeur chamber method the number of squares counted is:
    (a) 4 corner squares
    (b) 5 corner squares
    (c) Centre 4 squares
    (d) Centre 5 squares
34. The normal platelets count is ;
    (a) 50 – 400 X $10^9/_L$
    (a) 150 -450 X$10^9/_L$
    (c) 10.0 X 15.0X$10^9/_L$
    (d) 10.0 – 150 X $10^9/_L$
35. The reduction of MCH, MCHC and MCV is indicative of
    (a) Aplastic anemia
    (b) Megabloblastic anemia
    (c) Hemolytic anemia
    (d) Iron deficiency anemia
36. In peripheral blood film reporting, the microcytic hypochromic picture is indicative of ;
    (a) Iron deficiency anemia
    (b) Megaloblastic anemia
    (c) Hemolytic anemia
    (d) Aplastic anemia
37. When doing White blood cells count using haemocytometer the false high count can be obtained by;
    (a) Using high volume of blood.
    (b) Under filling the chamber
    (c) Counting less squares eg one.
    (d) Using high volume of diluting fluid
38. The following are examples of hemolytic anemia EXCEPT;
    (a) Sickle cell anemia
    (b) G6PD deficiency
    (c) Hemoglobin C disease
    (d) Pernicious anemia
39. The reason why infants have high hemoglobin than adults is;
    (a) Adults are less active than infants
    (b) Infants need high concentration of oxygen for their growth.
    (c) The oxygen carrying capacity in adults is higher than that of infants
    (d) Breast milk has high nutrient content which increase hemoglobin automatically

40. The MCV is obtained using the formula

(a) $\frac{HB}{PCV} \times 10$

(b) $\frac{PCV}{HB} \times 100\%$

(c) $\frac{HB}{PCV} \times 100\%$

(d) $\frac{PCV}{TRBC} \times 10$

SECTION B (60 Marks)

1. Discuss the cynamet hemoglobin estimation: (20Marks)
2. Explain the following:

   (a) Sickle cell anemia (10Marks)
   (b) Packed cell volume (10Marks)

3. (a)List down 5 sources of error when performing the ESR test. (5Marks)

   (b).Define hypersegmented neutrophils and the conditions which they are encounter. (5Marks)
   (c) Explain the term polychromasia (5 Marks)
   (d) List down 5 inclusions found in Red blood Cells. (5Marks)