



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELOR OF MEDICAL LABORATORY SCIENCES

AML 4206: HAEMATOLOGY I

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: Pick Date **May 2016**

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.

1. The following is a direct progenitor cell arising from the Pluripotential haematopoietic stem cell
 - a. T-cell
 - b. Myeloid stem cell
 - c. Myelocyte stem cell
 - d. Erythroid stem cell
 - e. Megakaryoblast
2. Plasma cells are differentiated end stage cells arising from the following
 - a. Monocytes
 - b. T-lymphocytes
 - c. B-Lymphocytes
 - d. Lymphoblast
 - e. Megakaryoblast
3. The following is true concerning cytokines except
 - a. They are strictly lineage specific
 - b. Are produced from T-lymphocytes
 - c. Are produced from monocytes
 - d. IL-3 is multi-lineage
 - e. Some cytokines are lineage specific

4. The following statement is true concerning the monocytes
 - a. Maturation is regulated by the GM-CSF
 - b. Stages of monocyte maturation include monoblast&promonocyte
 - c. Monocytes when released from the bone marrow continue to enlarge in tissues
 - d. Monocytes are only found in blood circulation
 - e. Monocytes are found in other tissues such as liver and spleen
5. The following is not a function of monocytes
 - a. They secrete cytokines
 - b. They act as antigen presenting cells
 - c. They are antibody producing cells
 - d. They are phagocytic
 - e. They filter antigens for T-cells
6. Which of the following is true concerning antigen independent lymphopoiesis
 - a. It occurs in the primary lymphoid organs
 - b. Develop into immunocompetent T and B cells
 - c. Are part of the heterogenous lymphocyte population
 - d. They reenter bone marrow and repopulate it
 - e. They enter secondary lymphoid tissue and populate them
7. The following are properties of T-cells except
 - a. They constitute 80% of blood lymphocyte pool
 - b. Express antigen CD2, CD3 and CD4 among others
 - c. Does not express CD8
 - d. They develop in the thymus
 - e. The end products of their activation are cytokines
8. The end products of B-Cell activation is?
 - a. Cytokine
 - b. Chemokine
 - c. CD19
 - d. Antibody
 - e. Antigens
9. Alpha granules contain platelet specific granules. These include the following
 - a. Platelet derived growth factor
 - b. Fibrinogen
 - c. Von Willebrand factor
 - d. Dense bodies
 - e. Catecholamines
10. Which of the following is true concerning platelet function ?
 - a. They nurture endothelial cells
 - b. They fill the endothelial gaps
 - c. They help in the formation of a platelet plug
 - d. Help in the maturation of blood vessels
 - e. They are able to maintain a vascular integrity

11. The following is true of growth factors
 - a. Stimulates apoptosis
 - b. Prevents maturation
 - c. Encourages apoptosis
 - d. Stimulates cell aggregation
 - e. Stimulates cell maturation
12. The following anticoagulants remove calcium except?
 - a. EDTA
 - b. Sodium citrate
 - c. Heparin
 - d. Acid Citrate Dextrose
 - e. Citrate Phosphate Dextrose
13. EDTA maybe used in the following concentration
 - a. 1.5mg/ml of blood
 - b. 1.0mg/ml of blood
 - c. 16gms/ltr of blood
 - d. 2.0gms /ml of blood
 - e. None of the above
14. The following is not a bad effect of excess EDTA
 - a. Causes cell shrinkage
 - b. Causes a decrease in the PCV
 - c. Leads to platelet swelling and disintegration
 - d. Chelates calcium
 - e. May cause an artificial increase in platelet count
15. Which of the following statement is false concerning anticoagulants use in coagulation studies
 - a. Trisodium citrate is preferred
 - b. The ratio of anticoagulant to blood is critical
 - c. Any free calcium ions may cause critical changes in the coagulation time
 - d. The ratio of volume of blood to anticoagulant is 1: 9
 - e. The ratio of volume of blood to anticoagulant is 9: 1
16. Which of the following is not attributable to Siderotic granules
 - a. These are hemoglobin iron granules
 - b. They appear dense blue in Romanowsky stains
 - c. The distribution in the red cell is uneven
 - d. They are also referred to as Pappenheimer bodies
 - e. The granules are regular and evenly distributed
17. The following disease conditions may present with basophilic stippling except?
 - a. Thalassemia
 - b. Megaloblastic anaemia
 - c. Heavy metal poisoning
 - d. Aplastic anaemia
 - e. Liver disease

18. The following are true of cabot rings except?
- They appear as thread-like inclusions
 - Mostly occur in severe anaemia
 - These are remnants of cytoplasmic organelles
 - Cabot rings are remnants of the nuclear membrane
 - May occur in dyserythropoietic conditions
19. Hypersegmented neutrophils contain the following
- At least 3 lobes
 - No lobes
 - Disintegrating lobes
 - More than 5 lobes
 - Less than 4 lobes
20. Pelgerhuet anomaly is associate which which of the following cells?
- Neutrophils
 - Lymphocytes
 - Monocytes
 - Eosinophils
 - Platelets
21. Auer rods occur in which of the following leukaemic blood cells
- Normal red cells
 - Leukemic red cells
 - Myeloblasts
 - Lymphocytes
 - Monoblasts
22. Iron circulates bound to the following molecules
- Hemosiderin
 - Ferritin
 - Transferrin
 - Siderocytes
 - Mucosal cells
23. Which of the following is the largest source of iron in the body?
- Bone marrow
 - Tissues
 - Liver
 - Red cells
 - Mucosal cells
24. A porphyrin ring is formed by the condensation of the following
- Four pyrrole rings
 - Two molecules of porphobilinogen
 - Four molecules of porphobilinogen
 - Four molecules of aminolevulinic acid
 - Four protoporphyrin rings

25. What is the function of ferrochelatase enzyme in heme synthesis
 - a. Chelate iron from protoporphyrin
 - b. Remove zinc from porphyrin
 - c. Add iron to the protoporphyrin
 - d. Add iron to the pyrrole ring
 - e. Chelate cobalt from beta carotene
26. One haemoglobin molecule contains the following
 - a. 2 globin + 4 heme groups
 - b. 4 globin + 4 heme groups
 - c. 4 globin + 2 heme groups
 - d. 2 globin + 2 heme groups
 - e. 1 globin + 4 heme groups
27. Total body iron is estimated to be about the following grams
 - a. 2gms
 - b. 4gms
 - c. 6gms
 - d. 8gms
 - e. 1gm
28. Types of spreader slides used for making peripheral smear include the following except
 - a. Polished slide
 - b. Ogee
 - c. Flat polished
 - d. Bevel
 - e. Frosted
29. The following is not a type of Romanowsky stains
 - a. Fields stain
 - b. Wrights
 - c. May-Grunwald
 - d. Leishman
 - e. Giemsa
30. The following radioisotope is not used in haematological studies
 - a. Cobalt-57
 - b. Chromium-51
 - c. Iron 59
 - d. Iodine-125
 - e. Carbon-12

SECTION B

Question thirty one

Discuss the following

- a. Light scatter as used in automated cell counts (10mks)
- b. Describe reactive changes in the following
 - i. Neutrophils 5mks
 - ii. Lymphocytes 5mks

Question thirty two

Compare and contrast polymorphonuclear cell granules (20mks)