Candidate Number:……..

AFRICA UNIVERSITY
A United Methodist-Related Institution

"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

DEPARTMENT OF BIOMEDICAL AND LABORATORY SCIENCES

BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS DEGREE

NSLS407: HAEMATOLOGY II

END OF SECOND SEMESTER FINAL EXAMINATIONS

APRIL 2024

LECTURER: Dr Aaron Maramba

DURATION: 3 HOURS

INSTRUCTIONS

1. Write your candidate number on the space provided on top of each page
2. Answer **all** questions in sections A on the question paper.
3. Answer **all** questions in section B on separate answer sheets provided.
4. Answer any **3** questions in section C on separate answer sheets provided
5. Credit will be given for logical, systematic and neat presentations in sections B and C

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SECTION A: MULTIPLE CHOICE [40 MARKS]

- **Answer all questions by encircling the correct response T for TRUE or F for FALSE for each statement in all the questions**
- **Each correct response is allocated half mark**

1. Haemolytic uremic syndrome (HUS):

T F a) often affects children

T F b) blood film exhibits schistocytes

T F c) is associated with DIC

T F d) it is an intrinsic form of haemolysis

T F e) is associated with bacterial infection if d-positive

2. Diagnosis of congenital dyserythropoietic anaemia is synonymous with:

T F a) gigantoblastosis in CDA type I

T F b) positive HEMPAS in CDA type III

T F c) an abnormal membrane glycosylation in CDA II

T F d) a normal band 3 protein in CDA II but not CDA I

T F e) adult i-phenotype in CDA II

3. Concerning Anaemia of Renal Disease:

T F a) reticulocyte count is increased

T F b) there is erythroid hypoplasia

T F c) may be due to dilution

T F d) blood film always exhibit target cells

T F e) Burr cells may be present

4. The following are found in congenital Dyserythropoietic anaemia (CDA1):

T F a) poikilocytosis

T F b) low platelet count

T F c) erythroid binucleation

T F d) hepatosplenomegally

T F e) iron overload

5. The following are usually associated with pancytopaenia:

T F a) Sideroblastic anaemia

T F b) Aplastic anaemia

T F c) anaemia of chronic disorder

T F d) Myelodysplastic syndrome

T F e) PNH

6. Laboratory features in Megaloblastic anaemia include the following:

T F a) pancytopaenia

T F b) normocytic normochromic blood picture

T F c) polychromasia

T F d) presence of hyper segmented neutrophils

T F e) pelger huet anomaly

7. About transferrin in iron metabolism:

T F a) Contains 50% of serum Fe

T F b) Synthesised in the liver

T F c) Measured in blood as a marker of iron status

T F d) Production increased in iron overload

T F e) Usually about 95% saturated with Fe

8. **The following are causes of iron deficiency**:

T F a) Bleeding from the gastrointestinal tract

T F b) Fever where it is adaptive to control bacterial infection

T F c) Haemolytic anaemias

T F d) CDAs

T F e) Aplastic anaemia

9. The following are inherited types of aplastic anaemia:

T F a) PNH

T F b) Systemic lupus erythematosus

T F c) Fanconi's anaemia

T F d) Dyskeratosis congenita

T F e) Shwachman-Diamond syndrome

10. The following are causes of macrocytosis:

T F a) Liver disease with inadequate cholesterol esterification

T F b) Renal failure

T F c) Myelodysplasia

T F d) Post-splenectomy

T F e) All HIV drugs

11. The following patient categories should be tested for vit. B12 and Folate:

T F a) Hypersegmented neutrophils

T F b) Unexplained neurologic

T F c) Malnourished, particularly the elderly

T F d) Vegans with no history of supplementation

T F e) Diabetics on metformin with new onset neuropathy

12. The following conditions present with red cell fragments

T F a) HUS

T F b) Haemolytic transfusion reaction

T F c) Systemic lupus erythematosus

T F d) Vascular thromboembolism

T F e) Pre-eclampsia

13. The following are causes of anaemia in renal failure

T F a) Impaired cell survival

T F b) Stress ulceration from chronic disease may result in GIT loss

T F c) Reduced Production of RBC

T F d) Inflammation

T F e) Thrombotic thrombocytopenic purpura (TTP)

14. Bad prognostic markers of B-Chronic Leukaemia

T F a) CD138+

T F b) ZAP-70+

T F c) A high LAP score

T F d) A lymphocyte doubling time of 6 months

T F e) Mutated IgVH

15. The following phenotype is associated with acute myeloid leukaemia:

T F a) CD13+, CD34+, CD117+, TdT^-

T F b) CD3+, CD5+, CD34+, $CD117^-$

T F c) $CD3^-$, CD33+, CD34+, CD117+

T F d) CD10+, CD19+, CD34+, CD117-, TdT+

T F e) CD5+, CD10+, CD19+, CD22-, CD23+

16. **The following are non-neoplasm disorders:**

T F (a) Persistent polyclonal B-cell lymphocytosis (PPBL)

T F (b) Acute promyelocytic leukaemia (APML)

T F (c) T-cell mediated hypereosinophilia

T F (d) Myelodysplastic syndromes (MDS)

T F (e) Follicular lymphoma

17. The following factors are Vitamin K dependent:

T F (a) Fibrinogen

T F (b) Plasmin

T F (c) Protein C

T F (d) Prothrombin

T F (e) Factor VII

18. Thrombophilia screening tests:

T F (a) Prothrombin gene mutation

T F (b) APC Resistance assay

T F (c) Inhibitor assay

T F (d) Protein C assay

T F (e) Thrombin Time

19. Cytochemical techniques for the diagnosis of neoplasms:

T F (a) Sudan Black

T F (b) Periodic Acid Schiff

T F (c) Wright Stain

T F (d) Gram stain

T F (e) Giemsa stain

20. The following are considered as subclasses of chronic myeloid leukaemia:

T F a) Chronic eosinophilic leukaemia

T F b) Reactive eosinophilia

T F c) Juvenile myelomonocytic leukaemia

T F d) Myeloid leukaemoid reactions

T F e) Basophilic leukaemia

SECTION B: Short Answer Questions [25 marks]

Instructions: Answer All questions

1. Give 5 examples of genetic disorders of red cell membrane (5 marks)
2. List any 5 types of porphyria (5 marks)
3. Name any 5 kinds of internal bleeding with specific names (5 marks)
4. List 5 features used in the WHO criteria for the diagnosis of polycythemia vera (PV) (5 marks)
5. List any 5 cytochemical stains used in the diagnosis of leukemia (5 marks)

SECTION C: LONG ESSAYS [60 marks]

Instructions: Answer three (3) questions and each question carries ***20 marks***.

1. Discuss the PVSG and WHO diagnostic criteria for polycythemia
2. Compare and contrast the laboratory diagnostic features/ findings of ALL and AML.
3. With the use of examples, discuss both good and bad prognostic markers of B-CLL.
4. Describe any two congenital causes of thrombophilia.
5. Describe any two platelet disorders associated with defective adhesion function
6. Discuss the pathophysiology and diagnosis of the iron deficiency anaemia