

Candidate Number:.....



*“Investing in Africa’s Future”*

**COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES  
DEPARTMENT OF BIOMEDICAL AND LABORATORY SCIENCES**

**BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS**

**END OF SEMESTER EXAMINATIONS**

**NSLS407: HEMATOLOGY II**

**MAY 2025**

**LECTURER: PROF. EMMANUEL OBEAGU**

**DURATION: 3 HOURS**

***INSTRUCTIONS***

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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. Mark allocation for each question is indicated at the end of the question
  6. Credit will be given for logical, systematic and neat presentations in sections B and C
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**SECTION A (MULTIPLE CHOICE): 20 MARKS**

**Instruction: Answer all questions by encircling the correct response T for TRUE or F for FALSE for each statement in all the questions**

1. **What is the primary cause of microcytic anaemia?**
  - a) Vitamin B12 deficiency                      **T or F**
  - b) Iron deficiency                                **T or F**
  - c) Folate deficiency                              **T or F**
  - d) Chronic inflammation                      **T or F**
  
2. **Which of the following is a feature of megaloblastic anaemia?**
  - a) Microcytosis                                  **T or F**
  - b) Macrocytosis                                 **T or F**
  - c) Polychromasia                                **T or F**
  - d) Increased reticulocyte count              **T or F**
  
3. **The hallmark of haemolytic anaemia is:**
  - a) Decreased reticulocyte count              **T or F**
  - b) Increased reticulocyte count               **T or F**
  - c) Elevated white blood cell count           **T or F**
  - d) Decreased hemoglobin                      **T or F**
  
4. **Which of the following is the primary laboratory test for diagnosing iron deficiency anaemia?**
  - a) Serum vitamin B12                          **T or F**
  - b) Serum ferritin                                 **T or F**
  - c) Coombs test                                  **T or F**
  - d) Complete blood count (CBC)              **T or F**
  
5. **Which anaemia is associated with a deficiency of vitamin B12 or folic acid?**
  - a) Iron deficiency anaemia                      **T or F**

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- b) Hemolytic anaemia **T or F**
  - c) Megaloblastic anaemia **T or F**
  - d) Sickle cell anaemia **T or F**
6. **Polycythemia vera is primarily caused by a mutation in which gene?**
- a) JAK2 **T or F**
  - b) MYC **T or F**
  - c) BCR-ABL **T or F**
  - d) BRCA1 **T or F**
7. **Which of the following is a characteristic feature of secondary polycythemia?**
- a) Low erythropoietin levels **T or F**
  - b) High erythropoietin levels **T or F**
  - c) Low red blood cell mass **T or F**
  - d) Low hematocrit **T or F**
8. **Relative polycythemia occurs due to:**
- a) Increased erythropoietin **T or F**
  - b) Hemoconcentration **T or F**
  - c) Decreased red blood cell mass **T or F**
  - d) Genetic mutations **T or F**
9. **A person with polycythemia vera will most likely show which of the following in their laboratory test?**
- a) Decreased RBC count **T or F**
  - b) Increased RBC mass **T or F**
  - c) Normal erythropoietin levels **T or F**
  - d) Elevated white blood cell count **T or F**
10. **What is the primary risk associated with untreated polycythemia vera?**
- a) Leukemia **T or F**
  - b) Deep vein thrombosis **T or F**
  - c) Pulmonary embolism **T or F**
  - d) Splenomegaly **T or F**
11. **Which of the following is most commonly associated with neutrophilic leucocytosis?**
- a) Viral infections **T or F**

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- b) Bacterial infections **T or F**
- c) Chronic myeloid leukaemia **T or F**
- d) Lymphoma **T or F**

12. **What laboratory test is used to diagnose chronic myelogenousleukaemia (CML)?**

- a) Coombs test **T or F**
- b) PCR for BCR-ABL gene fusion **T or F**
- c) Bone marrow biopsy **T or F**
- d) Complete blood count (CBC) **T or F**

13. **Leucocytosis due to an acute inflammatory response is most often:**

- a) Neoplastic **T or F**
- b) Non-neoplastic **T or F**
- c) Genetic **T or F**
- d) Infectious **T or F**

14. **The presence of blast cells in peripheral blood is suggestive of:**

- a) Chronic infection **T or F**
- b) Acute leukaemia **T or F**
- c) Allergic reaction **T or F**
- d) Bone marrow failure **T or F**

15. **Which of the following is associated with eosinophilic leucocytosis?**

- a) Bacterial infections **T or F**
- b) Parasitic infections **T or F**
- c) Chronic myelogenousleukaemia **T or F**
- d) Acute viral infections **T or F**

16. **Thrombocytopenia is characterized by:**

- a) Low platelet count **T or F**
- b) High platelet count **T or F**
- c) Abnormal platelet function **T or F**
- d) Increased bleeding time **T or F**

17. **Immune thrombocytopenic purpura (ITP) results in:**

- a) Increased platelet count **T or F**
- b) Decreased platelet function **T or F**

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c) Increased bleeding time **T or F**

d) Increased platelet production **T or F**

**18. Qualitative platelet disorders primarily affect:**

a) Platelet count **T or F**

b) Platelet function **T or F**

c) Platelet morphology **T or F**

d) Platelet size **T or F**

**19. Which of the following is a common cause of secondary thrombocytosis?**

a) Bone marrow failure **T or F**

b) Iron deficiency **T or F**

c) Immune thrombocytopenic purpura **T or F**

d) Chronic inflammation **T or F**

**20. Which of the following is an example of a qualitative platelet disorder?**

a) Von Willebrand disease **T or F**

b) Immune thrombocytopenic purpura **T or F**

c) Glanzmann thrombasthenia **T or F**

d) Essential thrombocythemia **T or F**

### **SECTION B: 20 MARKS**

**Instruction: Answer all questions on separate answer sheets provided**

1. What is the relationship between anaemia and erythropoietin **5 Marks**

2. Mention 5 clinical implications of polycythaemia **5 Marks**

3. What is major growth hormone for thrombocytopenia **5 Marks**

4. List 5 benefits of autologous blood transfusion **5 Marks**

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**SECTION C: 60 MARKS**

**Instruction: Answer any 3 questions from this section on separate answer sheets provided**

1. Explain the pathophysiology of iron deficiency anaemia and its 5 laboratory manifestations  
**20 Marks**
2. Explain the pathogenesis and laboratory diagnosis of sickle cell anaemia. **20 Marks**
3. Explain the pathophysiology and 5 laboratory features of polycythemia vera **20 Marks**
4. Describe the 5 laboratory features of immune thrombocytopenic purpura (ITP) **20 Marks**
5. Explain the pathogenesis and 5 laboratory manifestations of haemophilia A and B **20 Marks**