

**BOWEN UNIVERSITY, IWO**  
**(Of the Nigerian Baptist Convention)**

**COLLEGE OF HEALTH SCIENCES**  
**MEDICAL LABORATORY SCIENCE PROGRAMME**  
**2021/2022 FIRST SEMESTER EXAMINATION**

**MLS 305; BASIC HAEMATOLOGY;**

**TIME: 2HRS**

**INSTRUCTION: ANSWER ANY TWO QUESTIONS FROM EACH SECTION**

**ALL QUESTIONS CARRY EQUAL MARKS**

**SECTION A**

1. a) Discuss an anticoagulant commonly used in haematological analysis. Your answer should include the mechanism of action, two (2) advantages and disadvantages of its use. (12 marks)
- b) List three (3) qualities of a good blood smear (3 marks)
- c) State three (3) differences between primary and secondary haemostasis. (6 marks)
- d) Describe a coagulation pathway, stating how it is initiated, plasma proteins involved and how it prevents blood loss from the vessels. (4 marks)
2. a) Describe in sequential order the three (3) stages in erythrocyte sedimentation. (9 marks)
- b) State the principle of total white blood cell count estimation. (4 marks)
- c) Write short note on any three (3) of the following. Your answer should include the type of specimen, principle and use of each
- i) Platelet count (4 marks)
- ii) Prothrombin time (4 marks)
- iii) Clotting time (4 marks)
- iv) Activated partial thromboplastin time (4 marks)
3. a) If a Cyanmethaemoglobin standard with an absorbance of 0.540 has a concentration of 70mg/dl and the patient's sample when diluted in 1:200 has an absorbance of 0.35. What is the patient's haemoglobin concentration? (5 marks)
- b) Determine the total white cell count, if 240 cells were counted in the four large corner squares of an haemocytometer with a depth of 0.1mm after making a 1:20 dilution. (5marks)
- c) Calculate the red cell indices for a patient with PCV of 45%, haemoglobin concentration of 15g/dL and red cell count of  $5.0 \times 10^{12}$  cells/L. (15 marks)

**SECTION B**

4. Describe the term "haemoglobinopathy". Highlight methods of detection of common haemoglobinopathy and describe a confirmatory test for identification of a named haemoglobin variant. (25 marks)
5. Describe the morphology and functions of haemopoietic cells in the peripheral blood in health. (25 marks)

6. Define each of the following and state one clinical significance:

- a) Cyanmethaemoglobin (5 marks)
- b) Haemoglobin synthesis (5 marks)
- c) Bone marrow microenvironment (5 marks)
- d) Haemoglobin breakdown (5 marks)
- e) Morphological changes in haemopoietic cells development (5 marks)