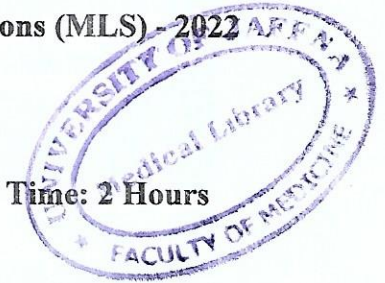


**UNIVERSITY OF JAFFNA, SRI LANKA**  
**FACULTY OF ALLIED HEALTH SCIENCES**  
**SECOND YEAR FIRST SEMESTER EXAMINATION IN BScHons (MLS) - 2022**  
**MLSHE 2115 HAEMATOLOGY I**

**PAPER II**

**Date: 18.12.2023**

**Time: 2 Hours**



**ANSWER ALL SIX QUESTIONS.**

1. The full blood count (FBC) report of a 45-year-old woman who presented with fatigue and weakness at the OPD clinic of Teaching Hospital Jaffna, is given below. The woman is having heavy menstrual bleeding over the last many months.

Total white blood cells count	4.7 x 10 <sup>9</sup> /L
Haemoglobin	5.2 g/L
Platelet count	243 x 10 <sup>9</sup> /L
Mean corpuscular volume (MCV)	68 fL
Mean corpuscular haemoglobin (MCH)	23 pg

- 1.1. Interpret the FBC findings. (15 marks)
- 1.2. State the most likely condition/disease giving reasons. (15 marks)
- 1.3. Describe expected blood picture findings in this patient. (15 marks)
- 1.4. Outline how anaemia is classified based on red blood cell morphology. (25 marks)
- 1.5. List the biochemical tests useful in the diagnosis of the condition mentioned in 1.2 stating expected findings. (30 marks)
2. Romanowsky stains are routinely used for morphological examination of blood cells in a haematology laboratory.
- 2.1. Name four (04) Romanosky stains commonly used in a haematology laboratory. (20 marks)
- 2.2. Write down the principle of Romanowsky Stains. (20 marks)
- 2.3. Explain how you would differentiate a Monocyte from an Eosinophil under the microscope in a stained blood smear. (20 marks)
- 2.4. Explain the basis for the following observations in a Romansky-stained blood smear.
- 2.4.1. Cells and details appear too blue. (20 marks)
- 2.4.2. Cells and details appear too pink. (20 marks)

3. Vitamin B12 and folate are essential for red blood cell production and maturation.
- 3.1. Outline the process of absorption of dietetic vitamin B12. (40 marks)
  - 3.2. Describe how folate deficiency causes megaloblastic anaemia. (30 marks)
  - 3.3. Give a classical full blood count and peripheral blood smear examination report for a suspected megaloblastic anaemia patient. (30 marks)
4. The haemoglobincyanide method is an internationally recommended method for haemoglobin estimation.
- 4.1. List the components of Drabkin's solution. (20 marks)
  - 4.2. Write how you would store Drabkin's reagent in the laboratory. (10 marks)
  - 4.3. Outline the principle of haemoglobincyanide method. (25 marks)
  - 4.4. Name the most common anticoagulant used for haemoglobin estimation. (05 marks)
  - 4.5. Briefly explain the mode of action of the anticoagulant you mentioned in 4.4. (20 marks)
  - 4.6. List four (04) specimen collection and handing errors that can lead to erroneous results in haemoglobin estimation. (20 marks)
- 5.
- 5.1. Explain how vitamin B12 deficiency is developed in pernicious anaemia. (50 marks)
  - 5.2. Briefly describe how the Schilling test supports the diagnosis of pernicious anaemia. (25 marks)
  - 5.3. Outline classification of haemolytic anaemia. (25 marks)
- 6.
- 6.1. Differentiate the following cells based on their cell size and nuclear and cytoplasmic characteristics.
    - 6.1.1. Proerythroblast and basophilic erythroblast (25 marks)
    - 6.1.2. Promyelocyte and myelocyte (25 marks)
  - 6.2. Briefly describe the principle of the following,
    - 6.2.1. Reticulocyte count (25 marks)
    - 6.2.2. Electrical impedance technique used in automated FBC analyzers. (25 marks)