



UNIVERSITY OF JAFFNA, SRI LANKA
FACULTY OF ALLIED HEALTH SCIENCES
SECOND YEAR FIRST SEMESTER EXAMINATION IN BScHons (MLS) - 2021
MLSHE 2115 HAEMATOLOGY I
PAPER II

Date: 08.03.2023

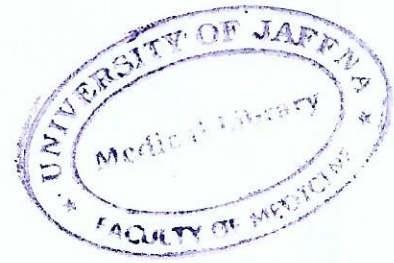
Time: 2 Hours

ANSWER ALL SIX QUESTIONS.

1. Iron metabolism plays a major role in erythropoiesis..
 - 1.1. Discuss iron absorption in the human gut. (40 marks)
 - 1.2. Briefly describe the role of Hepcidin in iron homeostasis. (30 marks)
 - 1.3. State the classical full blood count and serum iron study findings of iron deficiency anaemia. (30 marks)

2. Haematopoiesis is the production of blood cells from bone marrow.
 - 2.1. List five (5) characteristics of a haematopoietic stem cell. (20 marks)
 - 2.2. Diagrammatically illustrate the sequence of development of red blood cells and neutrophil from bone marrow. (60 marks)
 - 2.3. Briefly explain how you would morphologically differentiate a mature neutrophil from eosinophil under a light microscope. (20 marks)

3. Automated haematology analyzers play a major role in generating Full Blood Count reports over manual methods.
 - 3.1. List five (5) advantages of automated hematology analyzers. (20 marks)
 - 3.2. Briefly explain the working principle of the following cell counting techniques used in the automated FBC analyzers.
 - 3.2.1. Electrical impedance (20 marks)
 - 3.2.2. Light scatter (20 marks)
 - 3.3. Briefly outline the principle of the following laboratory tests.
 - 3.3.1. Hemoglobin estimation by haemoglobincyanide method (20 marks)
 - 3.3.2. Reticulocyte count (20 marks)



4. Write short notes on
- 4.1. Principle and clinical application of Romanowsky stains. (35 marks)
 - 4.2. Principle of manual WBC counting using a counting chamber and its limitations. (35 marks)
 - 4.3. Common anticoagulants used in a Haematology laboratory. (30 marks)
5. The laboratory report of a 55-year-old male who presented with tiredness and a sore mouth at the OPD clinic of Teaching Hospital Jaffna, is given below.
- | | |
|-------------------------------|---|
| White blood cells | $3.3 \times 10^9 /L$ |
| Hemoglobin concentration | 4.9 g/L |
| Platelet | $95 \times 10^9 /L$ |
| Mean corpuscular volume (MCV) | 112 fL |
| Blood film examination | oval macrocytes with hypersegmented neutrophils |
- 5.1. What is the most likely diagnosis? (15 marks)
 - 5.2. Briefly explain how you have diagnosed the condition mentioned in 5.1. (35 marks)
 - 5.3. List possible causes for the diagnosis mentioned in 5.1. (30 marks)
 - 5.4. Briefly describe the investigations that support and confirm the above diagnosis. (20 marks)
6. Pernicious anaemia is an autoimmune disease.
- 6.1. Briefly describe how the presence of autoantibodies causes B12 deficiency in pernicious anaemia. (50 marks)
 - 6.2. Explain how Vitamin B12 deficiency causes megaloblastic anaemia. (50 marks)