UNIVERSITY OF JAFFNA, SRI LANKA

FACULTY OF ALLIED HEALTH SCIENCES

SECOND YEAR FIRST SEMESTER EXAMINATION IN B.Sc HONS (MLS) - 2020

MLSHE 2115 HAEMATOLOGY I

PAPER II

Date: 27.06.2022 **Time: 2 Hours**

ANSWER ALL SIX QUESTIONS.

1. The full blood count (FBC) is a routine laboratory test performed by automated hematology analyzers.
   1.1. Name the most common anticoagulant of choice and its mechanism of action for the above test. (30 marks)
   1.2. List five (5) specimen collection and handling errors that can lead to incorrect/spurious results of the above test. (20 marks)
   1.3. Describe different principles used for counting blood cells in automated full blood count analyzers. (50 marks)

2.
   2.1. Define the term "Haematopoiesis". (10 marks)
   2.2. Schematically show the process of neutrophil development in the bone marrow. (30 marks)
   2.3. Briefly describe the morphological features of the following blood cells observed under x100 power objectives.
      2.3.1. Neutrophil (10 marks)
      2.3.2. Eosinophil (10 marks)
      2.3.3. Basophils (10 marks)
      2.3.4. Monocyte (10 marks)
   2.4. Differentiate the "Proerythroblasts" and "Orthochromatic erythroblasts" based on their cell size and nuclear and cytoplasmic characteristics. (20 marks)

3. Red cell parameters of full blood count of an adult male patient suspected of anaemia is given below.

Red blood cells	4.6×10^{12} /L
Haemoglobin concentration	90 g/L
Haematocrit	0.32

3.1. Briefly explain the morphological classification of anaemia. (30 marks)

3.2. Give two (2) possible causes for each type of anemia you mentioned in 3.1. (30 marks)

3.3. State the morphological types of anaemia of the above patient by calculating the appropriate red cell indices. (20 marks)

3.4. If the patient had long standing haemorrhoids with no appropriate treatment, state the morphological abnormalities of red blood cells you would expect in the blood smear of this patient? (20 marks)

4.

4.1. Name two (2) Romanowsky stains routinely used for morphological examination of blood cells in a haematology laboratory. (20 marks)

4.2. Outline the principle of Romanowsky stains. (30 marks)

4.3. Briefly explain the basis for following observations in a Romansky-stained blood smear.

4.3.1. Cells and details appear too blue (15 marks)

4.3.2. Cells and details appear too pink (15 marks)

4.4. List five (5) common causes which lead to poor-quality blood smears. (20 marks)

5.

5.1. Describe the mechanism of absorption of Vitamin B12 (cobalamin) in the human gut. (50 marks)

5.2. List five (5) causes for Vitamin B12 deficiency. (25 marks)

5.3. List the microscopic findings of the peripheral blood smear that can support the diagnosis of Vitamin B12 deficiency. (25 marks)

6.

6.1. Describe mechanisms of recognizing ageing red cells for the breakdown? (15 marks)

6.2. Outline haemoglobin breakdown including the fate of its products. (40 marks)

6.3. List five tests useful to diagnose haemolytic anaemia (15 marks)

6.4. Outline classification of haemolytic anaemia (30 marks)