UNIVERSITY OF JAFFNA, SRI LANKA

FACULTY OF ALLIED HEALTH SCIENCES

SECOND YEAR SECOND SEMESTER EXAMINATION IN BScHons (MLS) - 2020

MLSHE 2235 HAEMATOLOGY II

PAPER II

Date: 13.01.2023 **Time: 2 hours**

Answer all Eight Questions.

Answer Part A and B in Separate Answer Books.

Part A

1. Prothrombin Time (PT) and Activated Partial Thromboplastin Time (APTT) are routine tests used to analyze the coagulation state of a patient.
   - **1.1.** Explain the principle of PT and APTT **(40 Marks)**
   - **1.2.** Name the anticoagulant of choice and its ratio suitable for PT and APTT **(15 Marks)**
   - **1.3.** Briefly explain the preanalytical errors that lead to erroneous results in PT and APTT **(35 Marks)**
   - **1.4.** List **two (2)** medical conditions or diseases which shows elevated levels of both PT and APTT **(10 Marks)**

2. Hemostasis is the mechanism that leads to cessation of bleeding from a blood vessel.
   - **2.1.** Explain the mechanism of action of platelet plug formation in hemostasis **(50 Marks)**
   - **2.2.** Describe the coagulation cascades of normal hemostasis **(50 Marks)**

3. Write short note on
   - **3.1.** Classification of von Willebrand disease **(30 Marks)**
   - **3.2.** Mechanism of action of fibrinolytic system **(30 Marks)**
   - **3.3.** PFA-100 system **(40 Marks)**

4. Leukemia is a type of haematological malignancy.

4.1. List **five (5)** characteristics of haematopoietic stem cells **(25 Marks)**

4.2. Name the cells which are derived from myeloid progenitor cell **(25 Marks)**

4.3. Define "Acute Myeloid Leukemia (AML)" **(20 Marks)**

4.4. Describe the molecular basis of leukaemogenesis **(30 Marks)**

5.

5.1. List **four (4)** coagulation inhibitors present in blood **(20 Marks)**

5.2. Explain the mechanism of action of coagulation inhibitors mentioned in 5.2 **(40 Marks)**

5.3. What is Philadelphia chromosome **(15 Marks)**

5.4. List **five (5)** laboratory techniques which can detect Philadelphia chromosome **(25 Marks)**

Part B

6. A patient suspected of haemolytic anaemia is admitted to a medical ward. They collected following samples from the patients and sent to the laboratory for testing.
An EDTA sample, a blood sample collected in to a plain tube and a urine sample

6.1. List **three (3)** preliminary tests which can be performed using EDTA sample which are helpful in the diagnosis of haemolytic anaemia and indicate expected salient findings in each in haemolytic anaemia **(25 Marks)**

6.2. List **two (2)** preliminary tests which can be performed using the blood sample collected in to a plain tube which are helpful in the diagnosis of haemolytic anaemia and indicate expected salient findings in each in haemolytic anaemia **(15 Marks)**

6.3. Briefly outline the basis for **two (2)** findings you mentioned in question 5.2 **(15 Marks)**

6.4. List the **three (3)** tests which can be performed using a urine sample which are helpful in the diagnosis of haemolytic anaemia and indicate expected findings in each in haemolytic anaemia **(20 Marks)**

6.5. State the confirmatory test and expected findings in beta thalassaemia major **(10 Marks)**

6.6. Briefly outline how diagnosis is confirmed in hereditary spherocytosis **(15 Marks)**

7. In a newly constructed large hospital has allocated one floor to establish the laboratory. The management has planned establishing all the routine tests in haematology first. They have decided to have fully automated analyzers in haematology.

7.1. List the preliminary tests in haematology you would think most important for a large hospital **(10 Marks)**

7.2. Outline how quality should be managed in automated analyzers **(40 Marks)**

7.3. Briefly describe safety requirements of a haematology laboratory **(30 Marks)**

7.4. Briefly describe how to manage quality of technical team of a laboratory **(20 Marks)**

8. Defects of haemoglobin are diverse. Haemoglobin synthesis evolve progressively from embryonal life to post-natal life.

8.1. Outline how haemoglobin synthesis change from intrauterine life to post-natal life **(20 Marks)**

8.2. List two tests useful for the detection of abnormal haemoglobin and the principle of one of the tests mentioned **(30 Marks)**

8.3. Outline how defects of haemoglobin are classified giving examples **(20 Marks)**

8.4. Prepare a tests flowchart from initial/preliminary investigations to confirmation in **one** disease of haemoglobin defect stating expected findings **(30 Marks)**