THE OPEN UNIVERSITY OF SRI LANKA
21 JUL 2016
EXAMINATION DIVISION

036

The Open University of Sri Lanka
Faculty of Health Sciences
Bachelor of Medical Laboratory Sciences (B.MLS)
MLU3245 – Advanced Clinical Haematology
Semester 02- Academic year 2015/2016
Final Examination July 2016
Return your question papers with the answer sheets

Date: 21. 07. 2016	**Duration: 3 hours**
Time: 01.00 p.m. – 04.00 p.m.	**Index No:.....**

Please read the following instructions carefully before you answer the paper.

Answer all the questions.

Part A: Multiple Choice Questions (30 marks)

There are **thirty** multiple choice questions in this paper, each question has four responses. Select the **best response** and put 'X' mark for the correct answer in the given answer sheet.

Part B: Structured Essay Questions (40 marks)

You are given **four** questions. Each question contains three parts. Answer question 1 and 2 separately in one answer booklet and 3 and 4 in another answer booklet.

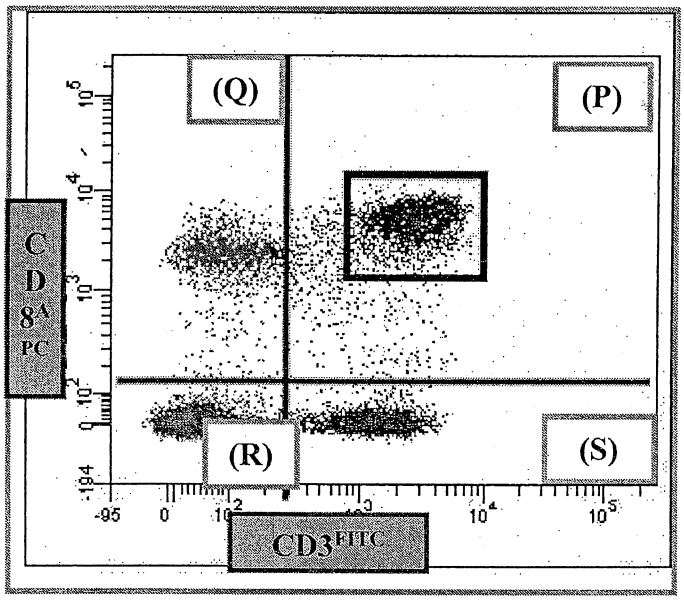
Part C: Essay Questions (30 marks)

There are **two** essay questions. Write your answers in the booklets provided.

Good Luck!

Part B: Structured Essay Questions (40 marks)

1) A dot plot chart obtained after flow cytometric analysis of T cytotoxic cells (CD8) in a peripheral blood is shown below.



1.1 Comment on the results of dot plot areas of P, Q, R and S. (04 marks)

1.2 Explain why CD3 is used in the analysis of T cytotoxic (CD8) cells. (02 marks)

1.3 Briefly describe how you would obtain CD4/CD8 ratio. (04 marks)

2) Mass spectrometers can ionize large biomolecules in a solid or liquid phase and to transfer them to the gas phase. Mass spectrometry plays the key role in Proteomics.

2.1 List three (03) major parts of a mass spectrometer. (03 marks)

2.2 Describe the terms "**Proteome**" and "**Proteomics**". (04 marks)

2.3 Name three (03) protein analysis techniques other than mass spectrometry. (03 marks)

3) Myeloproliferative disorders

3.1. What is meant by a "myeloproliferative disorder"? (02 marks)

3.2. List **two** (02) diseases categorized as Myeloproliferative disorders.(02 marks)

3.3. Write the changes associated with number of red cells, white cells and platelets in **two** (02) of the above disease. (06 marks)

4) Cytogenetics in Haematology

4.1. What is the difference between heterochromatin and euchromatin? (02 marks)

4.2. Define the term 'karyotype'. List the steps of karyotyping procedure.(05 marks)

4.3. List **three** (03) Hematological diseases that can be diagnosed using cytogenetics. (03 marks)

Part C: Essay Questions (30 marks)

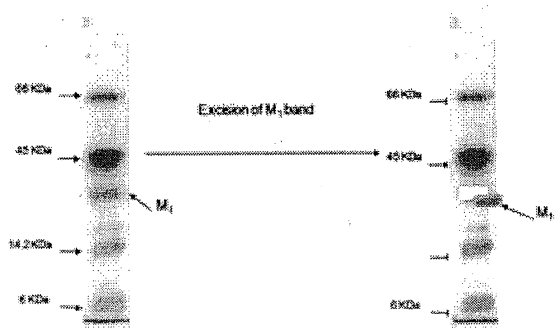
1) Write short notes on the following.

1.1. CD antigens on hematopoietic cells. (05 marks)

1.2. Chemokine Receptor type 4 (CXCR4). (05 marks)

1.3. Storage of stem cells post harvesting. (05 marks)

2) Human erythrocyte membrane proteins were isolated from whole blood, were subjected to 1-D-SDS/PAGE (One dimensional sodium dodecyl sulfate polyacrylamide gel electrophoresis) and the gel was stained with silver is shown below. M1 band was dissected out from the gel for further analysis.



2.1. Outline the **steps** you would perform to identify M1 by employing peptide mass fingerprinting (PMF). (06 marks)

2.2. What **problems** you would get when identifying proteins in the method mentioned in (2.1)? (03 marks)

2.3. Explain briefly **the importance** of identifying membrane proteins on cells. (06 marks)

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