UNIVERSITY OF JAFFNA, SRI LANKA

BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES

FOURTH YEAR SECOND SEMESTER EXAMINATION- JULY 2015

MLSIH 4202 IMMUNOHAEMATOLOGY

PAPER II

DATE: 03.08.2015   TIME: 2½ Hours

ANSWER ALL EIGHT QUESTIONS.

1. Discovery of the ABO system by Landsteiner marked the beginning of safe blood transfusion

    1.1) Mention 5 blood group system recognised by the international society of blood
          transfusion(ISBT) working party   (25 marks)

    1.2) List 4 Erythroid specific (expressed only on red cells) red cell antigens   (20 marks)

    1.3) Mention the 3 separate genetic loci that control the expression of ABO antigen
          and mention the chromosome on which the genetic loci is located   (30 marks)

    1.4) Mention 3 ways by which hyper immune anti A and anti B can be formed   (15 marks)

    1.5) Mention 2 blood groups of mothers who can produce hyper immune anti A
          or anti B that can cause ABO haemolytic disease of newborn   (10 marks)

2. The red cell is a convenient marker for serological reaction

    2.1) Describe the 2 stages of antigen antibody reaction   (20 marks)

    2.2) Mention 3 factors that influence the strength of binding of antigen and
          antibody   (12 marks)

    2.3) Describe 3 standard laboratory procedures that promote agglutination of
          IgG sensitized red cells   (30 marks)

    2.4) Describe the microscopic scoring of results in the red cell agglutination tests (18 marks)

    2.5) Mention the four rules that are followed in the routine laboratory work when using
          low ionic strength media to avoid false positive results   (20 marks)

3. Autoimmune haemolytic anaemia is the results of auto antibodies to a patient's own red cell antigens

    3.1) Mention the 2 broad categories of auto antibodies according to the temperature
          characteristics   (20 marks)

    3.2) Describe the principle behind direct and indirect antiglobulin test   (20 marks)

    3.3) Mention 5 causes for positive direct antiglobulin test   (25 marks)

    3.4) Mention 5 causes for false negative antiglobulin test results   (25 marks)

    3.5) Mention the preferred blood sample for direct antiglobulin test   (10 marks)

4. Safe and effective blood transfusion requires the combined effort of several teams

    4.1) Briefly describe the 7 steps that should be followed in the process of providing blood for transfusion (pre transfusion compatibility system)   (35 marks)

    4.2) List 5 causes for false positive reaction in ABO/D grouping   (25 marks)

    4.3) List 4 causes of false negative reaction in ABO/D grouping   (20 marks)

    4.4) Define massive blood transfusion   (20 marks)

5.

    5.1) Define haemolytic disease of the fetus and newborn   (20 marks)

    5.2) Briefly describe the protocol recommended by British committee for standards in Haematology(BCSH) for antenatal screening and follow up towards the prevention and management of Haemolytic disease of fetus and newborn   (50 marks)

    5.3) Briefly describe the test performed to estimate the quantity of fetal cells in the maternal circulation   (30 marks)

6. Standardization of oral anticoagulation therapy comprises several steps

    6.1) Briefly describe how International Sensitivity Index(ISI) value of a chosen Thromboplastin is determined   (50 marks)

    6.2) Describe how you would determine the geometric mean normal Prothrombin time for a thromboplastin   (20 marks)

    6.3) Mention how International Normalized Ratio(INR) is determined   (30 marks)

7. Immunophenotyping plays a major role in the diagnosis of haematological malignancies

    7.1) Mention 3 techniques for the identification of antigens expressed by leucocytes   (30 marks)

    7.2) List the initial monoclonal Antibody panel useful for the diagnosis and classification of acute leukaemia   (40marks)

    7.3) List 5 immunological markers that are included in the scoring system for the diagnosis of chronic lymphocytic leukaemia   (30 marks)

8.

    8.1) List 5 tests used in the laboratory control of heparin treatment   (25 marks)

    8.2) Tabulate the advantages and disadvantages of the 5 tests you mentioned in 8.1   (50 marks)

    8.3) Briefly describe the underlying mechanism of type II Heparin induced thrombocytopenia(HIT)   (25 marks)