

UNIVERSITY OF JAFFNA, SRI LANKA
 FIRST YEAR FIRST SEMESTER EXAMINATION IN
 BScHONS (MEDICAL LABORATORY SCIENCES) - 2021



MLSBM1163 – BIOCHEMISTRY FOR MEDICAL LABORATORY SCIENCES I

PAPER II

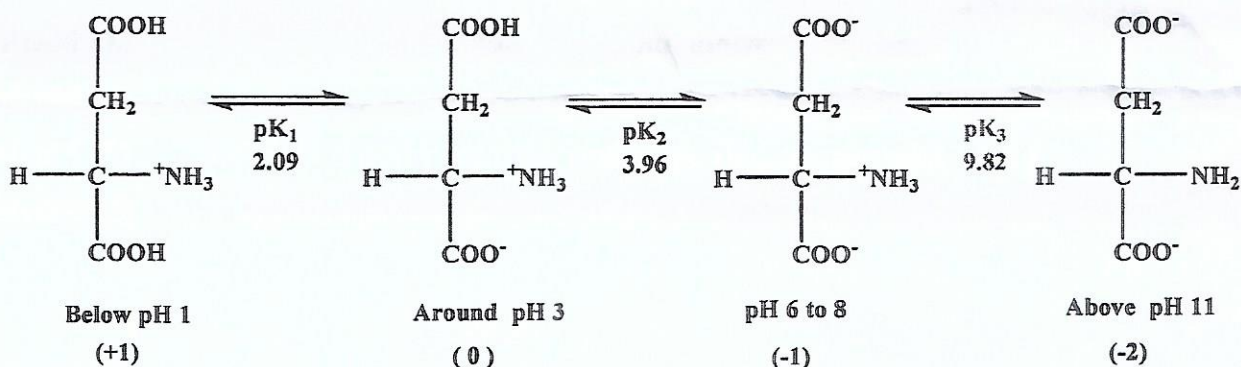
19.12.2022

Time: 2 Hours

Answer All Six Questions.

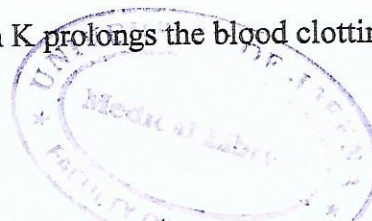
Answer Each Question in Separate Answer Books.

1. 1.1 What is meant by Isoelectric point (pI) of an amino acid. (10 Marks)
- 1.2 List the characteristic of amino acids at their Isoelectric pH (pI). (20 Marks)
- 1.3 The pKa values of the dissociable groups of aspartic acid are given below. Explain how the Isoelectric pH of aspartic acid can be calculated. (20 Marks)



- 1.4 At which pH can aspartic acid act best as a buffer? (10 Marks)
- 1.5 Give the basic principle of electrophoresis. (25 Marks)
- 1.6 Explain how the pI values are useful in the separation of proteins by electrophoresis. (15 Marks)

2. 2.1 Give the biochemical basis of physiological jaundice in a new born. (20 Marks)
- 2.2 Give the expected changes in the above new born on
- 2.2.1 different fractions of bilirubin in blood. (15 Marks)
- 2.2.2 bilirubin and urobilinogen in urine. (15 Marks)
- 2.2.3 bile salt in urine. (10 Marks)
- 2.3 Give the names of the biochemical tests for
- 2.3.1 different fractions of bilirubin in blood. (10 Marks)
- 2.3.2 bilirubin in urine. (10 Marks)
- 2.3.3 urobilinogen in urine. (10 Marks)
- 2.3.4. bile salt in urine. (10 Marks)
3. 3.1 A 30-year old woman from Nuwara Eliya district had the plasma T_4 level of 40nmol/L (normal 65-130nmol/L). She was a strict vegetarian and consumed only upcountry vegetables. Intake of iodized salt has improved plasma T_4 level. A survey carried out in that particular area revealed that many of the residents had lower plasma T_4 level.
- 3.1.1 What could be the probable condition in the female mentioned above? (10 Marks)
- 3.1.2 Explain with the help of a labelled diagram, how the intake of iodized salt improved her condition. (35 Marks)
- 3.2 3.2.1 List four dietary sources of iron. (10 Marks)
- 3.2.2 Diagrammatically show how the dietary iron is absorbed. (25 Marks)
- 3.3 Explain how the pancreatic insufficiency causes steatorrhoea. (20 Marks)
4. 4.1 Give three dietary sources of folic acid? (10 Marks)
- 4.2 How does folic acid deficiency lead to megaloblastic anaemia? (40 Marks)
- 4.3 Explain the biochemical basis of treating the leukaemia patients with folic acid antagonists. (10 Marks)
- 4.4 Explain how a deficiency of vitamin K prolongs the blood clotting time. (40 Marks)



5. 5.1 Explain the biochemical basic of treating myasthenia gravis patients with neostigmine. (25 Marks)
- 5.2 How do the constituents of Oral Rehydration Salt (ORS) benefit diarrhoeal patients? (25 Marks)
- 5.3 Even though the NADH is not transported through the inner mitochondrial membrane, the NADH formed in the cytoplasm is oxidized in the mitochondria. Explain. (25 Marks)
- 5.4 Give the structure of an immunoglobulin and explain how the structure suits for its function. (25 Marks)
6. 6.1 Write short notes on the biochemical basis of classifying human blood groups. (25 Marks)
- 6.2 Heparin is more polar than heparin sulphate. Explain. (20 Marks)
- 6.2 Explain the functions of phospholipids. (20 Marks)
- 6.3 Explain why fatty acid salts are used as detergents and not the free fatty acids. (15 Marks)
- 6.4 List the functions of cholesterol in human body. (20 Marks)

