21

RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. Honors in Applied Biology
Third Year – Semester II Examination – July 2020

MIB 3206 – ANALYTICAL TECHNIQUES IN MOLECULAR BIOLOGY

Time: Two (02) hours

Answer ALL questions.

---

1. a) Define the term "salting out" in protein purification. **(20 marks)**

   b) Describe briefly the steps that you would follow in determining the primary structure of a pure protein. **(80 marks)**

2. a) Describe briefly, **three (03)** methods of extracting secondary metabolites in plants. **(30 marks)**

   b) Explain how "distribution coefficient" of components in the sample affects their separation during chromatography. **(20 marks)**

   c) Which chromatographic technique would you choose to separate a mixture of proteins bearing a similar charge but different in size? Justify your answer. **(50 marks)**

3. a) Explain why several steps of centrifugation is necessary in purifying a substance using pelleting. **(30 marks)**

   b) Compare rate zonal centrifugation and isopycnic centrifugation. **(40 marks)**

   c) Explain the importance of nomogram in reporting results of centrifugation. **(30 marks)**

4. a) You are provided with a mixture of organic compounds X and Y dissolved in acetone and you are asked to determine the concentrations of X and Y in the mixture. You have access to pure samples of X and Y, acetone and a spectrophotometer with accessories.

   Give an outline of the procedure that you would follow in solving above problem. Limit you answer only to the major steps. **(40 marks)**

   b) "Fluorescence spectroscopy is superior to absorption spectroscopy in terms of sensitivity".
   Justify your opinion of the above statement. **(60 marks)**

--- END---