RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (Special) Degree in Applied Biology
Third Year –Semester II Examination –February/March 2019

MIB 3206 – ANALYTICAL TECHNIQUES IN MOLECULAR BIOLOGY

Time: Two (02) hours

Answer ALL questions.

1. a) Six proteins with different pI values as 2, 3, 6, 7, 9 and 11 are present in a plant extract. What would be the expected order of elution, when an anion exchange column equilibrated at pH 7.4 was used? Explain your answer. **(30 marks)**

   b) Explain how the electrophoretic separation of proteins depends on the pH of the medium. **(20marks)**

   c) A student working with a protein, accidently mixed it with a salt solution. Unfortunately, neither chromatographic columns nor resins are available in the laboratory. Explain a method which could be used to remove salts from the protein sample. **(50 marks)**

2. a) Define "distribution coefficient" in chromatography and explain how it affects the separation of a mixture into its' individual components. **(30 marks)**

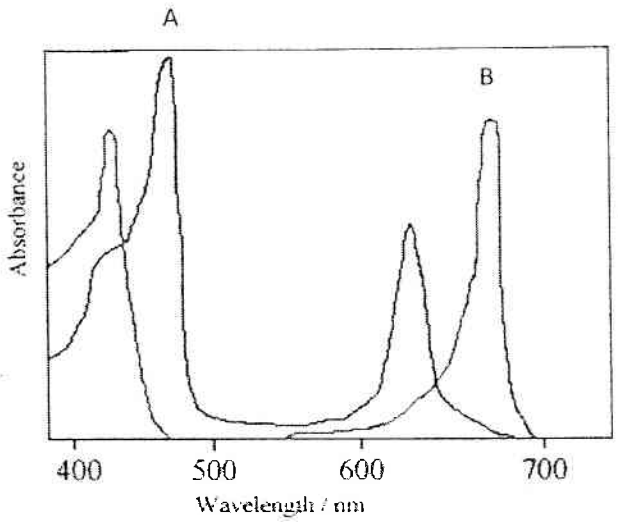
   b) Describe qualitative and quantitative methods used for component detection in TLC. **(70 marks)**

3. a) Give a brief account of the technical advancements that have led to the development of modern sophisticated centrifuges. **(70 marks)**

   b) Explain the importance of RCF in reporting the conditions of centrifugation over RPM. **(30 marks)**

4. a) Following figure shows the absorption spectra of compounds 'A'and 'B'. Validate selecting 475 nm as the most suitable wavelength of light to measure the concentration of 'A' in the absence of B using spectrophotometry. **(30 marks)**

b) Justify the use of the same wavelength (475 nm) for the determination of concentration of 'A' when 'B' is present in the sample as a contaminant. **(30marks)**



c) Explain the steps followed in sandwich ELISA procedure with underlying principle(s). **(40 marks)**

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