

**M. Sc. (CHEMISTRY) EXAMINATION, 2022**

( 4th Semester, CBCS )

**ANALYTICAL CHEMISTRY SPECIAL**

**PAPER – XIV-A**

Time : Two hours

Full Marks : 40

**(20 marks for each unit)**

**Use a separate answer script for each Unit.**

**UNIT: 4141a & 4141b**

1. Answer *any five* questions : 5×2
  - a) What is electrophoresis? What do you mean by cataphoresis and anaphoresis?
  - b) Explain the role of gel electrophoresis in separating bio-molecules.
  - c) What are the most common types of gel electrophoresis? Discuss in brief.
  - d) What are the merits and demerits of gel electrophoresis?
  - e) What are the factors that affect gel electrophoresis?
  - f) What is the difference between centrifuge and ultracentrifuge?
  - g) What is the principle of centrifugation?
  
2. a) What is Bradford assay? 3

[ Turn over

[ 2 ]

- b) What are the chromogenic substances used for the detection of horseradish peroxidase and  $\beta$ -galactosidase? Pictorially represent a spectrofluorometer. 3+1
- c) What is the effect of temperature and solvent viscosity on static and dynamic quenching? 3

**UNIT: A-4142**

**(Answer all questions)**

3. a) Draw a labelled diagram of the structure of the atmosphere and mention the characteristics of its different layers. 4
- b) Discuss the principle and chemical reactions involved in Winkler's Method for the estimation of **Dissolved Oxygen** in a water sample. 3
- c) Illustrate the principle for the estimation of **NO<sub>x</sub>** in an environmental sample. 2
- d) Is greenhouse effect unnecessary to Earth? 1
4. a) How do you analyse total carbohydrates in food by the **Anthrone** method? 3
- b) What do you mean by food preservatives? How do you identify qualitatively the presence of benzoic acid in food as a preservative? 2

[ 3 ]

- c) Describe the **Babcock** method for the determination of fat in milk. 2
- d) Define Active Pharmaceutical Ingredient (**API**) with suitable example. 1
- e) What is tabletability and why is it so important in pharmaceutical industry? 1
- f) What is the full form of **FSSAI** and what is the foremost responsibility of **FSSAI** in India. 1