

BACHELOR OF SCIENCE (CBCS-2018 COURSE)
T. Y. B. Sc. Sem-V : WINTER- 2022
SUBJECT : CHEMISTRY : ANALYTICAL CHEMISTRY-I

Day : Wednesday
Date : 14-12-2022

W-18417-2022

Time : 02:00 PM-05:00 PM
Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the **RIGHT** indicate **FULL** marks.
 - 3) Draw neat diagrams **WHEREVER** necessary.
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- Q.1** Attempt **ANY TWO** of the following : (12)
- a) Discuss the importance of common ion effect. Explain it with suitable example.
 - b) Explain in detail measurement of specific rotation by using polarimeter.
 - c) Draw a diagram of TGA and discuss instrumentation of TGA in detail.
- Q.2** Attempt **ANY TWO** of the following : (12)
- a) Explain the role of digestion in purification of a precipitate.
 - b) Describe the principle and construction of Turbidimeter.
 - c) Write a note on application of AAS.
- Q.3** Attempt **ANY TWO** of the following : (12)
- a) A solution of optically active compound with concentration 2.5 gm/100 ml in 4M HCl has an observed rotation of $+2.80^\circ$ in 20 cm. polarimeter. Calculate the specific rotation and molar rotation of the compound. [Given : mol. wt. of compound = 131.6].
 - b) The solubility product of BaCO_3 is 1.12×10^{-11} gm/lit. at 25°C . Calculate the solubility of BaCO_3 in water in grams per litre and in gram moles per litre. (Mol. wt. of BaCO_3 is 197.34).
 - c) The solubility of silver chromate is 0.0270 gm/lit. at 25°C . Calculate its solubility product. (Molecular weight of Ag_2CrO_4 is 332).
- Q.4** Attempt **ANY THREE** of the following : (12)
- a) Explain the factors affecting thermogravimetric curves.
 - b) Discuss – i) Radiation Source ii) Atomizers iii) Monochrometer iv) Detectors of Atomic Absorption Spectroscopy.
 - c) Explain the factors affecting the nephelometric and turbidimetric measurements.
 - d) List various types of thermal analysis and discuss principle of TGA.
- Q.5** Attempt **ANY FOUR** of the following : (12)
- a) Write any two applications of polarimetry.
 - b) Define the terms: i) Angle of rotation ii) Optical isomerism iii) Thermobalance.
 - c) How will you select and use a filter paper for filtering the given precipitate?
 - d) Write a note on Hollow Cathode Lamp.
 - e) Discuss the determination of molecular weight of high polymers by turbidimetry.
