

3 Hours

(Total marks: 80)

- N.B. 1. All questions are compulsory  
2. Figures to right indicate full marks.  
3. Draw neat labelled diagrams wherever necessary.  
4. Attempt answer of each main question on new page.

Q.1 A. Explain the terms –

- i. Reducing agent
- ii. Back titration
- iii. Ligand
- iv. Decomposition potential
- v. Normality
- vi. Complexones

(6)

B. Answer the following questions:

(14)

- i. Explain principle behind determination of end point in iodometric titration
- ii. Give Nernst Equation and state its significance to titrimetry.
- iii. State Ohm's law and Faraday's first law of electrolysis.
- iv. Differentiate between oxidising properties of potassium permanganate and ceric ammonium sulphate.
- v. What are argentometric titrations? Name the indicators used in Mohr's and volhard's method for determination of chlorides.
- vi. Fifty seven percent of a solute is removed from 100 mL of an aqueous solution by extraction with 100-mL of an organic solvent. What is the distribution ratio of the solute?
- vii. What is molarity of a solution which contains 6 g of NaCl (mol wt 58.5) in 500ml of solution?.

Q. 2 A. i. Give the principle involved in assay of sodium benzoate.

(2)

ii. Give the role of DMSO and sodium methoxide in non aqueous titrations.

(2)

B. What is Solubility product? Give an account of Volhard's method.

(4)

C. Write a note on Amperometric titrations.

(4)

OR

How is Karl Fischer reagent prepared and standardised?

Q. 3 A. What is monograph? Give therapeutic dose, category and reactions involved in assay of soluble aspirin tablet.

(4)

B. Explain the following terms:

(4)

- i. Supporting electrolyte
- ii. Residual current
- iii. Diffusion current
- iv. Limiting current

OR

What is polarography? Explain construction, working of DME.

**[TURN OVER**

2

C. Balance the following reactions. Identify the oxidising agents in each reaction. (4)



Q. 4 A. What are mixed indicators? Explain Ostwald's theory of neutralisation indicators. (4)

B. i. Sulphuric acid is used in permanganometric titrations. Justify (2)

ii. Name the type of titration and titrant involved in assay of paracetamol and ascorbic acid. (2)

C. i. What are the ideal conditions of precipitation in gravimetric analysis? (2)

ii. Explain co-precipitation. (2)

Q. 5 A. A series of API assays yielded the following values in terms of percent purity. (4)

100.99%	98.99%	101.99%	99.99%	99.99%
99.5%	99 %			

Calculate mean, median, C.V. and variance for the recorded values.

B. Explain the significance of - (4)

1. Complexometric indicators
2. Masking and demasking agents

C. Discuss Single extraction (Batch) and multiple extraction in detail. (4)

Q. 6 A. i. How many  $\text{cm}^3$  of 0.5N HCL are required to neutralise 75ml of 0.1 N NaOH? (2)

ii. If 50 ml of 0.1N NaOH is titrated with 0.1 N HCL, calculate the pH values at the start, at chemical equivalence and 1ml excess after chemical equivalence of titration. (2)

B. i. What is suitable titrimetric method for sulpha drugs? Name the indicator and titrant used in assay of sulphacetamide sodium. (2)

ii. 0.65g of organic compound was digested in Kjeldahl's apparatus and ammonia evolved was absorbed in 100ml of semi normal  $\text{H}_2\text{SO}_4$ . The residual acid required 111ml of 0.25N NaOH solution. Determine the % of Nitrogen in the compound. (2)

C. What is gravimetric factor? Write principle involved in assay of Aluminium by oxine. (4)