

[Time: Three Hours]

[Marks: 70]

- NB: 1. Please check whether you have got the right question paper.
 2. All questions are compulsory
 3. Figures to right indicate full marks
 4. Draw neat labelled diagram, write chemical reaction and give example wherever necessary
 5. Attempt answer of each main question on new page

Q.1 a) Explain the terms

(05)

- I. Iodimetry
- II. %W/V
- III. Back titration
- IV. Replacement Titration
- V. Standard reduction potential

b) Answer the following

(10)

- I. Discuss iodate titration
- II. Balance following reaction
 (a) $\text{MnO}_4^- + \text{H}_2\text{O}_2 \rightarrow \text{Mn}^{2+} + \text{O}_2 + \text{H}_2\text{O}$ (b) $\text{IO}_3^- \rightarrow \text{I}^+$
- III. Discuss types of coulometric titration
- IV. What is decomposition potential?
- V. Distribution coefficient of a solute X between water and ether is 8. If 10 ml of an aqueous solution of the compound is extracted with 30 ml of ether, what percentage of the original solute will be found in aqueous and ether layer after equilibrium.

2. a) Answer the following :

(4)

- I. Give principal, indicator and reactions used in Assay of NaCl
- II. Give principle and reactions for precipitation titration involving formation of coloured precipitate.

b) Write short note on-

(4)

- I. Preparation and stability of KFR
- II. Biamperometric Titration

c) Give solvent, titrant and indicator used for non-aqueous titration

(3)

3. a) Give therapeutic category, uses and assay of

(4)

- I. Soluble aspirin tablet
- II. Dried aluminium hydroxide gel

- b) Write short note on (4)
- I. Polarogram
 - II. Half wave potential
- c) Discuss back Iodometric titration with suitable example. (3)

Q.4 a) What is neutralization curve. Explain any one type of curve with example. (4)

OR

What is neutralization indicator. Explain any one theory of indicator.

- b) What is gravimetry? Explain co-precipitation and re-precipitation with suitable example (4)
- c) Give principle, indicator and titrant for the assay of hydrogen peroxide and paracetamol. (3)

Q.5 a) Discuss factors influencing liquid-liquid extraction and enlist ways to minimize it. (4)

b) write short notes on (4)

- I. Determination of aluminium by back titration
- II. pM indicators

c) An analyst analysed sample of crocin tablet. The content of paracetamol in each of five replicate analysis was as follows. (3)

499.5, 501.6, 501.2, 498.8, 500.4

Calculate Median and RSD for the given data.

Q. 6. a) Answer the following (4)

- I. Give principle and reactions involved in the assay of Sulphacetamide sodium

OR

Explain the principle of oxygen flask combustion method.

- II. In Kjeldahl's method, ammonia obtained from 0.88 g of an organic compound completely neutralize 80 ml of M/20 H₂SO₄. What is the percentage nitrogen in the compound?

b) Solve (4)

- I. Calculate the pOH of the solution in which $[H]^+ = 5 \times 10^{-6}$
- II. Find the hydroxyl ion concentration for pH = 4.55

C) Answer the following

- I. Draw the structure of Ni-DMG complex. (3)
- II. Calculate gravimetric factor involved in gravimetric determination of Aluminium as Al-(C₉H₆NO)₃

Atomic weight: C:12, H:1, O:16, N:14, Al:27
