

[Time: Three Hours]

[Marks: 70]

1. NB: 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 following terms

5M

- i) complexing Agents
- ii) common ion effect
- iii) solubility product
- iv) masking Agent
- v) Partition coefficient

[B] Answer the following Questions

10M

- i) State faraday's first & second law
- ii) Balance the following reaction $\text{Cr}_2\text{O}_7^{2-} + \text{Fe}^{+2} + \text{H}^+ \rightarrow \text{Cr}^{+3} + \text{Fe}^{+3}$
- iii) What is half wave potential?
- iv) explain IICovic equation
- v) Partition coefficient of solute between water and diethyl ether is 5. If 25 ml of an aqueous solution of a compound is extracted with 15 ml of organic solvent, what percentage of original solute will be found in organic layer after equilibrium?

Q.2 (a) Explain in brief different methods of argentometric titration

4M

(b) Give descriptive account of Coulometric techniques

4M

(c) Explain levelling and differentiating effect of solvent in non aqueous titration

3M

Q.3 (a) Enlist the components of Pharmacopoeial monograph for API as per IP and give the principle involved in the assay of Aspirin API

4M

(b) what is the difference between iodometry and iodimetry titration

4M

(c) write a short note on pulse polarography and give application of polarography

3M

Q. 4 (a) Explain Ostwalds theory of neutralization indicator

4M

(b) Enlist unit operations in gravimetric analysis and discuss Precipitation in detail

4M

(c) Name the analytes assayed by each of the following type of redox reaction

3M

i] permangnometry

ii] cerrimetry

iii] iodimetry

Q. 5 (a) A sample of drug A was analysed and percentage concentration obtained after analysis was as follows 8.50, 8.75, 8.14,8.20, 8.58. Calculate mean, median , variance and RSD for the given data

4M

(b) write short note on following (i)pM Indicators (ii) demasking agents

4M

(c) classify solvent extraction methods and explain any one in detail

3M

Q.6 (a) Discuss construction and working of Oxygen flask combustion method 4M

(b) 50ml of 0.5 M HCl is titrated with 0.5 M NaOH. Calculate the pH values at the start of titration & after addition of 5,15,25 ml of titrant. 4M

(c) Calculate gravimetric factor for 3M

Substance sought Substance weighted

P Ag₃PO₄

Ba BaSO₄

At wt. S=32.06, O=15.99, P=38.97, Ba=137.33, Ag=107.87, C=12, H=1, O=16, Fe=55.84
