Q.P. Code : 01401

[Time: 3 Hours] **[Total Marks:70]**

Please check whether you have got the right question paper.

N.B:
1. All Questions are compulsory.
2. Figures to right indicate full Marks.
3. Draw neat labelled diagram wherever necessary.
4. Attempt each main question on new page.

Q.1 (a) Explain the terms. **(05)**

i) Buffer Capacity

ii) Common ion Effect

iii) Co-ordination number

iv) Equivalence point

v) Standard Reduction Potential

(b) Answer the following. **(10)**

i) State Faradays first law of Electrolysis.

ii) Give four differences of Primary standard & Secondary standard.

iii) Explain in brief polarized electrode and Decomposition potential.

iv) Balance the following equations of redox reactions.

(a) $Cr_2O^{-2}_7 + I^{-1} \rightarrow Cr^{+3} + IO^{-1}_3$

(b) $MnO^{-2}_4 + H_2C_2O_4 \rightarrow Mn^{+2} + CO_2$

v) A partition coefficient of a solute between water and either is 4.2. If 15 ml of an aqueous solution is extracted with 20 ml of organic solvent, what percentage of original solute will be found in either layer and in aqueous layer after extraction?

Q.2 (a) Give construction, working and advantages of Dropping Mercury Electrode. **(04)**

(b) i) Explain Adsorption indicator method of Argentometric titration. **(04)**
ii) Give principle, indicator and reactions used in Assay of KCl.

(c) Explain characteristics of solvents used in Non-aqueous titration. **(03)**

Q.3 (a) Enlist the contents of Pharmacopoeial monograph for formulation as per I.P. Give principle involved in Assay of soluble Aspirin Tablet. **(04)**

(b) i) Discuss Factors affecting limiting current **(04)**

ii) Explain in brief Applications of Polarography.

(c) Explain in brief Iodometry titration. Give principle & reaction involved in Assay of $KMnO_4$ **(03)**

Q.4 (a) Enlist unit operations involved in Gravimetry. Discuss Organic and Inorganic precipitating agents with example. **(04)**

(b) What are mixed indicators? Explain the Resonance theory of Neutralization Indicators? **(04)**

OR

Explain in brief Neutralization Curve for HCl vs NaOH titration.

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(c) Define permagnometry. Give Principle and reaction involved in Assay of Hydrogen peroxide. **(03)**

Q.5 (a) Explain in brief factors affecting solvent-solvent extraction. **(04)**

(b) (i) Discuss PM Indicators **(04)**
(ii) Explain Masking & Demasking agents

(c) Calculate mean, standard derivation & CV for following data. **(03)**
The % content of Iodine in each of five replicate analysis is as follows.
6.30, 6.40, 6.33, 6.42, 6.36

Q.6 (a) Discuss in brief nitrite titration with suitable example. **(04)**

OR

Discuss oxygen flask combustion method with suitable example.

(b) When 50 ml of 0.1 M HCl is titrated with 0.1 M NaOH. Calculate the pH values at the start of titration and after addition of 5, 10, and 15 ml of titrant. **(04)**

(c) Define Gravimetric factor. Calculate Gravimetric factor for following. **(03)**

Sr. No	Substance sought	Substance weighed
1	Fe	Fe_2O_3
2	Ag	$AgCl_2$

Atomic wt Fe: 55.84, 0:16, Cl: 35.50,
Ag: 107.87, C:12

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