UKA TARSADIA UNIVERSITY

B.Pharm. (3rd Semester)

Subject :030020304 **-** Pharmaceutical Analysis I

Duration: 3 Hours   **Max. Marks: 70.**

Instructions:

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks allocated to that question.
5. Draw diagrams/figures whenever necessary.

Section-1

Q-1 (A) Do as directed.   **[07]**

   I) Define: Calibration

  II) Give Primary standard of Na_2 EDTA and Sodium hydroxide.

 III) Comment: Ammonia- Ammonium chloride buffer is used in the assay of calcium gluconate.

 IV) Define: Buffer capacity

  V) Define: Equivalence point

 VI) Define: Chelating agent

VII) Give two examples of Aprotic solvents.

Q-1 (B) Answer the following in brief. (Any 4)   **[08]**

   I) Explain leveling effect.

  II) Differentiate between accuracy and precision.

 III) Write a note on solvents used for weak acids and weak base substances in Non aqueous titration.

 IV) Explain in brief pM indicator.

  V) Write brief note on Ostwald theory of indicators.

 VI) Give importance of Quality Assurance in Pharmaceutical Analysis.

Q-2 Answer the following.   **[10]**

A) A 25 ml solution containing Na_2CO_3 (Mol. Wt. 106) and $NaHCO_3$ (Mol. Wt. 84) consumes 9.46 ml and 24.86 ml of 0.12 N HCl (Mol. Wt. 36.5) with phenolphthalein and methyl orange respectively. Calculate concentration of Na_2CO_3 and $NaHCO_3$ in 250 ml solution.

<center>OR</center>

A) Calculate the pH at 0, 10 and 50 ml of titrant in the titration of 50 ml of 0.1 M acetic acid with 0.1M NaOH. ($Ka = 1 X10^{-5}$)

B) Calculate the amounts required to prepare 250 ml solution of 0.2N $K_2Cr_2O_7$ (Mol. Wt. 294), $KMnO_4$ (Mol. Wt. 158) and NaOH (Mol. Wt. 40)

<center>OR</center>

B) Normality of solution is determined by 4 separate titrations, the result being 0.2041, 0.2049, 0.2039, 0.2043 calculate the mean, standard deviation and coefficient of variation for given results.

Q-3 Answer the following in detail. (Any 2)   **[10]**

A) Write a note on sampling techniques. Discuss how to minimize the sampling sampling errors.

B) Enlist different types of complexometric titration. Explain replacement type of titration

with suitable example.

C) Describe law of mass action in detail.

Section-2

Q-4 (A) Do as directed. [07]

I) Why pyridine is employed in the preparation of Karl fischer reagent.

II) Comment: Starch indicator should be added near the end point in iodine titration.

III) Comment: Aliphatic amines can not be analysed by Nitrite titration.

IV) Give two examples of Adsorption indicator.

V) Give primary standards of Potassium permanganate and Sodium thiosulphate.

VI) Define: solubility product

VII) Define oxidation in terms of electrons.

Q-4 (B) Answer the following in brief. (Any 4) [08]

I) Explain principle of radioimmunoassay.

II) Explain Co precipitation.

III) Discuss briefly Diazotization titration.

IV) Write a note on Mercurimetric titration.

V) Differentiate between iodometry and iodimetry.

VI) Explain principle of kjeldahl's method.

Q-5 Answer the following. [10]

A) What is the solubility of silver phosphate in gm/lit, if Ksp is 1.4×10^{-20} (mol/lit)^3. Mol. Wt of Ag_3PO_4 = 419 gm/mole.

OR

A) Calculate solubility product of silver chromate, given that its solubility is 2.5×10^{-2} gm/lit. (Mol. Wt of Ag_2CrO_4 = 331.7)

B) A 25 ml solution of 0.1 M $AgNO_3$ consumes 11 and 21 ml of 0.1 N NH_4SCN with and without 10 ml of NH_4Cl solution. Calculate NH_4Cl concentration in 100 ml solution (Mol. Wt of NH_4Cl = 53.5)

OR

B) Calculate the potential as a function of titrant volume in the titration of 100 ml of 0.1M Fe^{+2} at 10, 100 and 200 ml of 0.1M Ce^{+4}. E° Fe^{+2}/Fe^{+3} = + 0.771 V and E° Cr^{+4}/Cr^{+3} = + 1.61V

Q-6 Answer the following in detail. (Any 2) [10]

A) Write a note on Oxygen flask combustion method.

B) Enlist different methods of chloride estimation. Describe Volhard's method in detail.

C) Enumerate types of redox titration. Write down short note on redox indicator.