

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) Give two examples of primary standards
- II) Why perchloric acid is diluted with glacial acetic acid before adding the acetic anhydride?
- III) What is significant figure?
- IV) What is meant by standardization?
- V) Why Na₂EDTA is preferred than EDTA?
- VI) Why are organic polyhydroxy compounds added during the assay of boric acid?
- VII) What are neutralization curves?

Q-1 (B) Answer the following in brief. (Any 4)

[08]

- I) Explain differentiating effect.
- II) Discuss merits and demerits of Non aqueous titration over aqueous titration.
- III) Discuss factors affecting stability of complexes in complexometric titration.
- IV) Discuss applications of buffers in pharmacy.
- V) What is difference between QA and QC?
- VI) Enumerate common techniques of analysis.

Q-2 Answer the following.

[10]

A 10 ml solution of MgSO₄ consumes 12 ml and 20 ml of 0.05 M EDTA solution without
A) and with calcium gluconate. Calculate the amounts of MgSO₄ (Mol. Wt. 120) and calcium gluconate (Mol. Wt. 448) in the solution.

OR

- A) Calculate volumes of 2M solutions of H₂SO₄ (Mol. Wt. 98), Iodine (Mol. Wt. 254) and NH₃ (Mol. Wt. 17) required to prepare 500 ml 0.05N solution.
- B) 50 ml of 0.1 M HCl is titrated with 0.1M NaOH. Calculate the pH at the start of the titration and after addition of 10 and 50 ml of titrant.

OR

Analysis of sample gave the following values for the iron content: 7.08, 7.21, 7.12, 7.09,
B) 7.16, 7.14, 7.07, 7.18, 7.11, 7.14. Calculate the mean, standard deviation and coefficient of variation for the values.

Q-3 Answer the following in detail. (Any 2)

[10]

- A) What are the different types of errors? Describe the techniques to minimize the errors.
- B) Describe common ion effect. State the advantages of common ion effect in pharmaceutical Analysis.
- C) Write a note on Non aqueous solvents.

Section-2

Q-4 (A) Do as directed.

[07]

- I) Comment: KI is added in preparation of standard solution of Iodine.
- II) Why a little amount of CuSO_4 is added in Kjeldahl method of Nitrogen estimation?
- III) Why starch can not be used in strong acidic medium?
- IV) What are self indicating reagents?
- V) What is meant by 'Ageing of precipitate'?
- VI) What is the use of Nitrometer in gravimetry?
- VII) Why ferric alum is preferred than ferric salt in Volhard's method?

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

[08]

- I) Justify: Equivalent weight of KMnO_4 changes with the media.
- II) Why mohr's method can not carried out in acidic media? Give limitations of Mohr's method.
- III) Give composition of Karl Fischer titration.
- IV) Enlist Immunochemical techniques. Give application of RIA.
- V) Discuss in brief principle of Dumas method.
- VI) Discuss effect of pH and temperature on solubility of precipitates.

Q-5 Answer the following.

[10]

- A) What is the solubility of PbI_2 in gm/lit? the K_{sp} of $\text{PbI}_2 = 7.2 \times 10^{-9}$. Calculate the molar concentration of Pb^{+2} and I- ion.

OR

- A) Determine solubility of magnesium hydroxide in gm/lit. Given that its solubility product is 3.4×10^{-11} (mol/lit)³ and Mol. Wt. is 58.3.
A 50 ml solution of 0.1 M AgNO_3 consumes 35 and 48 ml of 0.1 M NH_4SCN with and
B) without 25 ml of NaCl solution. Calculate NaCl concentration in 250 ml solution. (Mol. Wt of NaCl = 58.44)

OR

- B) Calculate the potential as a function of titrant volume in the titration of 25 ml of 0.2N Sn^{+2} at 10, 20 and 30 ml of 0.2 N Ce^{+4} . $E^\circ \text{Sn}^{+2}/\text{Sn}^{+4} = +0.15$ V and $E^\circ \text{Ce}^{+4}/\text{Ce}^{+3} = +1.6$ V

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

[10]

- A) Write a short note on Gasometry.
- B) Explain with examples the different types of redox indicators.
- C) Describe with examples, any two methods of determining end point in Precipitation titrations.