Bachelor of Arts (FYUP) 1ˢᵗ Semester

(2124)

CHEMISTRY

Paper : Basic Analytical Techniques-I CHMIDC

Time Allowed : Three Hours]   [Maximum Marks : 40

Note :— Attempt **THREE** questions out of a total of **FIVE** questions selecting at least **ONE** question from each Unit. Q. No. **1** is compulsory.

1. Compulsory Question (Short answer type questions) :

   (i) What are determinate errors ?

   (ii) What are hazards of sampling ?

   (iii) Cite an example of gravimetric analysis.

   (iv) 4.0 g of NaOH is dissolved in 250 ml aqueous solution. What is the Molarity of the solution ?

   (v) How can you remove temporary hardness of water ?

   $2 \times 5 = 10$

UNIT—I

2. (a) Analysis of a sample of Iron gave following percentages of Fe :

   7.08, 7.21, 7.12, 7.09, 7.16, 7.14, 7.18, 7.11

   Calculate the mean and standard deviation.   5

   (b) A substance is known to contain $49.0\pm0.02\%$ of constituent A. Analysis by two students calculated % A as given below :

   Analyst 1: 49.01, 49.25, 49.08, 49.14

   Analyst 2: 49.40, 49.44, 49.42, 49.42

   Write your comments and analyse the above data in terms of being accurate and being precise.   5

   (c) How can one account for errors in addition and multiplication ? Explain using suitable examples.   5

3. (a) What are primary and secondary standards in volumetric analysis ?   5

   (b) Write a note on how to select an indicator in volumetric analysis for :

   (i)   Strong Acid- strong base titration

   (ii) Weak Acid- strong base titration.   5

   (c) What are standard solutions ? Explain using a suitable example.   5

UNIT—II

4. (a) How will you determine the end point in pH metric titration of Strong Acid and Strong Base ? 5

(b) Briefly discuss the applications of oxidation reduction titrations. 5

(c) How is equivalence point determined in strong acid- strong base conductometric titration ? 5

5. (a) What is temporary and permanent hardness of water due to ? 5

(b) What is the effect of pH on EDTA equilibria ? 5

(c) Why is cyanide considered effective masking agent ? Discuss its application. 5