

Subject Code:CHD 101

Subject name: Basic Topics In Analytical Chemistry

Total Marks: 60

Duration: 2 Hours

Total No. of Pages:03

*Instructions: All Questions are compulsory**Figures to the right indicate full marks***Q1.** Answer ANY FOUR of the following:**4x3=12 marks**

- i) Explain the mechanism of action of indicator in complexometric titration.
- ii) Define the following terms: (a) Gross Sampling (b) random sampling (c) Sampling Unit
- iii) Describe any three methods adopted to minimize determinate types of error.
- iv) Briefly discuss the use of complexing agents in solvent extraction.
- v) State the Factors on which the R_f Value of a substance depends.
- vi) With reference to polarography explain polarizable and non-polarizable electrodes.

Q2A) i) Discuss any two application of electrogravimetry.**3 marks**

ii) Compute the following results and express them to the number of significant figures of appropriate magnitude.

3 marks

- a) $41.48 \times 0.089 \times 0.13 \times 8.46$
- b) $43.839 - 4.28 + 25.646$
- c) $1.38 \times 1.254 \times 0.5443 \times 28.8574$

OR**Q2A) iii)** Discuss a silver coulometer with diagram.**3 marks**

iv) In separation of Zn^{2+} and Mg^{2+} by ion exchange chromatography, which ion will be eluted first and why?

3 marks**Q2B) i)** Differentiate between qualitative and quantitative analysis.**3 marks**

ii) With the help of neat labelled diagram discuss the apparatus and method of constant current electrolysis.

3 marks**Q3A) i)** 0.1 dm^3 of water containing 0.1 g of iodine is shaken with 0.075 dm^3 of carbon

room temperature is 85. Calculate the weight of iodine remaining unextracted in the aqueous layer after

- a) one extraction with 0.075 dm^3 of CCl_4
- b) three extractions with 0.025 dm^3 of CCl_4

3 marks

ii) You have a mixture of products obtained in an organic reaction. Explain the procedure of the chromatographic technique you will use to identify how many products are formed.

3 marks

OR

Q3A) iii) Explain the term Sample thief. How is it used for sampling of liquids? 3 marks

iv) Explain any 3 types of development techniques used in paper chromatography.

3 marks

Q3B) i) In a titration of strong acid v/s strong base, explain the effect of concentration on the titration curve. 3 marks

ii) Describe Batch Extraction method. 3 marks

Q4A) i) Distinguish between Accuracy and Precision. 3 marks

ii) Following are the results of percentage of gold obtained from analysis of same sample. From the data given in two sets, verify whether two standard deviation are same or different.

3 marks

Given $F_{\text{tab}} = 19.00$

Set I – 15.72 , 15.68 , 15.76

Set II – 15.62 , 15.80 , 15.67

OR

Q4A) iii) Explain Normal Error Curves with respect to accuracy and Precision.

3 marks

iv) For the data given below, derive an equation of best fitting line of the type $y = mx + c$ by method of averages.

3 marks

x	1	2	3	4	5	6	7
y	1.4	2.1	2.6	3.2	3.4	3.9	4.5

Q4B)i) Explain Mohr and Volhard method for determination of end point in precipitation titrations.

3 marks

ii) Discuss the following terms used in gravimetric analysis

3 marks

a) Digestion

b)Coagulation

c)Peptisation

Q5 A) i) Describe the any 3 steps involved in Analytical Process.

3 marks

ii) Explain the polarographic wave and the terms involved

3 marks

OR

Q5 A) iii) Differentiate between iodometric and iodimetric titration with example

3 marks

iv) Discuss the application of coulometry in neutralisation and redox titrations.

3 marks

Q5B) i) State the factors affecting column efficiency in Column Chromatography.

3 marks

ii) Explain Sequential sampling, Systematic sampling, Multistage sampling

3 marks

ALL THE BEST
