

**CARMEL COLLEGE OF ARTS, SCIENCE & COMMERCE FOR WOMEN,
NUVEM- GOA**

B.Sc. CBCS Semester V Examination, January 2021

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) What is complexometric titrations? Also write its classification.
- ii) Define the following terms : (a) Gross Sampling (b) Increment (c) Sampling Unit
- iii) In an organic estimation of acetone the following burette volumes were recorded, 25.4ml, 26.6ml, 26.0ml, 27.0ml, 26.5ml and 25.1ml .Using the 2.5d and 4d rule state whether the last observation of 25.1 ml can be rejected.
- iv) Describe Batch Extraction method.
- v) Explain any 3 types development techniques used in paper chromatography.
- vi) With a neat labelled diagram explain the apparatus involved in electrogravimetry.

Q2A) i) What is Coulometry? Explain the working of silver Coulometer.

3 marks

ii) List out any 6 differences between accuracy and precision.

3 marks

OR

Q2A) iii) Explain the principle and working of Hydrogen oxygen coulometer.

3 marks

iv) Differentiate between the types of ion exchangers used in ion exchange chromatography.

3 marks

Q2B) i) Explain the four areas of chemical analysis.

3 marks

ii) Define the following terms

3 marks

a) Deposition potential

b) Dissolution potential

Q3A) i) Describe Continuous Extraction method.

3 marks

ii) List the factors that affect the column efficiency in column chromatography.

3 marks

OR

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

iv) Explain the steps involved in paper chromatography. **3 marks**

Q3B) i) Write the procedure for the determination of Ca^{2+} in the presence of Mg^{2+}

3 marks

ii) Describe the method of Counter Current Extraction

3 marks

Q4A) a) Two different spectrometric methods were used to determine copper content in an alloy.

The results obtained in ppm are

Method I	Method II
0.386	0.450
0.392	0.420
0.400	0.395
0.421	0.410
0.380	0.424

Are the two means significantly different?

4 marks

T_{tab} at 95% probability level=2.31

F_{tab} at 95% probability level= 6.39

b) Find the number of significant figures in the following.

2 marks

i) 0.0003643

ii) 9996

iii) 7.3×10^{-9}

iv) 1.00120

OR

Q4A) a) From the data given below derive an equation for the type $y=mx+c$ by the method of averages

4 marks

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

b) Solve and round off to three significant figures

2 marks

i) $3.004+5.3+6009+1.340+3.605$

ii) $4.56+8.09+0.006+3.460+3.200$

Q4B) Explain the steps involved in gravimetric analysis **6 marks**

Q5 A) i) Differentiate between Qualitative and Quantitative analysis (3 points each)

3 marks

ii) Explain how copper can be determined quantitatively using constant current electrolysis.

3 marks

OR

Q5 A) iii) Explain any one type of Redox titration. **3 marks**

iv) What are the applications of polarography in organic and inorganic analysis?

3 marks

Q5B) i) What is R_f value in chromatography? State the factors on which R_f value depends.

3 marks

ii) What is meant by Bulk ratio? What is meant by size to weight ratio? Explain the importance of these in sampling.

3 marks