

Enrollment No: \_\_\_\_\_

Exam Seat No: \_\_\_\_\_

# C. U. SHAH UNIVERSITY

## Winter Examination-2022

Subject Name: Analytical Chemistry-I

Subject Code: 5SC01ACH1

Branch: M.Sc. (Chemistry)

Semester: 1

Date: 05/01/2023

Time: 11:00 To 02:00

Marks: 70

**Instructions:**

- (1) Use of Programmable calculator and any other electronic instrument is prohibited.
  - (2) Instructions written on main answer book are strictly to be obeyed.
  - (3) Draw neat diagrams and figures (if necessary) at right places.
  - (4) Assume suitable data if needed.
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**SECTION – I**

- Q-1 Attempt the Following questions (07)**
- |    |   |    |
|----|---|----|
| a) | Define analytical chemistry               | 01 |
| b) | What do you mean by spectroscopy?         | 01 |
| c) | Define food analysis                      | 01 |
| d) | What is called electromagnetic spectrum?  | 01 |
| e) | Define and give equation of normality.    | 01 |
| f) | What do you mean by Iodimetric titration? | 01 |
| g) | Define the term calibration               | 01 |
- Q-2 Attempt all questions (14)**
- |    |  |    |
|----|--|----|
| a) | Write a note on single and double beam spectrophotometers in detail. | 08 |
| b) | Discuss thermocouple and photomultiplier tube in detail.             | 06 |
- OR**
- Q-2 Attempt all questions (14)**
- |    |  |    |
|----|--|----|
| a) | Discuss the classification of analytical techniques in detail. | 07 |
| b) | Explain various wavelength-selecting devices in detail.        | 07 |
- Q-3 Attempt all questions (14)**
- |    |   |    |
|----|---|----|
| a) | Write a note on Saponification and Iodine value for fat or oil. | 07 |
| b) | Explain Beer's law.   | 04 |
| c) | Discuss the six major constituents analyte in food sample.      | 03 |
- OR**
- Q-3 Attempt all questions**
- |    |   |    |
|----|---|----|
| a) | Discuss the Kjeldahl method in detail.  | 05 |
| b) | Write a note on the determination of cellulose and H <sub>2</sub> O <sub>2</sub> in milk. | 05 |
| c) | Explain Lambert's law.  | 04 |



## SECTION – II

<b>Q-4</b>	<b>Attempt the Following questions</b>	<b>(07)</b>
	a) What is known as standardization?	<b>01</b>
	b) Write the equations for Molarity and Formality.	<b>01</b>
	c) Define the term: Titration.	<b>01</b>
	d) What is called precipitation titration?	<b>01</b>
	e) Define Phosphorescence	<b>01</b>
	f) How to prepare 1.0 L solution of $K_2Cr_2O_7$ having normality of 0.5N?	<b>01</b>
	g) Give the name of indicators used in complexometric and neutralization titration.	<b>01</b>
<b>Q-5</b>	<b>Attempt all questions</b>	<b>(14)</b>
	a) Draw and explain Instrumentation of Turbidimetry.	<b>05</b>
	b) Discuss the acid-base titrations in detail.	<b>05</b>
	c) Write a note on common ion effect.	<b>04</b>
<b>OR</b>		
<b>Q-5</b>	<b>Attempt all questions</b>	
	a) Draw the labeled diagram of fluorimetry and phosphorimetry.	<b>05</b>
	b) Discuss solubility product.	<b>05</b>
	c) Give the applications of Fluorimetry and Phosphorimetry.	<b>04</b>
<b>Q-6</b>	<b>Attempt all questions</b>	<b>(14)</b>
	a) Write a note on Instrumentation and working of Atomic Absorption Spectroscopy.	<b>07</b>
	b) Discuss the primary and secondary standards in details.	<b>07</b>
<b>OR</b>		
<b>Q-6</b>	<b>Attempt all Questions</b>	
	a) Explain the principle, Instrumentation and applications of Nephelometry.	<b>07</b>
	b) Discuss the types of errors and explain various methods for minimization of errors.	<b>07</b>

