# **C. U. SHAH UNIVERSITY**

# **Summer Examination-2022**

#### Subject Name: Advanced Analytical Instrumentation

Subject Code: 5SC04AIC1		Branch: M.Sc. (Chemistry)	
Semester: 4	Date: 05/05/2022	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.

## **SECTION – I**

Q-1		Attempt the following questions	(07)
	a.	Define Supercritical fluid	01
	b.	Write the Van-Deemeter equation for chromatography.	01
	c.	What is called Supercritical fluid chromatography?	01
	d.	Give the full form of FTIRC and FT-OT.	01
	e.	What do you mean by Critical pressure?	01
	f.	Give any two applications of SCF.	01
	g.	Write any two possible ways to attain supercritical state.	01
Q-2		Attempt all questions	(14)
	a.	Explain the instrumentation of supercritical fluid chromatography.	08
	b.	Discuss ion cyclotron resonance.	06
		OR	
Q-2		Attempt all questions	(14)
	a.	Discuss Atmospheric Pressure Chemical Ionization (APCI).	07
	b.	Explain the instrumentation of UHPLC.	07
Q-3		Attempt all questions	
	a.	Explain the electrospray ionization (ESI).	06
	b.	Discuss the role of CO <sub>2</sub> as supercritical fluid in SFC.	04
	c.	Give advantages and disadvantages of supercritical fluid chromatography.	04
		OR	
Q-3		Attempt all questions	(14)
	a.	Discuss Atmospheric pressure Photo Ionization (APPI).	07
	b.	Write a note on tandem mass spectrometry.	05
	c.	Give the advantages and applications of UHPLC.	02



## **SECTION – II**

Q-4		Attempt the following questions	
	a.	Give any two advantages of the ICP-MS above AAS or ICP-OES.	01
	b.	What do you mean by nondestructive technique?	01
	c.	Write the function of interface in ICP-MS.	01
	d.	Give the name of common dissolution agents used in ICP-MS.	01
	e.	Define hyphenated techniques	01
	f.	Define ICP-MS	01
	g.	How the plasma is formed in ICP-MS?	01
Q-5		Attempt all questions	(14)
	a.	Comparer the some important features of HPLC-UV/DAD, LC-MS and LC-NMR.	08
	b.	Discuss the spectral interferences and its removal method for ICP-MS.	06
		OR	
Q-5		Attempt all questions	
	a.	Discuss the possible way of improving the sensitivity of HPLC/NMR	08
		Techniques.	
	b.	Explain the Instrumentation of ICP-MS.	06
Q-6		Attempt all questions	(14)
-	a.	Discuss the available modes of efficient transport of components from HPLC to NMR.	05
	b.	Explain the fundamental aspects of interface in IC-MS.	05
	c.	Give the applications of ICP-MS.	04
		OR	
Q-6		Attempt all questions	(14)
-	a.	Discuss the role of LC-NMR and LC-MS in identifying impurities in drug	08
		samples.	
	b.	samples. Explain quadrupole mass analyzer.	04

