Enrollment No: _____ Exam Seat No:_____

C. U. SHAH UNIVERSITY
Winter Examination-2022

Subject Name : Analytical chemistry-III

Subject Code : 4SC06ACH1 **Branch: B.Sc. (Chemistry)**

Semester: 6 **Date: 23/09/2022** **Time: 11:00 To 02:00** **Marks: 70**

Instructions:
(1) Use of Programmable calculator & 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.

Q-1 **Attempt all the following questions:** **(14)**

a) Define spectroscopy. 01
b) Define electromagnetic radiation. 01
c) What is shielding effect in NMR spectroscopy? 01
d) Give range of Mid IR region. 01
e) Define solvent effect in UV visible spectroscopy. 01
f) Define bathochromic shift. 01
g) Give full form of NMR. 01
h) Give range of finger print region. 01
i) What is known as functional group region? 01
j) Define fragmentation. 01
k) Define equivalent and non equivalent protons. 01
l) What is called vibrational level? 01
m) Write function of monochromator. 01
n) Give composition of nernst globar source. 01

Attempt any four questions from Q-2 to Q-8.

Q-2 **Attempt all questions** **(14)**
A Explain instrumentation of IR spectroscopy with proper diagram. **07**
B Discuss molecular vibration of IR spectroscopy. **07**

Q-3 **Attempt all questions** **(14)**
A Explain working of mass spectrometry. **07**
B Discuss electronic transition in UV visible spectroscopy. **07**

Q-4 **Attempt all questions** **(14)**
A Write a note on chemical shift in NMR spectroscopy. **07**
B Discuss spin coupling and splitting of signals. **07**

Q-5		**Attempt all questions**	**(14)**
	A	Describe fragmentation mode in alkane molecule.	**07**
	B	Explain red shift and blue shift in UV visible spectroscopy with proper example.	**07**
Q-6		**Attempt all questions**	**(14)**
	A	Discuss various sampling techniques in IR spectroscopy.	**07**
	B	Write a note on coupling constants.	**07**
Q-7		**Attempt all questions**	**(14)**
	A	Write applications of UV visible spectroscopy.	**07**
	B	Write selection rule for IR and Raman Spectroscopy and give four differences between IR and Raman Spectroscopy.	**07**
Q-8		**Attempt all questions**	**(14)**
	A	Write applications of mass spectrometry.	**07**
	B	Write applications of NMR spectroscopy.	**07**