Enrollment No:	Exam Seat No:

## **C.U.SHAH UNIVERSITY**

## **Summer Examination-2017**

**Subject Name : Chemistry-I** 

Subject Code: 4SC01CHC1/4SC01CHE1 Branch: B.Sc.(All)

Semester: 1 Date: 30/03/2017 Time: 10:30 To 01:30 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 the following questions:	(14)
-	a)	What is the effect of hybridization on electronegativity of central atom?	(1)
	<b>b</b> )	Define electron affinity.	(1)
	c)	What is the hybridization of P atom in PCl <sub>5</sub> ?	(1)
	<b>d</b> )	What is the bond angle and hybridization in ethene?	(1)
	<b>e</b> )	Give example of addition reaction.	(1)
	f)	What is Saytzeff's rule?	(1)
	g)	Draw the structure of spiro[2,4] hepta-4,6-diene.	(1)
	h)	Write the IUPAC name of	(1)
	i)	Define internal energy.	(1)
	j)	Define open system.	(1)
	k)	Define adsorbate.	(1)
	1)	Define desorption.	(1)
	m)	Define normality.	(1)
	n)	What is Lewis concept of acid and base?	(1)
Attempt	any f	Cour questions from Q-2 to Q-8	
Q-2		Attempt all questions	(14)
	a)	Explain Pouling's method for the determination of ionic radius of isoelectronic	<b>(7</b> )
		ions. Calculate ionic radius of K <sup>+</sup> and Cl <sup>-</sup> (Inter nuclear distance in KCl is 3.14 A <sup>o</sup>	
		and screening constant is 11.24).	
	b)	What is ionization potential? Explain periodic trend and factors affecting	<b>(7)</b>
		magnitude of ionization potential.	
			/4 A
Q-3		Attempt all questions	(14)
	<b>a</b> )	Explain valence bond theory.	(7)
	<b>b</b> )	What is hybridization? Discuss the hybridization of $C_2H_2$ and $C_2H_6$ .	<b>(7)</b>
Q-4		Attempt all questions	(14)
<b>~</b> ·	a)	Discuss differences between $S_N^{-1}$ and $S_N^{-2}$ reactions.	(7)
	<b>b</b> )	Explain substitution reactions of alkyl halide.	(7)



Q-5		Attempt all questions	(14)
	a)	Explain method of preparation and chemical properties of cycloalkanes.	<b>(7)</b>
	<b>b</b> )	What is Zeroth law of thermodynamic? Explain mathematical treatment and	<b>(7)</b>
	·	limitations of Zeroth law of thermodynamic.	. ,
Q-6		Attempt all questions	(14)
	a)	Define heat capacity and derive $C_p$ - $C_v$ = R.	<b>(7)</b>
	<b>b</b> )	Explain different types of adsorption processes. What are the factors affecting adsorption of gases on solid?	(7)
Q-7		Attempt all questions	(14)
	a)	Write a note on Langmuir adsorption isotherm.	<b>(7)</b>
	<b>b</b> )	Derive the equation of pH, K <sub>h</sub> and degree of hydrolysis of a salt of a weak acid and weak base.	(7)
Q-8		Attempt all questions	(14)
	a)	Write a note on buffer solutions.	(6)
	b)	For preparing 28% W/W H <sub>2</sub> SO <sub>4</sub> solution, how many grams of H <sub>2</sub> SO <sub>4</sub> is required	<b>(4)</b>
	,	if 50 gm of H <sub>2</sub> O is used?	( )
	c)	Calculate pH before and after the addition of 0.01 mole of NaOH to 1 liter of a	<b>(4)</b>
	- /	buffer solution that is 0.1 M CH <sub>3</sub> COOH and 0.1 M is CH <sub>3</sub> COONa. The K <sub>a</sub> of	( )
		CH <sub>3</sub> COOH is $1.75 \times 10^{-5}$ .	

