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) Define electron affinity. (1)
c) What is the hybridization of P atom in PCl_5? (1)
d) What is the bond angle and hybridization in ethene? (1)
e) 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)
l) Define desorption. (1)
m) Define normality. (1)
n) What is Lewis concept of acid and base? (1)

Attempt any four 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 ions. Calculate ionic radius of K^+ and Cl^- (Inter nuclear distance in KCl is 3.14 A^o and screening constant is 11.24). **(7)**
b) What is ionization potential? Explain periodic trend and factors affecting magnitude of ionization potential. **(7)**

Q-3 **Attempt all questions** **(14)**

a) Explain valence bond theory. **(7)**
b) What is hybridization? Discuss the hybridization of C_2H_2 and C_2H_6. **(7)**

Q-4 **Attempt all questions** **(14)**

a) Discuss differences between S_N1 and S_N2 reactions. **(7)**
b) Explain substitution reactions of alkyl halide. **(7)**

Q-5 **Attempt all questions** **(14)**

a) Explain method of preparation and chemical properties of cycloalkanes. **(7)**

b) What is Zeroth law of thermodynamic? Explain mathematical treatment and limitations of Zeroth law of thermodynamic. **(7)**

Q-6 **Attempt all questions** **(14)**

a) Define heat capacity and derive C_p - C_v = R. **(7)**

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. **(7)**

b) Derive the equation of pH, K_h 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_2SO_4 solution, how many grams of H_2SO_4 is required if 50 gm of H_2O is used? **(4)**

c) Calculate pH before and after the addition of 0.01 mole of NaOH to 1 liter of a buffer solution that is 0.1 M CH_3COOH and 0.1 M is CH_3COONa. The K_a of CH_3COOH is 1.75×10^{-5}. **(4)**