Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY
Winter Examination-2015

Subject Name : Physical Chemistry-I

Subject Code : 4SC05CHC3 **Branch : B.Sc (Chemistry)**

Semester : 5 **Date : 07/12/ 2015** **Time : 2:30 To 5:30** **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) Define entropy **(01)**
b) Write any one statement of second law of thermodynamics **(01)**
c) Define Fugacity **(01)**
d) What are ideal solutions? **(01)**
e) Define critical solution temperature **(01)**
f) Define Molality **(01)**
g) Define phase **(01)**
h) Write the equation for reduced form of phase rule **(01)**
i) Give one example of two component system. **(01)**
j) What is gold number? **(01)**
k) Define colloids **(01)**
l) Define concentration cell **(01)**
m) Write one example of concentration cell without transference **(01)**
n) What is liquid junction potential? **(01)**

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

Q-2 **Attempt all questions** **(14)**

a) Explain Carnot Cycle in detail **(07)**
b) Derive Gibbs Helmholtz equations **(07)**

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

a) If the vapour pressure of water at $95^{o}C$ and $100^{o}C$ are 634 and 760 mm respectively, calculate latent heat of vaporization per mole. (R=1.987) **(04)**
b) Explain Vant Hoff Isotherm. **(05)**
c) Discuss Henrys Law and Dalton law of partial Pressure **(05)**

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

a) Explain Phenol-Water partially miscible system. **(05)**
b) Discuss equilibrium concept of solids in liquid solution. **(05)**

	c)	At a pressure of 760 mm, a mixture of nitrobenzene and water boils at 90^{o}C. The vapour pressure of water at this temperature is 733 mm. find the proportion of water and nitrobenzene in the distillate obtained by the steam distillation of impure nitrobenzene. (molecular mass of nitrobenzene is 123)	**(04)**
Q-5		**Attempt all questions**	**(14)**
	a)	Discuss water system in detail	**(05)**
	b)	Draw the phase diagram and explain Silver-Lead system.	**(05)**
	c)	Write a note on Degree of Freedom.	**(04)**
Q-6		**Attempt all questions**	**(14)**
	a)	Write the characteristics of lyophobic and lyophilic colloids	**(05)**
	b)	Explain Brownian movement and Tyndall effect.	**(05)**
	c)	Discuss any two methods for purification of sols.	**(04)**
Q-7		**Attempt all questions**	**(14)**
	a)	Explain concentration cell with transference using example.	**(07)**
	b)	Determine the ionic product of water.	**(07)**
Q-8		**Attempt all questions**	**(14)**
	a)	Explain electrode concentration cell.	**(05)**
	b)	Discuss desperation method for the preparation of sol.	**(05)**
	c)	Write a note on vapour pressure curves for non-ideal solutions.	**(04)**