Enrollment No: _____   Exam Seat No:_____

C.U.SHAH UNIVERSITY
Winter Examination-2018

Subject Name: Physical Chemistry-I

Subject Code: 5SC01PCH1   **Branch: M.Sc. (Chemistry)**

Semester: 1   **Date: 30/11/2018**   **Time: 02:30 To 05:30**   **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.	Write the definition of electrochemical series.	1
	b.	What is fugacity?	1
	c.	Write the statement of Roult's law.	1
	d.	Define: Assembly	1
	e.	What is standard electrode potential?	1
	f.	What are ideal solutions?	1
	g.	Write only equation of internal energy and heat capacity.	1
Q-2		**Attempt all questions**	**(14)**
	a.	Write a brief note on galvanic cell.	5
	b.	Explain any one property of ideal solutions.	5
	c.	Describe introduction of partition function.	4
		OR	
Q-2		**Attempt all questions**	**(14)**
	a.	Derive the state of equation for determination of fugacity.	7
	b.	Write characteristics of electrochemical series.	7
Q-3		**Attempt all questions**	**(14)**
	a.	Explain Boltzmann-Planck equation.	7
	b.	Discuss total vapor pressure varies in linear manner with mole fraction of component in liquid phase.	7
		OR	
Q-3		**Attempt all questions**	**(14)**
	a.	Explain dissociation constant of water.	7
	b.	Give explanation of variation of fugacity with temperature and pressure.	7

SECTION – II

Q-4   **Attempt the Following questions**   (07)
   a. What is thermodynamic probability?   **1**
   b. Give the decreasing order of electropositive character of metal.   **1**
   c. Define: Phase space   **1**
   d. What is electromotive force?   **1**
   e. Give the definition of electrochemical cell.   **1**
   f. Write two characteristic of Boltzmann distribution.   **1**
   g. Define: Battery   **1**

Q-5   **Attempt all questions**   (14)
   a. Derive the equation of partition function and third law of thermodynamics.   **6**
   b. Explain calculation of single electrode potentials from standard potentials.   **4**
   c. Give any two applications of standard electrode potentials.   **4**
                                              OR
Q-5   **Attempt all questions**   (14)
   a. Explain Fermi-Dirac stastics.   **7**
   b. Write note on Duhem- Margules equation.   **7**

Q-6   **Attempt all questions**   (14)
   a. Explain equation of Lewis Randall rule.   **6**
   b. Discuss Sakur-Tetrode equation.   **6**
   c. Write the characteristics of reversible and irreversible cell.   **2**
                                              OR
Q-6   **Attempt all Questions**   (14)
   a. Derive the equation of rotational partition function.   **7**
   b. Discuss composition of liquid and vapor in equilibrium.   **7**