

Enrollment No: \_\_\_\_\_

Exam Seat No: \_\_\_\_\_

# C. U. SHAH UNIVERSITY

## Summer Examination-2022

Subject Name: Physical Chemistry-I

Subject Code: 5SC01PCH1

Branch: M.Sc. (Chemistry)

Semester: 1

Date: 25/04/2022

Time: 11:00 To 02:00

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.
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### SECTION – I

- Q-1**                      **Attempt the Following questions**                      **(07)**
- a.      What is reversible cell?                      01
  - b.      What is fugacity?                      01
  - c.      Define: Electrochemical cell                      01
  - d.      Write the equation of thermodynamic probability.                      01
  - e.      State the Raoult's law.                      01
  - f.      Is magnitude of oxidation and reduction potential are equal or not?                      01
  - g.      Fugacity is expressed in which unit?                      01

- Q-2**                      **Attempt all questions**                      **(14)**
- a.      Explain the types of ensemble in detail.                      07
  - b.      Write any two applications of electrode potential.                      07

**OR**

- Q-2**                      **Attempt all questions**                      **(14)**
- a.      What is Lewis Randall rule? Explain in detail.                      07
  - b.      Derive the equation for dissociation constant of water.                      07

- Q-3**                      **(14)**
- Write a note on Electrochemical series.

**OR**



<b>Q-3</b>	<b>Attempt all questions</b>	<b>(14)</b>
a.	Derive Duhem Margules equation.	07
b.	Write a note on Fermi-Dirac statistics.	07

**SECTION – II**

<b>Q-4</b>		<b>(07)</b>
a.	Define the term battery.	01
b.	What is uniform ensemble?	01
c.	How many types of electrodes are available?	01
d.	Write the equation of rotational partition function.	01
e.	State the Henry's law.	01
f.	Define the ideal gas.	01
g.	If we have a collection of particles, a single particle is known as _____	01

<b>Q-5</b>	<b>Attempt all questions</b>	<b>(14)</b>
a.	Explain the variation in chemical potential in mixture of ideal gases.	07
b.	How to determine fugacity by generalized method?	07

**OR**

<b>Q-5</b>	<b>Attempt all questions</b>	<b>(14)</b>
a.	Explain the fractional distillation of binary system.	07
b.	How to determine fugacity by graphical method?	07

<b>Q-6</b>	<b>Attempt all questions</b>	<b>(14)</b>
a.	Write a note on the Freezing points of dilute solution.	07
b.	How to determine the entropy of monoatomic gases.	07

**OR**

<b>Q-6</b>	<b>Attempt all Questions</b>	
a.	Explain the composition of liquid and vapour in equilibrium	07
b.	Write any seven applications of electrochemical series.	07

