

C.U.SHAH UNIVERSITY

Summer Examination-2019

Subject Name: Physical chemistry -I

Subject Code: 5SC01PCH1

Branch: M.Sc. (Chemistry)

Semester: 1

Date: 16/03/2019

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.
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SECTION – I

- Q-1 Attempt the following questions (07)**
- a. Define: phase space. (1)
 - b. Write two characteristics of Boltzmann distribution. (1)
 - c. Write the definition of assembly. (1)
 - d. Give decreasing order of electropositive matter of metal. (1)
 - e. What are ideal solutions? (1)
 - f. Define: fugacity. (1)
 - g. What is battery? (1)
- Q-2 Attempt all questions (14)**
- a. Write the applications of electrochemical series. (5)
 - b. Describe galvanic cell. (5)
 - c. Write characteristics of reversible and irreversible electrode. (4)
- OR**
- Q-2 Attempt all questions (14)**
- a. Derive the equation for entropy and probability. (7)
 - b. Explain Boltzmann distribution law. (7)
- Q-3 Attempt all questions (14)**
- a. Determine fugacity by graphical method. (7)
 - b. Variation of fugacity for pure gases with temperature and pressure. (7)
- OR**
- Q-3 Attempt all questions (7)**
- a. Discuss total vapor pressure varies in linear manner with the mole fraction of component in liquid manner. (7)
 - b. Write note on Duhem-margulus equation. (7)



SECTION – II

- Q-4 Attempt the Following questions (07)**
- a. Write the definition of electrochemical series. (1)
 - b. Give full form of EMF. (1)
 - c. Define: ensembles. (1)
 - d. Write the statement of Roul't's law (1)
 - e. Give the definition of thermodynamics. (1)
 - f. Write the final equation of vibrational partition function. (1)
 - g. Define: Microstate. (1)
- Q-5 Attempt all questions (14)**
- a. Describe dissociation constant of weak acid. (6)
 - b. Explain calculation of electrode potentials from standard potentials (4)
 - c. Write any four characteristics of electrochemical series. (4)
- OR**
- Q-5 Attempt all questions (14)**
- a. Derive Sakur- Tetrode equation. (7)
 - b. Explain rotational partition function. (7)
- Q-6 Attempt all questions (14)**
- a. Write note on lewis Randall rule. (7)
 - b. Determine fugacity by state of equation method. (7)
- OR**
- Q-6 Attempt all Questions**
- a. Write the properties of ideal solution. (7)
 - b. Discuss the freezing points of dilute solution. (7)

