

# C.U.SHAH UNIVERSITY

## Summer Examination-2019

**Subject Name: Physical Chemistry- III**

**Subject Code: 4SC05PCH1**

**Branch: B.Sc. (Chemistry)**

**Semester: 5**

**Date: 19/03/2019**

**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.
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**Q-1                    Attempt the following questions                    (14)**

- a) Define: Spontaneous reaction. (1)
- b) Write the statement of second law of thermodynamics. (1)
- c) What is standard entropy? (1)
- d) Write the definition of fugacity? (1)
- e) Define: concentration. (1)
- f) What is mole fraction? (1)
- g) Define: molality. (1)
- h) What is solubility? (1)
- i) Write the definition of compound. (1)
- j) Define: phase. (1)
- k) Write the formula degree of freedom. (1)
- l) Define: colloids. (1)
- m) What are lyophilic sols? (1)
- n) Write the formula of Nernst equation. (1)

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

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

- a) Write note on Carnot cycle. (7)
- b) Derive Gibb's Helmholtz equation on base of free energy and enthalpy. (7)

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

- a) Write note on phenol-water system. (7)
- b) Write description on Henry's law (5)
- c) Write the definition of normality with formula. (2)

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

- a) Describe phase diagram of one component system. (7)
- b) Give explanation on term "component" (7)

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

- a) Write the characteristics of lyophilic ad lyophobic sols (7)



- b) Explain any two dispersion methods for colloids. (7)
- Q-6            Attempt all questions            (14)**
- a) Write determination of pH using hydrogen electrode. (7)
- b) Determine the dissociation constant of weak acid. (7)
- Q-7            Attempt all questions            (14)**
- a) Derive an equation of entropy for an ideal gas. (7)
- b) Write note on Vant-hoff isotherm equation. (7)
- Q-8            Attempt all questions            (14)**
- a) Explain Brownian method of colloids. (7)
- b) Write application of colloids. (7)

