PC – 264 CV-19

(532) M.Sc. CHEMISTRY (SECOND SEMESTER)

Term End Examination JUNE 2020

Compulsory/Optional Group A,B and C Paper - III PHYSICAL CHEMISTRY

Time : Three Hours] [Maximum Marks : 080 [Minimum Pass Marks : 029

नोट :– दोनों खण्डों से निर्देशानुसार उत्तर दीजिए। प्रश्नों के अंक उनके दाहिनी ओर अंकित हैं। **Note : Answer From Both the Section as Directed. The Figures in the right-hand margin indicate marks.**

SECTION - A

1. Answer the following questions:- **1X10**

(a) State the Zeroth law of Thermodynamics.
(b) Calculate the ionic strenght of O.I M-NaCl
(c) Predict Feasibility of a chemical reaction in terms of Gibb's free Energy.
(d) What is statistical weight factor?
(e) Write Phenomenological Equation.
(f) Write Ilkovic Equation.
(g) How does PH affects corrosion?
(h) Write wierl equation.
(i) What is SEM and TEM in Electron Diffration?
(j) Write importance of Neutron Diffraction in brief.

2. Answer the following questions:- **2X5**

(a) What are the limitations of the first law of thermodynamics? Justify the need of Second law of thermo dynamics.
(b) Write applications of irreversible thermodynamics for Biological Systems.
(c) Describe tunneling in brief.
(d) Write effect of light at Semi-Conductor Solution interfaces.
(e) Explain scattering angle in Electron Diffraction.

SECTION - B

1. Answer all questions:- **12X5**

UNIT-I

3. Define non ideal solution. Discuss Excess functions for non-ideal Salutions.

OR

Describe application of Phase rule to three compenent system with suitable example and explain second order phase transition.

UNIT-II

4. What is Distribution law in thermodynamics? Discuss its application to metal.

OR

What is Rotational Partition function? Derive an expression for Ratational Partition Function of diatomic molecute.

UNIT-III

5. Devive an expression for thermodynamics of electrifield interfaces by Lippmann's Equation.

OR

Write note on
(a) Tafel Plot (b) Structure of Double Layer interface.

UNIT-IV

6. Write note on
(a) Half wave Potential and its Significance. (b) Nernst Plank Equation.

OR

What is Corrosion? Discuss homogeneous theory of corrosion and its preventions.

UNIT-V

7. Discuss elucidation of structure of simple gas phase molecules by electron diffraction.

OR

What do you mean by Neutron Diffraction? Discuss magnetic Scattering and its measurement techhiques.

--------ooo--------