SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
M.Sc.Chemistry - END SEMESTER EXAMINATIONS - NOV' 2024
SEMESTER - I
22PCHCT1003 - Chemical Kinetics and Thermodynamics

Total Duration : 2 Hrs. 30 Mins.   Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. What is the difference between high and low activation energies and how this affects the reaction?

2. Explain any one method of fast reaction.

3. Derive the relationship between substrate and enzyme concentrations and the rates of enzyme-catalyzed reactions.

4. Explain the concept of Lindemann and Hinshelwood theory.

5. Explain Gibbs Duhem equation.

6. Discuss the terms Concepts of activity and activity coefficient.

7. Describe the transformation properties of fluxes and forces in a chemical reaction.

8. Derive the expression for Maxwell - Boltzmann statistics.

Section C

I - Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. Predict the kinetics of complex for the parallel reaction

10. Apply Nernst distribution law, under what condition is it valid?
    How is the law derived from thermodynamic considerations?

11. Justify an expression for the average energy of one of material oscillator according to Einstein model and obtain heat capacity at constant volume.

12. Determine an expression for the molecular vibrational partition function of an ideal diatomic gas.

II - Compulsory question $(1 \times 10 = 10$ Marks)

13. Justify and explain Rice–Herzfeld mechanism for the decomposition of acetaldehyde.

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