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.
B.Sc. END SEMESTER EXAMINATIONS NOVEMBER-2022
SEMESTER - V
20UCHCT5011 - Physical Chemistry - I

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

Section A

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

1. State and explain Raoult's law for vapour pressure of binary solutions of volatile liquids.
2. Calculate the molar mass of a non-volatile solute, if at 25°C, its solution containing 1.6g dm^{-3} has an osmotic pressure of 83 torr. Given R = 0.0821 $dm^3 atm K^{-1} mol^{-1}$.
3. Draw schematically the phase diagram for the water system and apply the Gibb's phase rule to it.
4. Derive the rate equation and half-life of zero order reaction.
5. Explain the factors affecting the rate of a reaction.
6. Outline the significance of collision theory and explain the failure of collision theory.
7. Analyze and explain the factors influencing the adsorption.
8. Distinguish homogeneous and heterogeneous catalysis.

Section B

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Explain the applications of Nernst distribution law.
10. Draw and discuss the phase diagram for lead-silver system.
11. Derive Arhenius equation. Justify the statement "Activation energy of a reaction can't be negative" .
12. Evaluate the following with the help of activated complex theory
    (i) Standard enthalpy of activation
    (ii) Standard entropy of activation
13. Evaluate the Langmuir theory of adsorption.

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