

DEPARTMENT OF CHEMISTRY

R.C.S. COLLEGE, MANJHAUL

BEGUSARAI, BIHAR - 851127

Assignment Question Paper

MJC/MIC - States of matter and Ionic Equilibrium

Paper - 2

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1. Dependence of Coefficient of Viscosity on Temperature and Pressure:
Consider a gas with a coefficient of viscosity (η) at standard conditions ($T=273\text{ K}$, $P=1\text{ atm}$). The temperature is increased to 350 K , and pressure is raised to 2 atm .
Given:
Coefficient of viscosity at standard conditions (η_0) = $2.0 \times 10^{-5}\text{ Ns/m}^2$

Calculate the new coefficient of viscosity (η) at the new conditions.
 2. Explain Maxwell's distribution of molecular velocities and its significance in understanding the behaviour of gas molecules.
 3. Discuss the coefficient of viscosity and its dependence on temperature and pressure according to kinetic theory.
 4. Establish the relationship between mean free path and coefficient of viscosity, and illustrate how one can calculate collision diameter from the coefficient of viscosity.