

Second Semester Internal Examination, February 2026
Major Course in Chemistry
CHE2CJ101- Physical Chemistry-I: States of Matter

Time: 1 Hr

Max Marks: 35

Name:	Marks Scored	Section A		Total Marks
Class:		Section B		
		Section C		

Section A

(Each question carries 3 marks, Max marks for section – 7)

1. Explain refractive index and Snell's law.
2. Calculate the number of atoms per unit cell in a BCC and FCC lattice.
3. Give kinetic gas equation and explain the terms.

Section B

(Each question carries 6 marks, Max marks for section – 18)

4. What is Viscosity? What are the factors affecting it? Explain Poiseuille's equation?
5. Discuss hydrophilicity and superhydrophilicity with regard to rigid solid surfaces using contact angle.
6. Calculate the packing efficiency in primitive and cubic close packed lattice.
7. Sketch the 111, 110 and 200 planes in a cubic lattice.

Section C

(Answer any one question, each question carries 10 marks)

8. a) Discuss Hydrogen bonding. Explain with two examples, how it imparts unusual behaviour in water?
b) Discuss the significance of H-bonding in biological systems.
9. a) Discuss the significance of Maxwell's equation for the distribution of molecular velocities and the effect of temperature on such distribution.
b) Give the relationships that connect the (i) RMS velocity (ii) average velocity and (iii) most probable velocity of a gas with temperature.