Unit IV

8. Derive and explain Maxwell's distribution of speed in an ideal gas.

Or

9. Explain transport of momentum, energy and mass in gases.

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52061

B. Sc. EXAMINATION, 2026

(Second Semester)

(Re-appear Only)

PHYSICS

Paper–I

Properties of Matter and Kinetic Theory of Gases

Time : 3 *Hours*] [*Maximum Marks :* 40

Before answering the question-paper, candidates must ensure that they have been supplied with correct and complete question-paper. No complaint, in this regard will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

(Compulsory Question)

1. (a) What is radius of Gyration ?

(b) Twisting of a hollow cylinder is more difficult compared to solid cylinder. Why ?

(c) Explain the Kinetic interpretation of temperature ?

(d) What is diffusion of gases ?

Unit I

2. (a) A solid cylinder of mass 4 kg., radius 0.5 m, length 1 m. Moment of inertia about cylinder's axis (through center) is $I_{cm} = \frac{1}{2} MR^2$. Find moment of inertia about a parllel axis at a distance 0.5 m from the center.

(b) Derive the perpendicular axis theorem.

Or

3. Derive the moment of inertia of a solid sphere and hollow sphere.

Unit II

4. (a) Define Hook's law.

(b) A mass $m = 2$ kg is hung on a spring with $k = 400$ N/m. Find the extension.

(c) Explain the difference between stress and strain.

Or

5. (a) What is a twisting couble ?

(b) Define torsion of cylinder

(c) A road has possion's ratio 0.3. If it is stretched to produce a longitudinal strain of 0.001. Find lateral strain.

Unit III

6. Derive the expression for pressure of an ideal gas using kinetic theory.

Or

7. (a) Explain Brownian motion.

(b) What is meant by degree of freedom of a molecule ?