Model College Dumka

# Department of Physics

## B.Sc. Semester I Internal Examination

Full Marks: 25 (20 + 5)  
Time: 1 Hour

Instructions:  
- Attempt all questions from Group A.  
- Attempt one question only from Group B.  
- 5 marks will be awarded based on attendance and overall class performance.

## Group A (Compulsory: 1×5 + 5 = 10 Marks)

## Q1. Very Short Answer Type Questions (1×5 = 5 Marks)

Answer all five questions briefly:

1. Define Poisson's ratio.
2. What is Hooke’s Law?
3. Write one Kepler’s law.
4. What is resonance in forced oscillation?
5. State one outcome of the Michelson-Morley experiment.

## Q2. Short Answer Type Question (1×5 = 5 Marks)

Derive the differential equation of simple harmonic motion (SHM) and mention its characteristics.

## Group B (Descriptive: 1×10 = 10 Marks)

Attempt any one question only.

Q3. Derive Poiseuille’s equation for the flow of a viscous fluid through a capillary tube. Explain the necessary corrections.

OR

Q4. Derive the trajectory of a particle moving under a central inverse square law force and discuss the concept of effective potential.