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:

a) Define Poisson's ratio.

b) What is Hooke's Law?

c) Write one Kepler's law.

d) What is resonance in forced oscillation?

e) 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.