

October 2025
B.A./B.Sc.
First Semester
MULTI-DISCIPLINARY COURSE – 1
PHYSICS
Course Code: PHO 1.11
(General Physics - I)

Total Mark: 50
Time: 2 hours

Pass Mark: 20

I. Answer three questions, taking one from each unit.

UNIT-I

1. (a) State and explain Newton's three laws of motion with suitable examples. 6
- (b) What is orbital velocity of a satellite? Write its formula and significance. 4
- (c) A car starts from rest and accelerates at 2 m/s^2 for 5 seconds. What is its final velocity? 2
2. (a) State Newton's law of gravitation. Explain acceleration due to gravity with formula. 6
- (b) Define physical quantity. Distinguish between fundamental and derived quantities with examples. 4
- (c) If a car travels 100 m in 5 seconds. Find the speed of the car. 2

UNIT-II

3. (a) Explain thermal expansion of solids, liquids, and gases with suitable examples. Write about anomalous expansion of water and its significance in nature. 6
- (b) Distinguish between reversible and irreversible processes. 4
- (c) Define specific heat capacity. 2
4. (a) Distinguish between conduction, convection, and radiation as modes of heat transfer. Give two examples for each. 6
- (b) Explain Wien's displacement law and Stefan's law of radiation. 4

- (c) State the first law of thermodynamics. 2

UNIT-III

5. (a) Differentiate between transverse and longitudinal waves with examples. 6
(b) Define restoring force and force constant in SHM. 4
(c) Write two characteristics of SHM. 2
- 6 (a) State Pascal's law and explain its applications in hydraulic lift and hydraulic brakes. 6
(b) Define terminal velocity and critical velocity. 4
(c) State Hooke's law. 2

II. Answer any two questions from the following.

UNIT-I

7. (a) What is escape velocity? Write its formula and significance. 5
(b) Define moment of inertia. 2

UNIT-II

8. (a) What is blackbody radiation? Write its important characteristics 5
(b) Write SI unit of work and energy. 2

UNIT-III

9. (a) State Bernoulli's theorem and explain its applications. 5
(b) What are harmonics? 2