61121

# I Semester B.Sc. Examination, March/April 2022
## (CBCS) (Fresh)
## PHYSICS
## Mechanics – I, Heat and Thermodynamics – I

Time : 3 Hours Max. Marks : 70

***Instruction :*** *Answer* ***any five*** *questions from* ***each*** *Part.*

PART – A

Answer **any five** questions. **Each** question carries **eight** marks. **(5×8=40)**

1. a) Define static friction and kinetic friction.

   b) What is angle of repose ? Derive an expression for the acceleration of a body moving along an inclined plane with friction. **(2+6)**

2. Derive an expression for radial and transverse components of velocity and acceleration for a particle moving along a curve. **8**

3. a) Distinguish between conservative and non-conservative forces with examples.

   b) Derive an expression for work done by a variable force. **(4+4)**

4. a) State Kirchoff's law of radiation.

   b) Deduce Wien's law and Rayleigh-Jean's law from Planck's law of radiation. **(2+6)**

5. a) Define average velocity and rms velocity of gas molecules.

   b) Define mean free path of a gas molecule and derive an expression for the same. **(2+6)**

6. a) What are transport phenomenon of gases ?

   b) Derive an expression for critical constants in terms of Van Der Waal's constants. **(2+6)**

**P.T.O.**