15|12|23

DOON UNIVERSITY, DEHRADUN
End Semester Examination, Odd Semester, 2023-24
Department of Physics, School of Physical Sciences
B.Sc. (Hons) With Research
Course PHC-103: Mechanics

Time Allowed: 2:00 Hours   *Maximum Marks: 30*

SECTION: A   **(Marks: 3×2=6)**

1. Write the Kepler's laws.

2. Discuss the elastic and inelastic collision.

3. Two electrons moved towards each other, the speed of each being 0.9 c in a Galilean frame of reference. What is their speed relative to each other?

SECTION: B   **(Marks: 3x4=12)**

4. Write a short note on:
   (a) Global Positioning System (GPS)   (b) Geostationary satellite.

5. Define the simple harmonic motions and solve differential equation for its solution.

6. Discuss relativistic Doppler Effect. Obtain an expression for the apparent frequency of source.

SECTION: C   **(Marks: 2x6=12)**

7. Describe Michelson Morley experiment. What is the significance of the negative result?

8. What is meant by Galilean Transformation and Galilean Invariance? Show that acceleration is invariant to Galilean Transformation but velocity is not.