M.Sc. DEGREE EXAMINATION, EVEN SEMESTER 2021
I Year I Semester
Classical Mechanics And Relativity

Max.marks :25

Answer any **FIVE** questions $(5 \times 5 = 25)$ Marks

1. Derive Langrange's equation of motion.

2. Illustrate infinitesimal rotations as vectors.

3. Solve the Harmonic oscillator problem by Hamilton-Jacobi method.

4. Discuss the theory of vibrations of linear triatomic molecule.

5. Show that the scalar product of two four vectors is invariant under Lorentz transformations.

6. Derive Euler's equations for the motion of a rigid body.

7. Obtain the relativistic expression for the Hamiltonian of a free particle