B.Sc. DEGREE EXAMINATION,ODD SEMESTER 2020
III Year V Semester
Dynamics

Max.marks :25

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

1. A particle has two velocities $\overline{v_1}$ and $\overline{v_2}$. Its resultant velocity is equal to $\overline{v_1}$ in magnitude. Show that when the velocity $\overline{v_1}$ is doubled, the new resultant is perpendicular to $\overline{v_2}$.
2. Show that in a simple harmonic motion, the sum of kinetic energy and potential energy is a constant.
3. Obtain the horizontal range of a projectile.
4. Show that when two spheres of equal masses collide directly, the velocities of the spheres are interchanged, if e=1.
5. Find the moment of inertia of a square about its diagonal of length l.
6. Find the magnitude and direction of the resultant of the velocities $\overline{v_1}$ and $\overline{v_2}$.
7. Find the velocities of two smooth spheres after a direct impact between them.