

DYNAMICS

UNIT I

Kinematics Velocity – Relative Velocity - Acceleration – Coplanar Motion - components of Velocity & Acceleration – Newton’s Laws of Motion.

UNIT II

Simple Harmonic motion – Simple Pendulum – Load suspended by an elastic string – Projectile – Maximum height reached , range , time of flight – Projectile up / down an inclined plane.

UNIT III

Impulsive force – conversion of linear momentum – Impact of a sphere & a plane - Direct & Oblique Impact of two smooth spheres –Kinetic energy and Impulse.

UNIT IV

Central Orbit – Central force – Differential equation to a central orbit in polar & pedal coordinates - Given the central orbit, to find the law of force – Kepler’s Laws of Planetary motions.

UNIT V

Motion of a rigid body – Moment of Inertia of simple bodies –Theorems of Parallel & Perpendicular axes – Motion in two-dimension – Motion of a rigid body about a fixed axis.

TEXT BOOK(S)

[1] P.Duraipandiyan, Vector Treatment as in Mechanics, S.Chand & Co. -June 1997 Edition.

UNIT – I - Chapter 1 & Chapter 2 Sections 2.1, 2.1.1

UNIT – II - Chapter 12 sections 12.1 to 12.3 & Chapter 13

UNIT – III - Chapter 14

UNIT –IV - Chapter 16

UNIT – V - Chapter 4 Section 4.2 Chapter 17 & Chapter 18

REFERENCE(S)

[1] M.K.Venkataraman, Dynamics, Agasthiar Book Depot, 1990.

[2] A.V.Dharmapadam, Dynamics, S. Viswanathan Publishers, 1981.