AMMR-2 ENGINEERING MECHANICS

UNIT-1 GENERAL COPLANAR FORCE SYSTEMS

1.1 Basis concepts, Law of motions, principle of transmissibility of forces,

1.2 Transfer of a force to parallel position, Resultant of a force system, simplest resultant of two dimensional concurrent & non concurrent force systems,

1.3 Free body diagrams, equilibrium & its equations, applications.

UNIT-2 TRUSSES & CABLES

2.1 Introductions, simple truss & solutions of simple truss,

2.2 Method of joints & method of sections.

UNIT-3 FRICTION

3.1 Introduction, Laws of coulomb friction, equilibrium of bodies involving dry friction, belt friction, applications.

UNIT-4 CENTRE OF GRAVITY, CENTROID, MOMENT OF INERTIA

4.1 Centroid of plane, curve, area ,volume & composite bodies, moment of inertia of plane area, parallel axis theorem, perpendicular axis theorem,

4.2 Principal moment inertia, mass moment of inertia of circular ring, disc, cylinder, sphere and cone about their axis of symmetry.

UNIT-5 BEAMS

5.1 Introductions, shear force and bending moment, differential equations for equilibrium,

5.2 Shear force & bending moment's diagrams for statically determinate beams.

UNIT-6 KINEMATICS OF RIGID BODY

6.1 Introduction, plane motion of rigid bodies,

6.2 Velocity & acceleration under translation & rotational motion,

6.3 Relative velocity, projectile motion.

UNIT-7 KINETICS OF RIGID BODIES:

7.1 Introduction, force, mass & acceleration, work & energy,

7.2 Impulse & momentum, D'Alembert principles & dynamic equilibrium.

7.3 Virtual work.

Reference Books :

1. Beer F.P. & Johnston ,F.R. " Mechanics For Engineers", McGraw Hill.
2. Shames, I.H. " Engg. Mechanics" , P H I.
3. Meriam , J. L. " Statics" , J. Wiley.