AMPL04 ENGINEERING MECHANICS & STRENGTH OF MATERIALS

UNIT-1 ENGINEERING MECHANICS

1.1 Concurrent Forces in a Plane and its Equilibrium,
1.2 Centroids of Composite Plane Figures,
1.3 General Case of Forces in a Plane.
1.4 Moment of Inertia of Plane Figures,
1.5 Parallel Axis Theorem,
1.6 Polar M.I.,
1.7 Concept of Mass M.I.,
1.8 Rectilinear Translation,
1.9 Kinematics,
1.10 Principle of Dynamics,
1.11 Motion of a Particle Under Constant Force,
1.12 Force Proportional to Displacement and Free Vibrations (SHM),
1.13 D' Alembert's Principle, Momentum,
1.14 Impulse- Work and Energy.
1.15 Rotation of a Rigid Body about a Fixed Axis Kinematics,
1.16 Equation of Motion of a Rigid Body about a Fixed axis,
1.17 Rotation and Constant Moment, Torsional Vibration.

UNIT-2 STRENGTH OF MATERIALS

2.1 Simple Stress and Strain,
2.2 Stresses on Inclined Plane,
2.3 Two-dimensional Stress Systems,
2.4 Principal Stress and Principal Planes,
2.5 Mhor's Circle.
2.6 Shearing Force and Bending Moment,
2.7 Types of Loads,
2.8 Types of Supports, S.F. and D.M.
2.9 Diagrams for Cantilever and Simply Supported Beams under Concentrated Loads and under U.D.L.
2.10 Flexure formula,
2.11 Bending Stresses on the above types of Beams with Rectangular and Circular Sections.
2.12 Torsion of Circular Shafts,
2.13 Determination of Shear Stress.

Reference Books

1. Engineering Mechanics, S. Timoshenko (Relevant sections only).
2. Elements of Strength of Materials, S. Timoshenko (Relevant sections only).