

LECTURE NO.	CHAPTER	DETAILS OF CHAPTER
Lecture 1	Module-V Free Body Diagram (1L)	Free body diagrams; Examples on modelling of typical supports and joints and discussion on the kinematic and kinetic constraints that they impose.
Lecture 2	Module-VII Bending Moment (5L)	Beam: Transverse Loading; Types of Beam
Lecture 3		Shear Force and Bending Moment ; Relationship between load intensity (w), shear force (F_s) and bending moment (M)
Lecture 4		Shear force and bending moment diagram for a few standard cases
Lecture 5		Shear force and bending moment diagram for a few standard cases
Lecture 6		Numerical Solution of Problems on Shear force and bending moment
Lecture 7	Module-IV Kinetics of Rigid Bodies (5L)	Angular momentum about a point; Mass moment of Inertia, Conservation of Angular Momentum
Lecture 8		Inertia tensor: Definition and computation; Principal axes and Moment of Inertia; Parallel and perpendicular axes theorems
Lecture 9		Mass moment of inertia of symmetrical bodies: Derivation of the moment of inertia of a ring; Derivation of the moment of inertia of a hollow/solid cylinder; Derivation of moment of inertia of a uniform solid sphere; Derivation of moment of inertia of a uniform solid cone; Derivation of moment of inertia of a Cuboid.
Lecture 10		Area Moment of Inertia and Polar Moment of Inertia of Common Geometric Figures
Lecture 11		Numerical Solution of Problems on area moment of inertia.
Lecture 12	Module-VIII Torsional Motion (2L)	Torsion of circular shafts, derivation of torsion equation; stress and deformation in circular and hollow shafts.
Lecture 13		Numerical Solution of Problems on Torsion
Lecture 14	Module-IX Friction (3L)	Concept of Friction; Laws of Coulomb friction; Angle of Repose; Coefficient of friction.
Lecture 15		Numerical Solution of Problems on Friction
Lecture 16		Numerical Solution of Problems on Friction

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Lecture 17	Module-III Kinematics of Rigid Body (6L)	Definition and motion of a rigid body
Lecture 18		Rigid bodies as coordinate systems; Angular velocity of a rigid body
Lecture 19		Angular acceleration of a rigid
Lecture 20		Motion relative to a rotating rigid body: Five term acceleration formula.
Lecture 21		Numerical Solution of Problems on Kinematics of Rigid Body
Lecture 22		Numerical Solution of Problems on Kinematics of Rigid Body
Lecture 23	Module-VI General Motion (9L)	General Planar Motions-Numerical Solution of Problem on Accelerating Truck & Falling Ladder
Lecture 24		General Planar Motions-Numerical Solution of Problem on Rolling Cylinder & Rolling Coin
Lecture 25		General Planar Motions-Numerical Solution of Problem on Slider Crank Velocity
Lecture 26		General Planar Motions-Numerical Solution of Problem on Slider Crank Acceleration
Lecture 27		General 3-D Motions-Angular Motion about a Fixed Point-Numerical Solution of Remote-Control Mechanism
Lecture 28		General 3-D Motions-Angular Motion about a Fixed Point-Numerical Solution of Electric Motor with an Attached Disk
Lecture 29		General 3-D Motions: Precession
Lecture 30		General 3-D Motions: Gyroscope
Lecture 31		General 3-D Motions: Rolling Coin
Lecture 32		Module-I Introduction to vectors and tensors and co-ordinate Systems (5L)
Lecture 33	Vector and tensor algebra	
Lecture 34	Index notation; Symmetric and anti-symmetric tensors	
Lecture 35	Eigenvalues and Principal axes.	
Lecture 36	Numerical Solution of Problems on vector and tensor	
Lecture 37	Module-II Three-dimensional Rotation (4L)	Euler's theorem, Axis-angle formulation and Euler angles
Lecture 38		Coordinate transformation of vectors and tensors.
Lecture 39		Numerical Solution of Problems on Three-dimensional Rotation
Lecture 40		Numerical Solution of Problems on Three-dimensional Rotation