M. Tech (Earthquake Engineering): Entrance Examination Syllabus, NCDMM, MNIT Jaipur

1. Plate tectonics, earthquake mechanism, seismic waves, magnitude, intensity; Equation of motion of SDOF systems; Response Spectrum; Seismic zones, Importance factor, Response reduction factor
2. Bending moment and shear force in statically determinate beams; Stress and strain relationships; Simple bending theory, flexural and shear stresses, shear centre; Torsion, Transformation of stress; Buckling of column, Combined and direct bending stresses.
3. Analysis of statically determinate and indeterminate structures by force and energy methods; Method of superposition; Analysis of trusses, arches, beams, cables and frames; Displacement methods: Slope deflection and moment distribution; Influence lines; Stiffness and flexibility methods of structural analysis.
4. Working stress and limit state design concepts; Design of RCC members: beams, slabs, columns; Bond and development length; Analysis and design of prestressed concrete beams.
5. Design of Steel Structures: tension and compression members, beams, columns, column bases; Connections - simple and eccentric, beam-column connections, plate girders and trusses; Concept of plastic analysis - beams and frames.