

AMSB07 ANALYSIS OF STRUCTURES

1. Introduction to plasticity, Failure Theories, Analysis of continuous beam using three moment equation.
2. Stability of columns and beams – Euler buckling of columns, Energy and Equilibrium criteria for beam columns.
3. Introduction to finite element method – Nodes, elements, mesh, shape functions.
4. Development of relevant matrices - stiffness matrix, load vector, mass matrix and damping matrix. Examples of truss, beams, various plate finite elements.
5. Computer implementation of finite element method – General format of structural analysis software, various numerical schemes for – solution of simultaneous equations, assembly of global stiffness matrix, solution to eigen value problems, dynamic analysis.

Reference Books:

1. Timoshenko & Young; Theory of Structures, McGraw Hill Publications, 1965.
2. Reddy, C.S.; Basic Structural Analysis, Tata-McGraw Hill Publications, 2010.
3. Timoshenko & Young; Theory of plates, McGraw Hill Publications, 2010
4. Krishna Raju & Gururaja; Advanced Mechanics of Solids and Structures, Narosa Publications, 1997.
5. Russell. C. Hibbeler ; Structural analysis. Ed. 9, Prentice hall, 2014