UNIT - I
Introduction to Finite Element Method – Basic Equations in Elasticity – stress
strain equations – concept of plane stress – plane strain – advantages and
disadvantages of FEM.
Element shapes – nodes – nodal degree of freedom – strain displacement
relations.

UNIT - II
Finite Element Analysis (FEA) of – one dimensional problems – Bar element
– Shape functions stiffness matrix
FEA Beam elements – stress strain relation shape functions stiffness matrix-
continuous beams.

UNIT - III
FEA Two dimensional problem – CST – LST element – shape function –
stress – strain.
Lagrangian – Serendipity elements – Hermite polynomials – regular, Irregular
2 D & 3D – Element – shape functions.

UNIT - IV
Isoparametric formulation – Concepts of isoparametric elements for 2D
analysis formulation of CST element, 4 – noded and 8-noded iso-parametric
quadrilateral elements.

UNIT-V
Solution Techniques: Numerical Integration, Static condensation, assembly
of elements and solution techniques for static loads.

TEXT BOOKS:
1. Introduction to Finite elements in engineering by Chandrupatla,
   Belegundu, Prentice Hall.
2. Finite element method by Daryl L. Logan, CENGAGE Learning.

REFERENCES:
1. Finite element analysis by S.S. Bhavikatti-New age International
   publishers.
2. Finite element analysis by P. Seshu, PHI.