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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

M.Tech I Year II Semester Supplementary Examinations Feb-2021
FEM IN STRUCTURAL ENGINEERING
(STRUCTURAL ENGINEERING)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 a Explain discretization and classification of discretization. 6M
b Explain nodes at discontinuities. 6M

OR

- 2 A beam AB of span L simply supported at ends and carrying a concentrated load W at the centre C. Determine the deflection at mid span by using Rayleigh-Ritz method and compare with exact solution. 12M

UNIT-II

- 3 Derive the Stiffness matrix for 1D – two noded linear bar element. 12M

OR

- 4 Derive the shape function, strain displacement matrix element stiffness matrix for a two noded 1-D Element. 12M

UNIT-III

- 5 Derive shape functions for four noded rectangular elements. Use natural Co-ordinate system. 12M

OR

- 6 Derive the strain-displacement matrix for CST element. 12M

UNIT-IV

- 7 Explain the isoperimetric concept in finite element analysis. 12M

OR

- 8 Derive the Jacobian matrix for 4-noded rectangular element. 12M

UNIT-V

- 9 Write the stiffness matrix for a hexahedral element. 12M

OR

- 10 Explain about different types of 3-D solid elements. 12M

*** END ***