Code: 9A01701

SS

B.Tech III Year I Semester (R13) Supplementary Examinations June 2017

FINITE ELEMENT METHODS IN CIVIL ENGINEERING

(Civil Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

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1 What are the various steps involved in finite element analysis? Explain by taking a practical example.

2 (a) Derive the constitutive equations for plane stress and plane strain problems.
(b) Define axi-symmetric loading with an example.

3 Derive the elements stiffness matrix for a bar element.

4 Derive the shape functions of a three noded right angled triangular element of base 25 mm and height 50 mm.

5 Derive the element stiffness matrix for a 3-noded triangular element.

6 Formulate the element stiffness matrix for a constant strain triangle.

7 Write down the steps that are needed to be followed during the formulation of a 4-noded isoparametric axi-symmetric element.

8 (a) Explain the various types of finite elements.
(b) Explain the following:
(i) Mesh refinement.
(ii) Assemblage of elements.

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