

M. Tech. Structural Engineering & Construction (CBCS Pattern) Semester-II
PSES21 - Finite Element Method

P. Pages : 2

Time : Three Hours

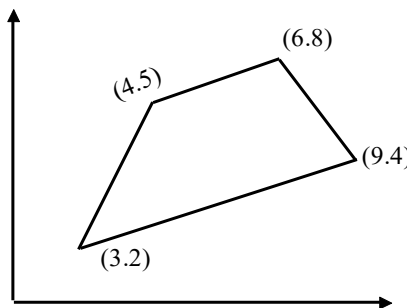


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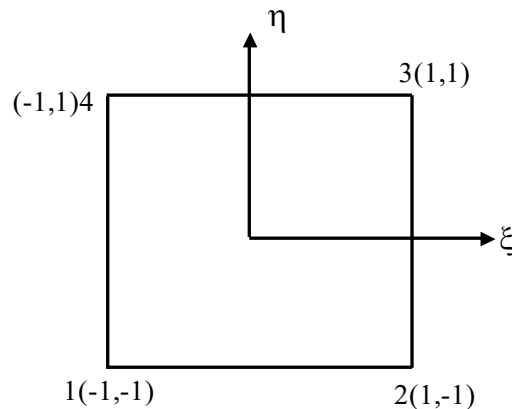
Max. Marks : 70

- Notes :
1. All questions carry equal marks.
 2. Answer **any five** questions.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.
 5. Illustrate your answers wherever necessary with the help of neat sketches.

1. Write principles of discretization. 14
2. a) Explain step by step FEM of structural analysis. 7
b) What is shape function? Explain its use in FEM. 7
3. Evaluate the cartesian co-ordinate of the point P which has local co-ordinate $\xi = 0.6$ 14



4. a) Discuss convergence required for mesh generation. 7
b) Briefly discuss the discretization process & type of element used for discretization. 7
5. Develop the element stiffness matrix for the plane stress 4 noded rectangular linear element of size $a \times b$ using iso-parametric element. 14



6. Write notes on 14

- 1) Modelling techniques in FEM.
- 2) Storage techniques used in FEM.

7. Determine the deflection at centre of simply supported beam of span d subjected to a uniform distributed load throughout its length as shown in fig. (Use Rayleigh Ritz method) 14

