Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

 Roll No .....

MVSE-301(A)

M.E./M.Tech., III Semester

Examination, June 2017

Advanced FEM and Programming

(Elective-I)

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.
ii) All questions carry equal marks.
iii) Assume suitable data if missing.

1. What is the use of Hermitian Interpolation Function? Derive shape functions for a 6-noded quadrilateral element.

2. Discuss convergence requirements in finite element formulation. Derive the shape function for 3-noded truss element by Lagrangian Interpolating Function.

3. Discuss the steps of buckling analysis of struts using finite element method with a suitable example.

4. Solve a fixed-fixed beam problem for free vibration using finite element method by discretizing the beam into three elements.

5. Discuss in detail "Structural modeling of multistory building with shear walls.

6. Discuss computational aspects and interpretation of results of finite difference and finite element method.

7. Derive strain deformation matrix for a shell element with higher order terms to incorporate in buckling analysis.

8. Write short notes on any two of the following :
   a) Determination of approximate deflection of simply supported beam under UDL using Rayleigh-Ritz method.
   b) Characteristics and types of elements to be used in modeling the superstructure of Box girder bridge.
   c) Modeling of Cooling Towers.

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