COURSE CODE (CREDITS): 18B1WCE737 (3)   MAX. MARKS: 25

COURSE NAME: Finite Element Method

COURSE INSTRUCTOR: Dr. Sugandha Singh   MAX. TIME: 1 Hour and 30 Minutes

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

1. For an axial element, derive the Transformation Matrix for converting element stiffness matrix in local coordinates to element stiffness matrix in global coordinates.

   [10 marks, CO–3]

2. Describe the various types of indeterminacies in structures with examples.

   [5 marks, CO–1]

3. State the Maxwell's Law of Reciprocal Deflections. Describe the application of the law.

   [3 marks, CO–1]

4. In the following spring assembly, find the displacement at all nodes and forces in all elements. Assume *k = 50 N/m*.

   [7 marks, CO–2]