

Dr Pankaj Kumar

Jaypee University of Information Technology, Warknaghat
Test-1 Examinations – September 2018
M. Tech 3rd semester (CM/SE)

Course code: 13M1WCE031

Max. Marks: 15

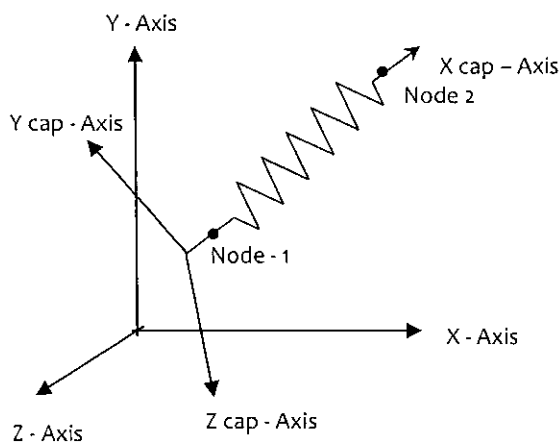
Course Name: Finite Element Methods

Course Credits:03

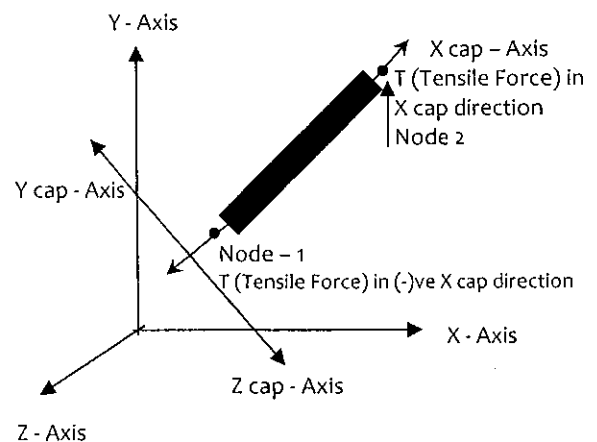
Max. Time: 1 Hrs

Note: all questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Assume any missing data.

- Q1. List and briefly describe the general steps included in solution of an engineering problem by finite element method. 4
- Q2. Write two examples for axisymmetric, 1 – D (dimensional), 2 – D, and 3 – D elements along with precise sketch. 2
- or**
- Write applications of finite element method in structural engineering and non-structural engineering. 2
- Q3. Discuss the advantages of finite element method over conventional method. 1.5
- Q4. Define term *degree of freedom*. 0.5
- Q5. Name three commonly used methods for deriving the element stiffness matrix and element equations. Briefly describe each method. 3
- Q6. Develop the stiffness matrix for the given the given elements in local co-ordinate system.
- a. Spring element 2
 - b. Bar element 2



a. spring element;



b. bar element