Sem - V / Comp. Aided Design & Finite Analysis / Prod / 18-11-14

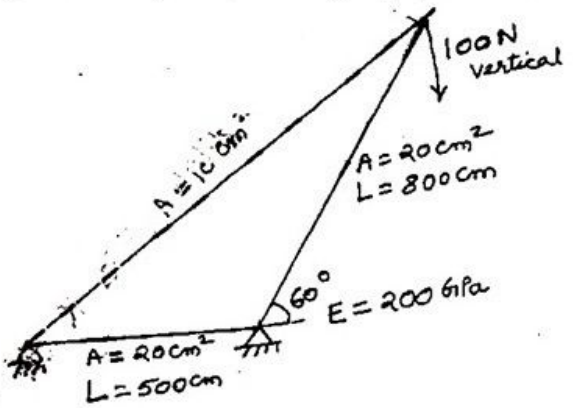
Q.P. Code : **14815**

(3 Hours) [Total Marks : 80

N.B. : (1) Question No.1 is **compulsory**.
(2) Answer any **three** questions from remaining **five** questions.
(3) Assume suitable **data** if required and state them clearly.
(4) **Figures** to the **right** indicate **full** marks.

1. Attempt any **four** from the following :– 20
   (a) Input and output devices in CAD hardware - Explain.
   (b) Sources of error in FEA solutions - Explain.
   (c) Write a short note on transformations in computer graphics.
   (d) Explain the penalty approach used in FEM.
   (e) Explain in short the properties of B-spline curves.
   (f) Describe the general rules of mesh generation for Finite Element formulation.

2. (a) Analyse the following truss completely i.e. for displacements, reactions, stresses and strains. 12



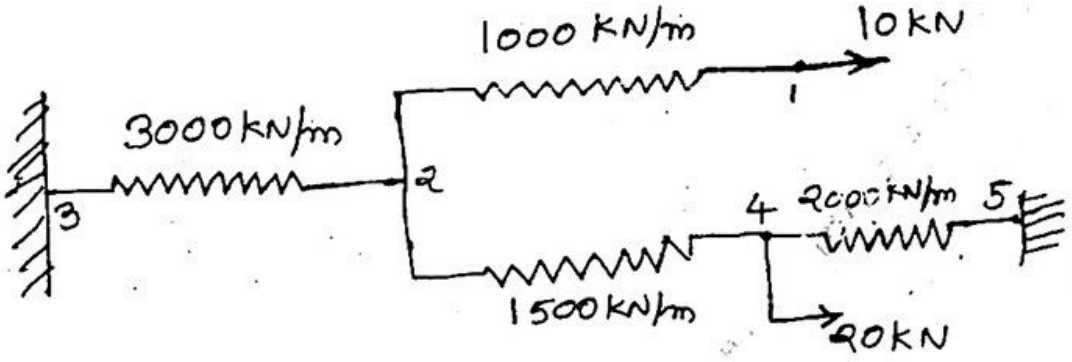
   (b) Explain preprocessing, processing and post-processing with reference to FEM software. 8

3. (a) What is product data exchange ? List data exchange formats available in the market. Explain any one in detail. 12
   (b) Formulate a global stiffness matrix for a three nodded linear element considering thermal stresses. 8

[TURN OVER

I-Con. 5638-14.

4. (a) For the following problem find; 12
   (i) Nodal displacements
   (ii) Reaction forces
   (iii) Force in each spring.



   (b) Explain B-rep and CSG types of solid modelling with examples. 8

5. (a) Write an algorithm to draw a line using DDA. 10
   (b) Write a note on windowing and clipping. Explain cohen sutherland algorithm for line clipping. 10

6. Write short notes on :– 20
   (a) H-method and P-method in FEA
   (b) Explain RGB and CMY colour models
   (c) Applications of FEA
   (d) Product life cycle with CAD ouerlay.