B – 5527

(Pages : 3)

Reg. No. : .....

Name : .....

Sixth Semester B.Tech. Degree Examination, March 2017
(2008 Scheme)
08.603 : COMPUTER AIDED DESIGN (MPU)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions. **Each** carries **4** marks.

1. What do you understand by geometric modeling ? Compare wireframe and solid modeling.
2. Explain the merits and demerits of plasma panel display.
3. What are the hardware elements associated with virtual reality (VR) systems ?
4. What do you mean by composite transformation ? How it is useful ?
5. Distinguish between window and view port.
6. Write on z-buffer algorithm.
7. What is Rayleigh Ritz method ?
8. Define principle of minimum potential energy.
9. What are the different types of boundary conditions ? Give examples.
10. What is meant by Shape Function and write down the shape function for one dimensional element ?

PART – B

Answer **one** question from **each** Module. **Each** question carries **20** marks.

Module – I

11. a) Explain with neat diagram the display processor for a random scan display device. Explain how it is different from vector display. **10**

    b) With neat sketch explain the working of Liquid Crystal Display. **10**

OR

12. a) Discuss the various data exchange formats and their application in CAD. **10**

    b) Describe the various editing features available in CAD software. **10**

P.T.O.

Module – II

13. a) Explain how transformation can be done from window to view port. Explain with an example. **10**

b) Find the transformation matrix that transforms the given square ABCD to half its size with centre still remaining at the same position. The coordinates of the square are : A (1, 1), B (3, 1), C (3, 3), D (1, 3) and centre at (2, 2). Also find the resultant coordinates of square. **10**

OR

14. a) Explain the Cohen Sutherland line clipping algorithm. **10**

b) Discuss an image space algorithm for hidden surface removal. **10**

Module – III

15. a) Discuss the following basic principles of finite element method.

i) Derivation of element stiffness matrix. **5**

ii) Assembly of global stiffness matrix. **5**

b) For the two-bar truss shown in figure 1 below, determine the displacement in the y direction of node 1 and the axial force in each element. A force of P = 100 kN is applied at node 1 in the positive y direction while node 1 settles an amount $\delta = 50$ mm in the negative x direction. Let E = 210 GPa and $A = 6 \times 10^{-4}$ m^2 for each element. The lengths of elements are shown in the figure. **10**

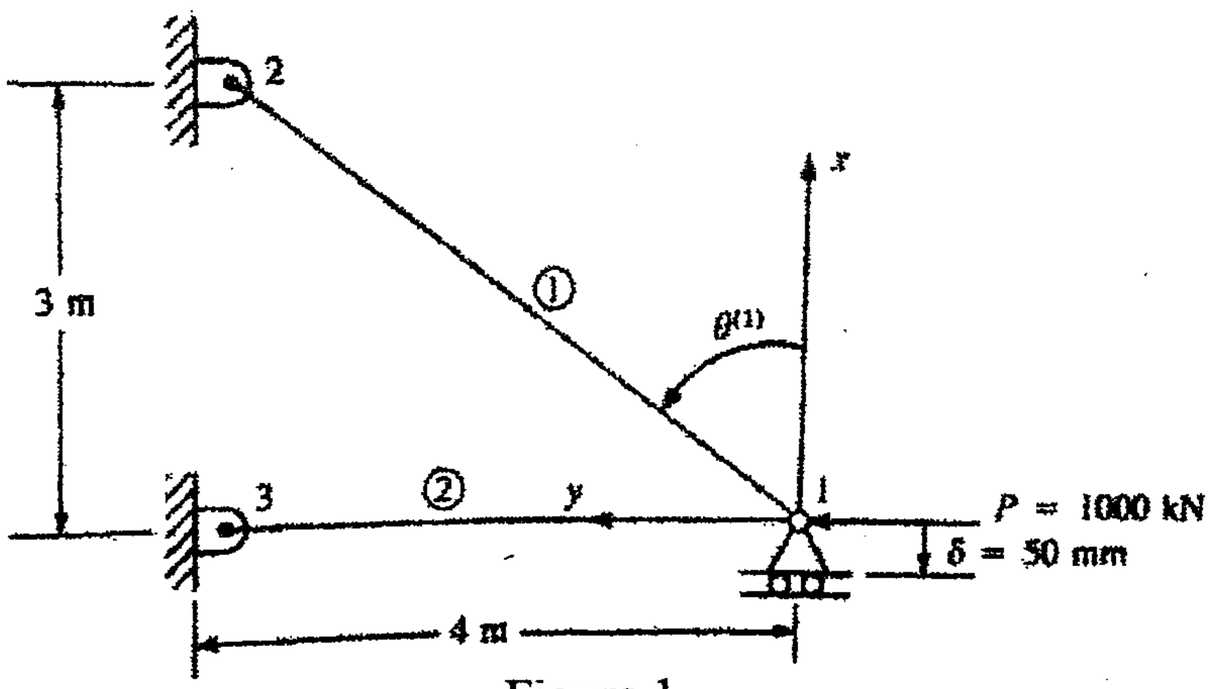

Figure 1

OR

16. a) With a suitable example, explain the physical interpretation of finite element method for one dimensional analysis. Starting from the first principles derive the stiffness matrix for a 1D bar element and extend it for the plane truss element. **10**

b) Find the total stiffness matrix of the structure given below (Figure 2). Take E = 70 GPa, I = 20×10^{-4} m^4. **10**

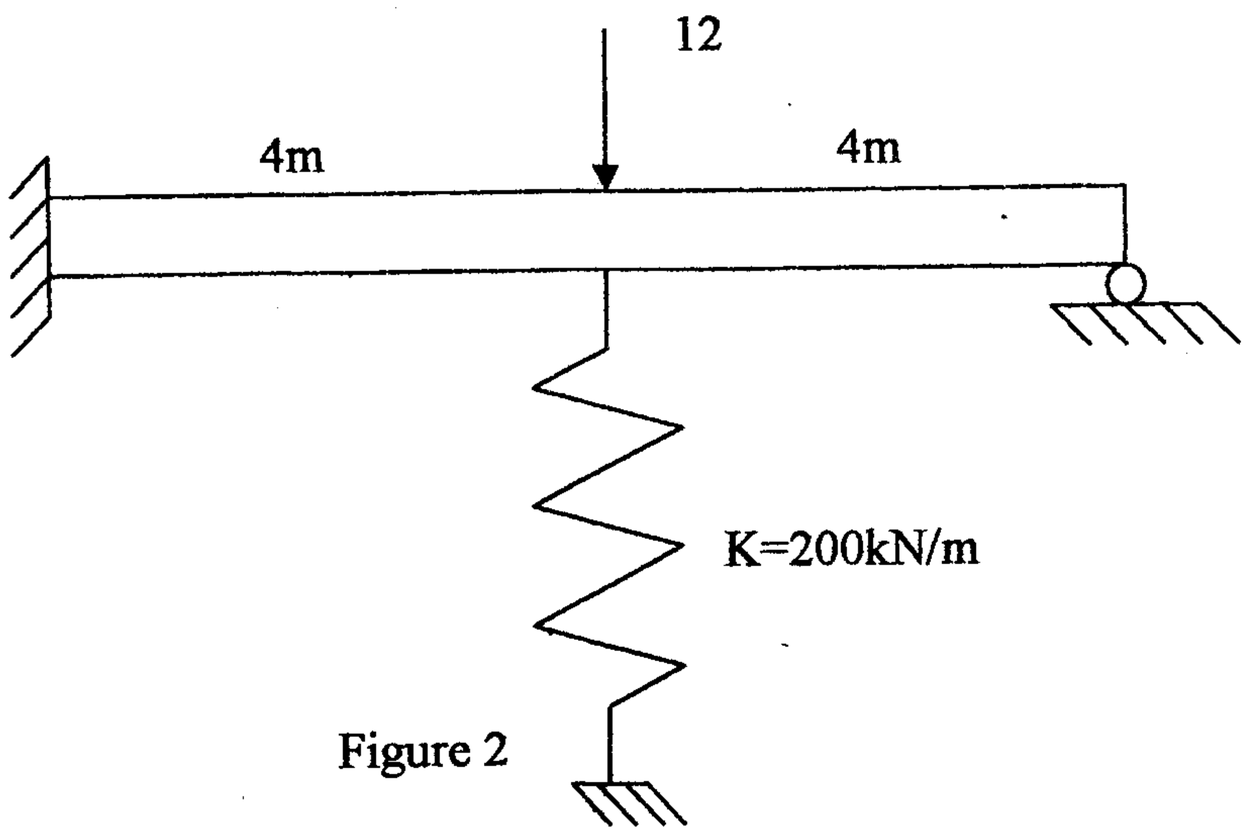

Figure 2