



Reg. No. : .....

Name : .....

**Sixth Semester B.Tech. Degree Examination, May 2012  
(2008 Scheme)**

**08.603 : COMPUTER AIDED DESIGN (MPU)**

Time : 3 Hours

Max. Marks : 100

**Instruction :** Answer *all* questions from Part **A** and one from *each* Module of Part **B**.

**PART - A**

1. Enumerate the benefits of using CAD. 40
2. What do you understand by a design workstation ?
3. What are the applications of virtual reality in product design ?
4. What are the functions of CG packages ?
5. Write short notes on scan line algorithm.
6. Distinguish between wire frame and solid modelling.
7. Explain how CAD is applied to design analysis ?
8. Explain different type of boundary conditions applied for structural problems.
9. Explain the properties of shape functions used in FEM.
10. What are the steps involved in the formulation of stiffness matrix ?

**PART - B**

**Module - I**

11. Discuss the applications of computers in design and manufacturing. 20

OR

12. Explain the working of an LCD with the help of neat sketches. Compare plasma and LCD. 20



### Module – II

13. a) What are the functions of Computer Graphics Packages ? 10  
 b) Distinguish between Windowing and Clipping. 10

OR

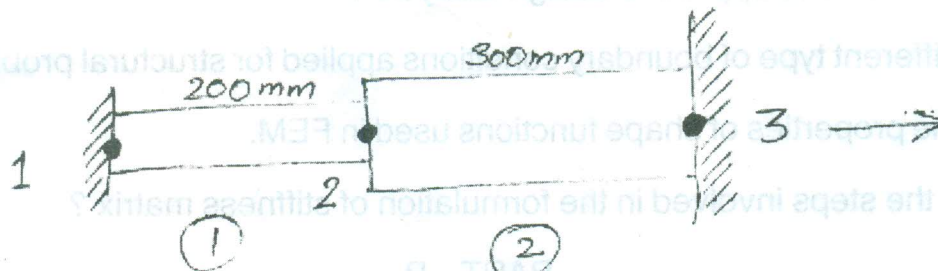
14. a) Discuss the features of Solid Modelling Packages. 10  
 b) Discuss the methods of creation of 3D solids. 10

### Module – III

15. a) Explain the principle of minimum potential energy. How is it related FEM ? 12  
 b) Write down the shape functions of a CST element. 8

OR

16. An axial load  $P = 300 \times 10^3 \text{ N}$  is applied at node 2 of the rod as shown in the figure. 10  
 i) Assemble the K and F matrices. 10  
 ii) Determine the nodal displacement and element stresses. 10



$$E_1 = 70 \times 10^9 \text{ N/mm}^2$$

$$E_2 = 200 \times 10^9 \text{ N/mm}^2$$

$$A_1 = 900 \text{ mm}^2$$

$$A_2 = 1200 \text{ mm}^2$$