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C – 2712

Reg. No. :

Name :



**Sixth Semester B.Tech. Degree Examination, June 2017
(2013 Scheme)**

13.603 : COMPUTER AIDED DESIGN (MPU)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions.

1. Explain the factors, which inhibit the use of a very high resolution and a large number of colours for display in the case of raster scanning display devices.
2. Write on the importance of studying geometric modeling in CAD.
3. CAD helps in integrating CAM-Justify this statement.
4. What are the functions of CG packages ?
5. List any 2 types of Graphics input devices used in CAD. Explain functions of each.
6. Scan convert a circle whose center is (10, 15) and radius is 12 units. Using midpoint circle drawing algorithm.
7. What is meant by clipping and list the types of clipping ?
8. Write short notes on generic hidden-line algorithm.
9. What do you mean by isoparametric formulation of FEM solutions ?
10. List FEM steps and explain how an FEM problem is solved. **(10×2=20 Marks)**

PART – B

Answer **any one full** question from **each** Module.

Module – 1

11. Define computer aided design. Compare computer aided design and conventional design with a neat sketch/block diagram. State the different applications of CAD in an engineering field. Justify the need of CAD in engineering area. **20**

OR

12. What is wire frame modeling ? Explain the concept with the help of neat sketch. **20**

P.T.O.



Module – 2

13. Define and explain Bresenham's circle algorithm. 20

OR

14. a) What is a geometric transformation? Define and explain the following with respect to 2-D transformations (any three):

i) Translation

ii) rotation

iii) scaling

iv) reflection. 10

b) Explain 3-D geometric transformations (any three) in detail. 10

Module – 3

15. Discuss different types of hidden surface removal algorithms. 20

OR

16. Explain in detail the orthographic transformations and isometric transformations from the prospective of computer aided design. 20

Module – 4

17. a) Explain 2-D and 3-D elements used in finite element analysis mode. 10

b) Discuss the different steps used in finite element analysis in detail. State the suitable examples of FEA in engineering. 10

OR

18. A three bar truss is shown in figure. Modulus of elasticity of the material is $2 \times 10^5 \text{ N/mm}^2$. The cross sectional area of each element is 50 mm^2 . Determine:

i) The element stiffness matrix

ii) Global stiffness matrix

iii) Nodal displacement

iv) Stresses in each element

v) Reaction force. 20

