SIXTH SEMESTER B.TECH DEGREE EXAMINATION
(2013 SCHEME)
13.603 COMPUTER AIDED DESIGN (MPU)

Time: 3 Hours   Max. Marks: 100

PART A

Answer all questions. Each question carries 2 marks.

1. Explain engineering analysis in view of CAD.
2. Describe CSG in solid modeling.
3. List the components of ICG system.
4. Enlist the different methods of defining arcs and circles.
5. Explain how rotation in 3D transformation can be accomplished.
6. Define concatenation in view of transformations.
7. Distinguish between orthographic projection and oblique projection.
8. Define shape functions and write their properties.
9. Define Isoparametric representation.
10. Differentiate between plane stress and plane strain in 2D analysis.

(10 x 2= 20 marks)

PART B

Answer any one full question from each module.

Module I

11. (a) Explain the application of computers in design.   (10 marks)

    (b) Explain the necessity for CAD.   (10 marks)

12. Differentiate between constructive solid geometry and boundary representation with sketches.   (20 marks)
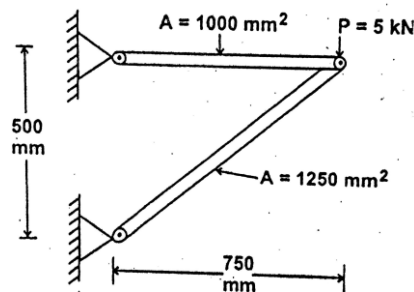
Module II

13. Explain Bresenhams algorithm for circle generation.   (20 marks)

14. A line defined by end points (1, 1) and (2,4) is to be translated by 2 units in X direction and 3 units in Y direction and then rotate the translated line about origin by 30 ^{0}. Obtain the end points of the line after the transformations and plot sketches of each transformation.   (20 marks)

Module III

15. Explain the different types of hidden surface removal algorithms. (20 marks)

16. Explain the algorithm for line clipping operation.   (20 marks)

Module IV

17. Derive the stiffness matrix of CST element.   (20 marks)

18. The loading and other parameters for a two bar truss system is shown in figure. Determine a) the element stiffness matrix for each element, b) global stiffness matrix, c) nodal displacements, d) reaction forces and e) stress induced in each element. Assume E= 200 GPa.

                    (20 marks)