Register Number.....

M.E. DEGREE EXAMINATIONS: DECEMBER 2008

First Semester

CAD/CAM

P07CC101 Computer Applications in Design

Time: Three Hours **Maximum Marks: 100**

Answer ALL Questions:-

PART A (20 × 1 = 20 Marks)

1. The initial position of object A on a round holding table is (347, 149) units, from the center. The new position of A after the table rotated by 35° is

   a. (180,300) b. (190,310) c. (199,321) d. (120, 160)

2. _____system is inherent in the design of display.

   a. Viewing co-ordinate b. Screen co-ordinate

   c. World co-ordinate d. Natural co-ordinate

3. The sequence of transformations required to rotate an element about an arbitrary point in the element are

   a. Rotation and scaling b. scaling, translation & rotation

   c. Rotation and translation d. translation, rotation & translation

4. _____ is an algorithm to generate a circle.

   a. Z buffer b. Bresenham c. Seed Fill d. Sutherland Hodgeman

5. _____ is a synthetic surface which permits local control.

   a. B-spline surface b. Bezier surface c. Plane surface d. Fillet surface

6. The surface generated by translating a planar curve to a certain distance along a specified direction(axis of the cylinder) is

   a. surface of revolution b. planar surface

   c. ruled surface d. tabulated cylinder

7. One of the model creation feature for curves and surfaces is

   a. blending b. fair curve c. shading d. inflection

8. In B-rep modeling the prismatic objects created by an operation called _____.

   a. rotation b. trimming c. sweeping d. blending

9. _____ shading is a popular form of intensity interpolation or first derivative shading.

   a. Constant b. Phong c. Gourand d. Enhanced

10. _____ color model used for raster color graphics. It has been in use as a television broadcast standard.

    a. CMY b. YIQ c. HSV d. RGB

11. The _____ test checks whether a given point lies inside a polygon or polyhedron.

a. minimax b. homogeneity c. surface d. containment

12. The algorithm based on sorting all the faces (polygons) in the scene according to the largest z coordinate value of each is

a. priority algorithm b. Warnock's algorithm

c. ray --tracing algorithm d. area oriented algorithm

13. _____ is the difference between the maximum material limits of the mating parts.

a. tolerance b. allowance c. clearance d. interference

14. The _____ type of mating condition holds between two planar faces or between a planar face and a cylindrical face (shaft).

a. against b. fit c. tight fit d. contact

15. The main difference between mass and geometrical properties is the inclusion of the _____ of the object material in the former.

a. centroid b. sectional area c. density d. surface area

16. The _____ of a lumped mass about a given axis is the product of the mass and the square of the perpendicular distance between mass and the axis.

a. volume b. centroid

c. first moment of inertia d. second moment of inertia

17. The most commonly used file format in rapid prototyping is

a. IGES b. PDES c. DXF d. STL

18. A rapid prototyping technology based on powder metallurgy concept is

a. stereolithography b. 3-D printing

c. selective laser sintering d. solid ground curing

19. The general structure for a boundary model should have _____information.

a. topology b. geometry

c. edges and vertices d. both geometry and topology

20. Euler primitive (operator) used to create edges and vertices is

a. MBFV b. MEV c. KFEVB d. KFEVMG

PART B (5 x 16 = 80 Marks)

21. a. (i). Explain the simple DDA algorithm for line generation with an example. (8)

(ii). What is meant by clipping? Write a line clipping algorithm and explain. (8)

(OR)

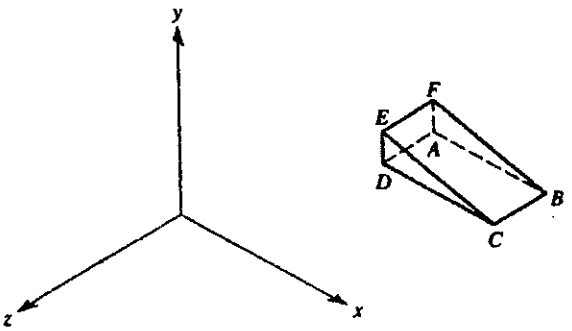
21.b (i). What are the types of three dimensional transformations? When we require

concatenation? (6)

(ii).Consider a 3-D object shown in figure. The co-ordinates of the vertices are given as follows

A= [3,5,3], B=[7,5,3] ,C = [7,5,5], D= [3,5,5] ,E=[3,6,5] and F = [3,6,3]

Rotate the object by 30° in clockwise direction at point D about the y-axis. Find the new positions of all vertices. (10)



22. a. Write an interactive program in Auto LISP to design a gear.

(OR)

b. (i). Write a program in Auto LISP to draw a square with sides 150 mm. (6)

(ii).Explain different features available in solid modeling packages to create prismatic and revolved parts with sketch. (10)

23.a. (i). What is parametric modeling? Discuss its benefits and limitations. (8)

(ii). Explain the creation of lofted parts using software packages with examples. (8)

(OR)

23. b. What is the significance of visualization? Explain the Ray – Tracing algorithm for hidden solid removal with an example.

24. a. (i). Explain in brief about different mass property calculations. (8)

(ii). What are the steps involved in mechanism simulation? Explain (8)

(OR)

24. b. (i). What are the three requirements of assembly modeling? Explain. (8)

(ii). Generate the assembly tree for the screw jack assembly shown in the following figure 1. (8)

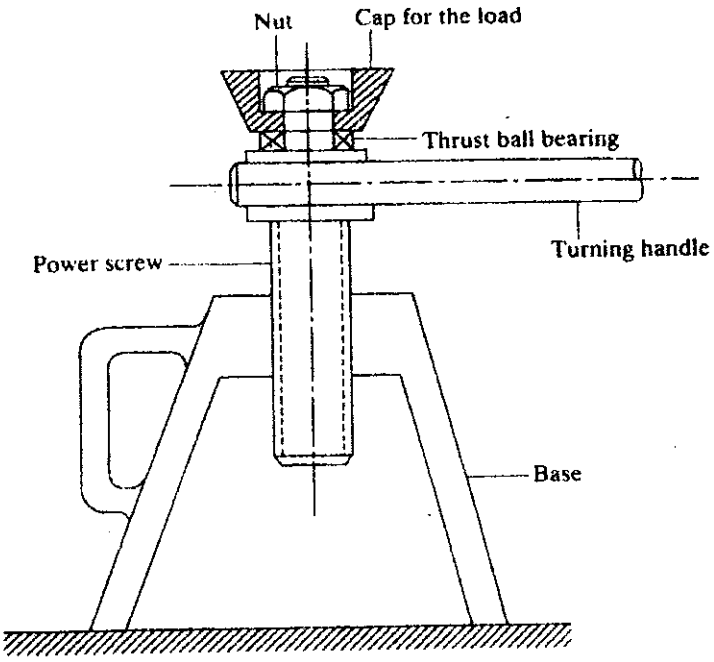


figure 1

25. a. What is geometric modeling? Explain B-rep and CSG type solid models, bringing their limitations and applications.

(OR)

25. b.(i). What is meant by Rapid prototyping? What are the steps involved in the creation of Rapid prototype? (8)

(ii).Explain with neat sketch the working principle and features of Fusion Deposition modeling (FDM) process. (8)

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