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Reg. No. :

Question Paper Code : 50868

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017
Fifth/Seventh Semester
Mechanical Engineering
ME 6501 – COMPUTER AIDED DESIGN
(Common to Manufacturing Engineering/Mechatronics Engineering)
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10×2=20 Marks)

1. What are the benefits of concurrent engineering ?
2. What is meant by viewport and windowing ?
3. Write the equation of a circle in parametric form.
4. Mention the various limitations of using wire frame models.
5. State the salient features of RGB color space.
6. What are the basic requirements for engineering animation system ?
7. Briefly explain the bottom-up assembly approach.
8. With sketch discuss about least material condition for external features.
9. What is meant by open GL ?
10. What is IGES ?

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PART - B

(5×13=65 Marks)

11. a) Explain the different types of 2D transformations with examples. (13)
- (OR)
- b) Explain the Cohen-Sutherland line-clipping approach with proper sketches. (13)
12. a) i) Using Bresenham's circle drawing algorithm construct a circle whose radius is 4 units and center is (8, 8). (7)
- ii) A set of control points is given by $P_0 = (4, 4, 4)$, $P_1 = (6, 8, 6)$ and $P_2 = (10, 3, 4)$, Compute Bазier curve with two intermediate points. (6)
- (OR)
- b) How does solid modeling differ from surface modeling? With neat sketch discuss briefly about B-rep type of solid modeling techniques. (13)
13. a) Describe an algorithm for removal of line surface. Also illustrate with an example how the algorithm can be implemented. (13)
- (OR)
- b) i) Explain the depth-buffer (z-buffer) algorithm for hidden surface removal. (7)
- ii) Explain the procedure to compute the z-values in two successive locations in a scan-line and intersection positions on two successive scan lines. (6)
14. a) What are the various techniques to generate all assembly sequences for a mechanical component? (13)
- (OR)
- b) What are the types of geometric tolerances? How is it different from conventional tolerance? Give a list of ANSI symbols for geometric tolerance. (13)
15. a) State the need and requirements of the product data exchange between dissimilar CAD/CAM systems. Describe the STEP methodology. (13)
- (OR)
- b) Explain the following :
- i) Graphical Kernel System. (7)
- ii) CALS (6)



PART - C

(1×15=15 Marks)

16. a) Generate the assembly tree for the screw jack shown in Figure 16 a. (15)

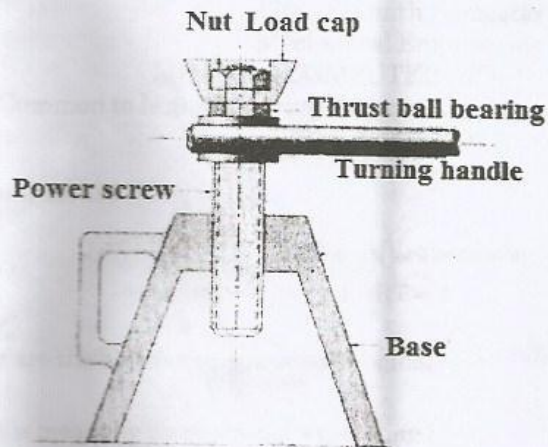


Figure 16.a

(OR)

- b) Explain constructive solid geometry technique. What is the role of primitives and Boolean operations in CSG? Explain with suitable examples. (15)