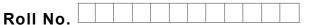


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M.Tech.(ME) (Sem.-2) COMPUTER AIDED DESIGN Subject Code : MME-506 Paper ID : [E0422]

Time: 3 Hrs.

Max. Marks: 100

INSTRUCTION TO CANDIDATES :

- 1. Attempt any FIVE questions out of EIGHT questions.
- 2. Each question carries TWENTY marks.
- 1. a) Discuss the role of computers in the design process.
 - b) What are the advantages and disadvantages of the various interactive input devices?
- 2. a) Briefly explain the various techniques that can be used for image generation on computer terminals.
 - b) What do you understand by reverse engineering? How is CAD useful in this process?
- 3. a) Show that the mid-point of a line transforms to the mid-point of the transformed line.
 - b) A point is rotated about the Z axis by two successive angles θ_1 and θ_2 . Show that this is equivalent to rotating the point about the same axis once with an angle $\theta = \theta_1 + \theta_2$.
- 4. a) How is surface modeling different from wireframe modeling? Explain briefly with the help of examples.
 - b) Draw a Bezier spline for the following control points :

(0, 0), (4, 3), (8, 4) and (12, 0)

- 5. What is Constructive Solid Geometry (CSG)? Discuss in detail the steps required to construct a meaningful solid object by primitives and Boolean operators taking a suitable example.
- 6. a) What is parametric programming? What is the advantage of parametric programming in designing curves and surfaces?
 - b) Discuss the essential requirements of CAD and CAM integration. What are the difficulties encountered in this process?
- 7. a) How are hidden line and hidden surface algorithms classified? Explain each one of them briefly.
 - b) Given a point P = (2, 4, 8) and using the homogeneous representation, calculate the coordinates of the transformed point P* if P is rotated about the X, Y and Z axes by 30°, 60° and 90° respectively.
- 8. Write short notes on :
 - a) Selective Laser Sintering b) 3-D concatenation
 - c) Rendering d) Half spaces

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