

Seat  
No.

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मठ - 083

## Computer Aided Design / Computer Aided Manufacturing (New) (1220)

P. Pages : 3

Time : Four Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any two** subquestions from each unit.
5. Figures to right indicates full marks.
6. Neat diagrams must be drawn wherever necessary.
7. Use of electronic calculator is allowed.
8. Assume suitable data if necessary.

### UNIT - I

1. a) i) Explain the product life cycle with use of computers using neat sketch. 5  
ii) Explain in detail the application of CAD in different phases of design process. 5  
b) i) Enlist the various benefits of CAD systems. 5  
ii) What are interfaces. Explain with the help of neat sketch serial and parallel interface. 5  
c) What do you understand by faster scanning ? Why it is preferred to the storage tube in the display of graphics information. 10

### UNIT - II

2. a) A triangle PQR with vertices P(2, 5), Q(6, 7) and R (2, 7) is to be reflected about the line  $y = 0.5x + 3$  determine. 10  
i) The concatenated transformation matrix and  
ii) The co-ordinates of the vertices for a reflected triangle.  
b) i) Using digital differential analyzer algorithm. Draw the picture elements (pixels) on the paper for the line drawn from (2, 7) and (15, 10). 5  
ii) How IGES format is used to exchange the data. 5

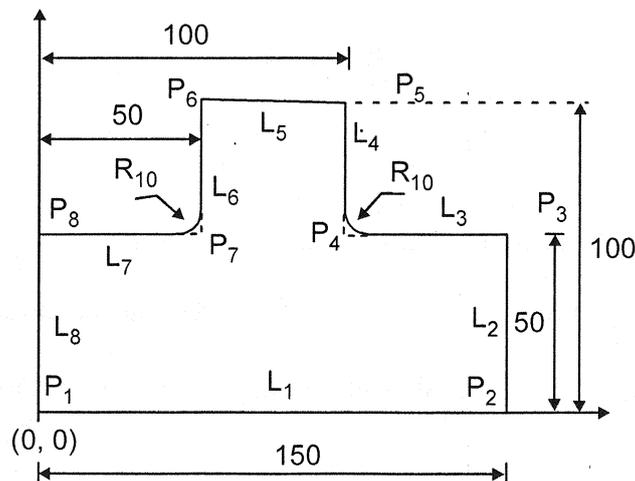
- c) Explain the terms: 10
- i) Clipping. ii) View port.
  - iii) Rendering iv) Scan conversion
  - v) Windowing

**UNIT - III**

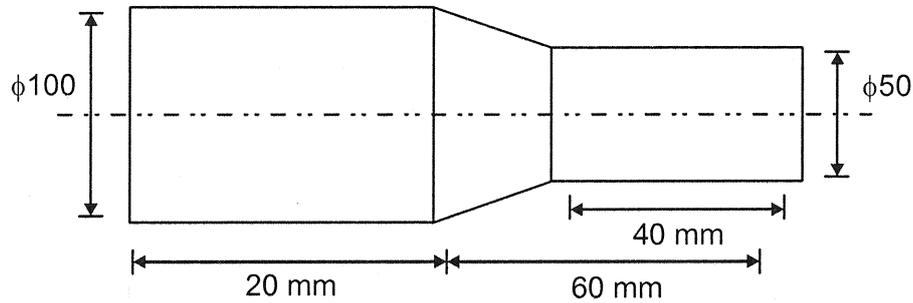
3. a) The co-ordinates of four control points relative to current WCS are given by  $P_0 = (2, 2, 0)$ ,  $P_1 = (2, 3, 0)$ ,  $P_2 = (3, 3, 0)$  and  $P_3 = (3, 2, 0)$ . Find the equation of resulting bezier curve. Also find points on the curve for  $u = 0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}$  and 1. 10
- b) i) Explain Boolean operations used in solid modeling with neat sketches showing the effect of these operations considering any example. 5
- ii) Describe  $\beta$ - spline curve. 5
- c) What is automation ? What are its type ? Enlist the various advantages and disadvantages of automation. 10

**UNIT - IV**

4. a) Write a part programme using APT to generate the outline of the component as shown in figure given below. Use cutter diameter 20 mm, spindle speed 580 rpm and feed rate 80 mm/min. 10



- b) Write a manual part program for a plain and taper turning the forged bar of  $\phi 100$ mm. 10



- c) Explain following in details related to industrial control system. 10
- i) Supervisory control with block diagram.
  - ii) Programmable logical controllers.

### UNIT - V

5. a) Explain different types of Mechanical Grippers used in robotics with neat sketches. 10
- b) Explain the following in detail. 10
- i) Optiz coding system.
  - ii) Maltidass coding system.
- c) i) Draw the various layout of typical FMS system. 5
- ii) What do you understand by FMC ? Explain with neat sketch the concept of it. 5

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