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**B.E. (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014**

**MECHANICAL ENGINEERING BRANCH**

**SIXTH SEMESTER**

**ME9354 – COMPUTER AIDED DESIGN AND MANUFACTURE**

(Regulation 2008)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

**PART-A (10 x 2 = 20 Marks)**

1. Differentiate between Windowing transformation and viewing transformation.
2. A line is represented by the endpoints P1 (1, 1) and P2 (6, 2). If the value of parameter  $u$  at P1 and P2 is 0 and 1 respectively, determine the coordinate of a point represented by  $u = 0.5$ .
3. Represent a circle with centre (0, 0) and a radius of 50 mm through the parametric form.
4. Compare the effect of change in control points with respect to Bezier surface and B-Spline surface.
5. Draw a typical GT layout.
6. List down the two broad scopes of STEP.
7. Why velocity loop is not there in position loop control?
8. What will happen to the tool motion if we write the block as "N15 G92 X-100.00 Y86.00 Z95.0"?
9. Differentiate between Master Production Schedule and Aggregate Production Planning?
10. List down any four differences between Lean and Mass Production.

**Part – B ( 5 x 16 = 80 marks)**

11. (i) Describe the operation of a Kanban system used in Just-in-Time production systems with suitable diagrams. (8)  
(ii) Describe the various steps involved in implementation of BPR. (8)

12. a) (i) Describe the Hidden line removal technique and Hidden surface removal technique using depth-buffer or Z-buffer algorithm used in Visual Realism. (10)
- (ii) Write about Concurrent Engineering and its benefits by comparing with Sequential Engineering. (6)

(OR)

- b) A rectangle ABCD has the length of edge AB as 6 units and is inclined to the horizontal axis by  $40^\circ$ . The other edge of the rectangle is 4 units. If in the world coordinate system, the coordinates of point A are (3, 4), then determine the coordinates of points B, C and D in user coordinate system and world coordinate system. To define the user coordinate system, the edge AB can be considered as X-axis with point A as the origin. The presented problem is shown in Figure-1. (16)

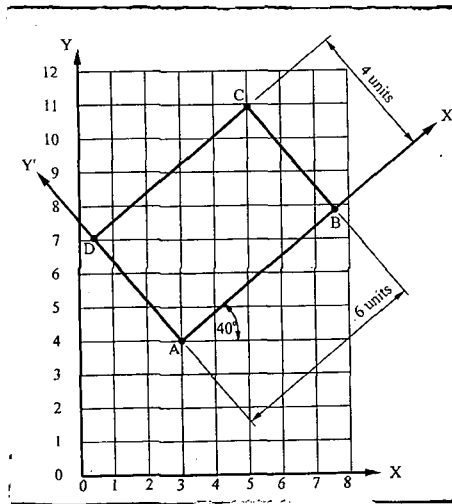


Figure-1

13. a) (i) Briefly write about representation of surfaces by tabulated cylinder, ruled surfaces, surface of revolution, swept surface and sculptured or curved mesh, with simple sketches. (10)
- (ii) Explain Translational Sweep, Translational Sweep over path and Rotational Sweep in solid modelling with suitable sketches. (6)

(OR)

- b) (i) Write about Coons Patch & Bicubic Patch. (6)
- (ii) Describe about typical facilities for CAD system customisation. (10)

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14. a) Briefly write about various steps in QFD with the aid of House of Quality Diagram. (16)

(OR)

- b) Write about the three common network configuration used in Local Area Network for CAD with suitable diagram and also discuss about Access Methods for LAN. (16)

15. a) Write a complete Manual part programme for machining the external contour of the component shown in Figure – 2 in one pass. Use cutter radius compensation. Select the origin as shown. Draw the Tool Path and give explanation for each block referring to the tool path drawn. Assume Speed 800 rpm and Feed 480 mm/min. Use Absolute system. The Work Material is Mild Steel. Use end mill of 6 mm diameter. Thickness of the component is 5 mm. Assume  $Z_0 = 2$  mm above the surface of the component. Assume suitably any missing data and also show your assumption. (16)

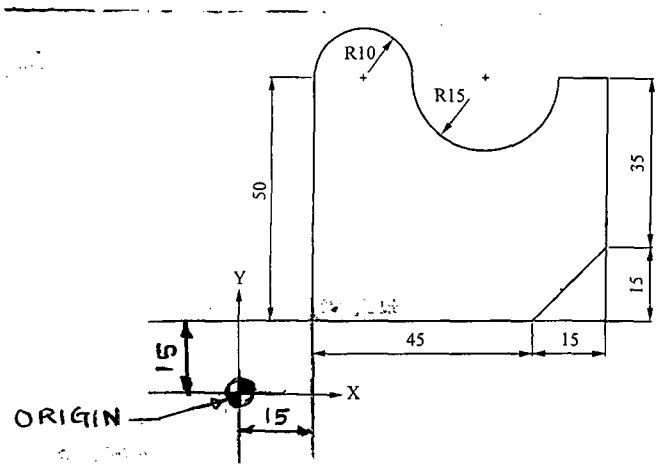


Figure-2

(OR)

- b) (i) Draw a "TOOL HOLDER" of CNC Machining Centres and explain its feature/parts with respect to their function. (8)
- (ii) With the aid of a diagram explain drive surface, part surface and check surface referred in APT. (8)

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