Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2013

Subject code: 1720905 **Date: 31-12-2013**

Subject Name: Computer Aided Design

Time: 10.30 am – 01.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Enlist different factors influencing the selection or implementation of CAD/CAM Systems for your organization	**07**
	(b)	A triangle ABC with vertices A(1,1), B(7,1) and C(1,6) is to be reflected about the line ***4y – 2x – 12 = 0***. Determine : (i) the concatenated transformation matrix and (ii) the final coordinates of the vertices of a reflected triangle.	**07**
Q.2	**(a)**	Discuss the different techniques used for generating the picture on the CRT screen.	**07**
	(b)	Explain IGES, STEP and GKS	**07**
		OR	
	(b)	A triangle ABC with vertices A(1,1), B(7,1) and C(4,5) is to be translated such that the point D(4,3) within the triangle coincides with the origin after the translation. Using the homogenous coordinate system determine the coordinates of the vertices for a translated triangle.	**07**
Q.3	**(a)**	Generate a straight line connecting two points (21, 11) and (26, 15) using Bresenham's line generating algorithm.	**07**
	(b)	Differentiate between conventional machine design and Computer Aided Design	**07**
		OR	
Q.3	**(a)**	Explain the Functions of a Graphic Package in Detail	**07**
	(b)	Write a short note on concept of Data structure and Database management in CAD.	**07**
Q.4	**(a)**	Write a short note on C-Rep and B – Rep.	**07**
	(b)	Draw the surface model of a solid that simultaneously satisfies the following conditions: $x^2 + y^2 \leq z^2/4$ $z \geq 2$ $z \leq 9$	**07**
		OR	
Q.4	**(a)**	Plot the Bezier curve having endpoints $P_O(0,0)$ and $P_3(7,0)$. The other control points are $P_1(7, 0)$ and $P_2(7,6)$. Plot for values for u = 0, 0.1, 0.2, …..1, if the characteristic polygon is drawn in the sequence P_O - P_1 - P_2 - P_3.	**07**
Q.4	**(b)**	Explain different types of modeling techniques.	**07**
Q.5	**(a)**	Explain Zero order continuity, First Order Continuity and Second Order continuity with respect to synthetic curves.	**07**

	(b)	An ellipse is defined by the center point(8,10) and has a major radius of 10 units and minor radius of 4 units. Determine the various points on the ellipse in the first quadrant, if the increment between each point is 30°. Assume that the ellipse is oriented such that the major axis and minor axis are parallel to X and Y axes respectively.	**07**

OR

Q.5	**(a)**	Sketch the area defined by the relation $x^2 + y^2 - 6(x^2 + y^2)^{1/2} + 9 \leq 3$	**07**
	(b)	Write a short note on different kinds of surfaces.	**07**

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