Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject code: 1720905 **Date: 03-06-2013**

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)**	What is scan conversion? Explain Bresenham algorithm for scan conversion of a circle.	**07**
	(b)	List the various approaches used for creating solid models of the objects. Explain three of them in detail.	**07**
Q.2	**(a)**	Given $P_o[1,1]$, $P_1[2,3]$, $P_2[4,3]$ and $P_3[3,1]$ the vertices of a Bezier polygon, determine seven points on Bezier curve	**07**
	(b)	Explain significance of graphic standards for hardware and software market. List some of the well known standards and explain any one of it.	**07**
		OR	
	(b)	What is Data, Database and Data structure? Explain different data structure.	**07**
Q.3	**(a)**	A triangle with vertices (4,6), (9,11), (6,3) is first scale by one unit about a fixed point (5,6) then translated by 2 units in Y-direction and finally rotated about point (2, 5) in counter clockwise direction by 30^0 . Find the final position of triangle.	**07**
	(b)	What is the meaning of homogeneous co-ordinates and why it is necessary? Explain the advantages of using the same.	**07**
		OR	
Q.3	**(a)**	A mirror is placed vertically such that it passes through the point (10,0) and (0,10). Find the reflected view of triangle ABC with the co-ordinates A(5,50), B(20,40) and C(10,70).	**07**
	(b)	Write short note on B- Spline curve.	**07**
Q.4	**(a)**	Calculate parametric midpoint of the Hermite cubic curve that fits the points P_0 =(1,1), P_1=(6,5) and the tangent vector $P_0\hat{o}$=(0,4), $P_1\hat{o}$=(4,0).	**06**
	(b)	Explain parametric and non-parametric, Explict and Implict representation of curves and its importance in CAD.	**04**
	(c)	Compare conventional design and CAD.	**04**
		OR	
Q.4	**(a)**	Discuss (1) Bêzier surfaces (2) B- spline surfaces (3) Lofted surfaces.	**07**
	(b)	Explain the method for generating an image on the screen.	**07**
Q.5	**(a)**	Find the minimum distance between a point in space and a plane surface.	**07**
	(b)	Prove that the curvature of a circular cylinder is zero.What is the radius of curvature at any point on surface.	**07**
		OR	
Q.5	**(a)**	Show that: (1) Translation is commutative. (2) Mirror and two dimensional rotation about z-axis are not commutative.	**07**
	(b)	Explain LCD display with its advantages and disadvantages over CRT display.	**07**

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