[Time: 3 Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B: 1. Question number one is compulsory

2. Attempt any three from remaining five questions.

3. Assume any suitable data if necessary and justify the same.

Q.1	a)	What is aliasing and anti-aliasing? Explain anyone anti-aliasing method in detail	**05**
	b)	Explain the various polygon rendering models used in computer graphics.	**05**
	c)	Explain inside outside test used in polygon filling algorithm	**05**
	d)	Prove that two successive rotations are additive	**05**
Q.2	a)	Derive 2-D rotation matrix about an arbitrary point.	**10**
	b)	Rasterize a line segment using Bresenham's line drawing algorithm where starting coordinates of line segment are Pl(5,5) and ending coordinates are P2(l 3,9)	**10**
Q.3	a)	Explain Cohen Sutherland clipping algorithm. Apply the algorithm to the line with coordinates Pl(xl,yl) = (2, 2) and P2(x2,y2)=(l2, 9) against the window (xwmin,ywmin) = (4, 4) and (xwmax, ywmax) = (9, 8).	**10**
	b)	What is mean by parallel and perspective projections? Derive the matrix for parallel projection.	**10**
Q.4	a)	Explain Sutherland Hodgeman polygon clipping algorithm in detail	**10**
	b)	Explain half toning and dithering techniques in detail	**10**
Q.5	a)	Write and explain the properties of Bezier curve. Differentiate between Bezier and B spline curve.	**10**
	b)	What is object in object space, image in image space and derive the matrix for window to viewport transformation	**10**
Q.6	a)	What is Fractal? What is Fractal dimension? Explain Koch curve.	**10**
	b)	Derive 3-D rotation matrix about an arbitrary axis.	**10**

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