Code No: RT32032   **R13**   SET - 1

III B. Tech II Semester Regular/Supplementary Examinations, April -2018
INTERACTIVE COMPUTER GRAPHICS
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**
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PART –A

1	a)	What are the advantages and disadvantages of LCD over faster-scan CRT?	[4M]
	b)	Compare homogeneous coordinated with screen coordinates.	[3M]
	c)	What is the use of View Reference point?	[4M]
	d)	Define Blending Functions.	[4M]
	e)	Define classification.	[3M]
	f)	How animation is used in multimedia?	[4M]

PART -B

2		Describe the working methodology of various input devices used for developing graphics applications.	[16M]
3	a)	Describe the midpoint circle generation algorithm. State its advantages and disadvantages over DDA circle generation algorithm.	[8M]
	b)	A point (3,5) is rotated anticlockwise by an angle of 45^0. Find the rotation matrix and resultant point.	[8M]
4	a)	Explain Cyrus-beck line clipping algorithm.	[8M]
	b)	What is the difference between window and viewport? How window-to-viewport transformation is done?	[8M]
5	a)	Explain the Properties of B - spline. How it is differ from Bezier?	[8M]
	b)	How does the depth of a polygon determined by the painter algorithm?	[8M]
6		A solid tetrahedron is given by position vectors A(1,1,1), B(3,1,1), C(2,1,3) and D(2,2,2) with a point light source is kept at P(2,3,4). Using back face detection method, find the surfaces on which the light falls and the surfaces which are to be shaded.	[16M]
7	a)	Discuss the important principles behind Computer Animation with suitable diagrams	[8M]
	b)	What is animation? And give its application areas?	[8M]

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Code No: RT32032   (R13)   (SET - 2)

III B. Tech II Semester Regular/Supplementary Examinations, April -2018
INTERACTIVE COMPUTER GRAPHICS
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**
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PART –A

1	a)	Give the functioning of Display processor.	[4M]
	b)	What are filled area primitives?	[3M]
	c)	How to Map a window to view port?	[4M]
	d)	Explain about diffuse illumination.	[4M]
	e)	What are composite transformations?	[3M]
	f)	Define frame by frame animation.	[4M]

PART -B

2		Explain the principle of following video display devices: (i) Cathode Ray Tube. (ii) Liquid Crystal Displays	[16M]
3		Digitize a line from (1, 2) to (12, 18) on a raster screen using Bresenham's straight line algorithm. Compare it with line generated using a DDA algorithm	[16M]
4		Explain Sutherland Hodgeman polygon clipping algorithm. List and Explain its disadvantages and how to rectify them.	[16M]
5	a)	Explain how to generate a Bezier Curve using the blending functions.	[8M]
	b)	Give an overview of basic illumination methods.	[8M]
6		Derive the matrix form for the geometric transformations in 3D graphics from the following operations: i) Translation ii) Scaling iii) Mirror reflection	[16M]
7	a)	Design a Storyboard layout and accompanying key frame for an animation of a single polyhedron.	[8M]
	b)	Describe various methods of controlling animation.	[8M]

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Code No: RT32032   R13   SET - 3

III B. Tech II Semester Regular/Supplementary Examinations, April -2018
INTERACTIVE COMPUTER GRAPHICS
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**
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PART –A

1	a)	Distinguish between Raster and Random Scan display.	[4M]
	b)	Where does overstrike occur When Four way symmetry is used to obtain a full ellipse from pixel coordinates generated for first quadratic	[3M]
	c)	List the differences between aliasing and ant aliasing.	[4M]
	d)	What are the properties of a Bezier curve?	[4M]
	e)	Write down the uses of depth sorting algorithm.	[3M]
	f)	List any four animation techniques.	[4M]

PART -B

2	a)	Explain the role of computer graphics in picture analysis. Give the advantages of interactive graphics.	[8M]
	b)	List the important characteristics of video display device.	[8M]
3	a)	Distinguish the merits and demerits of scan line and flood fill algorithms.	[8M]
	b)	With respect to 2D transformations explain Translation, Rotation and Scaling.	[8M]
4		Given a clipping window P (0, 0), Q (340, 0), R (340, 340) and S (0, 340). find the visible portion of the line AB [(-170, 595), (170, 225)] and CD [(425, 85), (595, 595)] against the given window, using Cohen - Sutherland algorithm, showing all the steps	[16M]
5	a)	What are the three equivalent methods for specifying spline representation? Describe.	[8M]
	b)	What is hermite spline and give the boundary condition for hermite curve?	[8M]
6	a)	Explain the concept of Depth Buffer algorithm for detecting visual surface of a 3D object.	[8M]
	b)	Define Tilting as a rotation about x axis followed by a rotation about y axis. Find the tilting matrix? Does the order of performing tilting matters.	[8M]
7	a)	How to specify Object motion in an animation system?	[8M]
	b)	List various types of animation languages. Describe various problems associated with animation.	[8M]

Code No: RT32032   **R13**   **SET - 4**

III B. Tech II Semester Regular/Supplementary Examinations, April -2018
INTERACTIVE COMPUTER GRAPHICS
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**
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PART –A

1	a)	What are the merits and demerits of plasma panel display?	[4M]
	b)	Define shear transformations and give its matrix form.	[3M]
	c)	Why there is a need for clipping?	[4M]
	d)	Distinguish Clipping and Culling.	[4M]
	e)	Discuss how wireframe displays might be generated with the various visible surface detection methods.	[3M]
	f)	List the differences between conventional and computer assisted animation.	[4M]

PART -B

2	a)	Describe the working principle and applications of faster scan display devices.	[8M]
	b)	What is the role of workstation in computer graphics? List various essential input devices.	[8M]
3		Explain midpoint circle algorithm. Given a circle radius r=10, demonstrate the midpoint circle algorithm by determining positions along the circle octant in the first quadrant from x=10 to x=y.	[16M]
4	a)	What is the need of homogeneous coordinates? Give the homogenous coordinates for translation, rotation, and scaling	[8M]
	b)	Develop the transformation for finding the reflection of a point w.r.t the line ax+by+c=0.	[8M]
5		Derive the 3D transformation matrix to transform world coordinates to view coordinates.	[16M]
6		Determine the Bezier blending functions for five control points. Plot each function and label the maximum and minimum values.	[16M]
7	a)	Explain various steps in designing animation sequence.	[8M]
	b)	What is an animation? Give basic rules of animation.	[8M]

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