PAPER ID-420311

Roll No: | | | | | | | | | | | |

MCA
(SEM IV) THEORY EXAMINATION 2021-22
COMPUTER GRAPHICS AND ANIMATION

Time: 3 Hours   *Total Marks: 100*

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. **Attempt *all* questions in brief.**   **2*10 = 20**

Qno	Questions	CO
(a)	Define frame buffer.	1
(b)	Differentiate between Raster scan systems and Random scan systems.	1
(c)	Illustrate the term viewing.	2
(d)	How Interior clipping is different from Exterior clipping?	2
(e)	Distinguish between Orthographic and Oblique projections.	3
(f)	Give the advantage of using B-spline curves over Bezier curves.	3
(g)	What is Transparency and Shadow in context to illumination models?	4
(h)	Why Ambient light is called as background light?	4
(i)	List the different file formats used in animation.	5
(j)	Outline the advantages of using computer animation instead of traditional animation.	5

SECTION B

2. **Attempt any *three* of the following:**   **10*3 = 30**

Qno	Questions	CO
(a)	Scan convert a line segment having end points A (12,15) and B (22,23) by applying Digital Differential Analyzer (DDA) algorithm.	1
(b)	Scale a rectangle by reducing its size to half having coordinates P(10,10) R(40,10) S(40,30) and T(10,30). Find the resultant coordinates of transformed rectangle about the origin.	2
(c)	Define mathematically, Sphere and Ellipsoid in context to quadratic surfaces.	3
(d)	What is Back face detection algorithm? How it can be used to identify back face of an object?	4
(e)	Define the term animation and also discuss the applications of animation.	5

SECTION C

3. **Attempt any *one* part of the following:**   **10*1 = 10**

Qno	Questions	CO
(a)	Draw a line segment by applying Bresenham's line drawing algorithm. The endpoints of line segment are X(1,1) and Y(10,9). Also plot the pixels.	1
(b)	What is octant symmetry in circle? Discuss Mid-point circle algorithm to draw a circle having radius r=5 and center xc=100 and yc=200.	1

4. **Attempt any *one* part of the following:**   **10 *1 = 10**
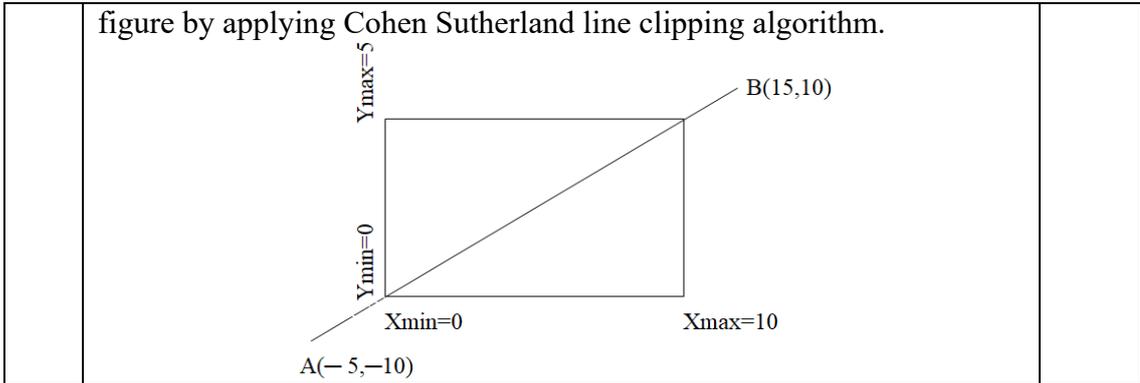
Qno	Questions	CO
(a)	What is reflection? Reflect a triangle having vertices A(2,4) B(1,3) and C(4,3) about a line Y=X+1. Find the new vertices of the object.	2
(b)	Define the term clipping? Clip a given line segment AB as show in	2

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figure by applying Cohen Sutherland line clipping algorithm.

5. **Attempt any *one* part of the following:** 10*1 = 10

Qno	Questions	CO
(a)	Discuss the way to display 3D object on 2D view plane. Apply orthographic parallel projection for the given cube and find the projected coordinated of the cube.	3
(b)	Given below is the Bezier curve having four control points. Find points on the curve that correspond to u = 0.25, 0.5 and 0.75.	3

6. **Attempt any *one* part of the following:** 10*1 = 10

(a)	Discuss Depth buffer method/algorithm for displaying visible surfaces. Why it is called as depth buffer method?	4
(b)	Define Diffuse reflection. Calculate total intensity of light reflected from rough surface by considering ambient light for illuminating the surfaces of an object.	4

7. **Attempt any *one* part of the following:** 10*1 = 10

(a)	Illustrate the use of Storyboard in amination; also discuss the concept of key framing.	5
(b)	What are the different techniques of animations? Describe each of them by taking suitable example.	5