

University of Mumbai

Program: Cyber Security

Curriculum Scheme: Rev2019

Examination: SE Semester :III

Course Code: CSC305

Course Name: Computer Graphics

Time: 2 hour 30 minutes

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	In DDA line drawing method, for lines having negative slope with absolute value greater than 1 and taking right end point as starting point, the X and Y coordinate increments are
Option A:	1/m and -1
Option B:	-1/m and 1
Option C:	-1 and -m
Option D:	1 and m
2.	In Liang Barsky line clipping method, for a parallel lines, k indicates window boundary if
Option A:	$P_k > 0$
Option B:	$P_k < 0$
Option C:	$P_k = 0$
Option D:	$P_k \neq 0$
3.	Coordinates of clipping window are (4,4) and (9,8). A line is drawn from point A(2,2) to point B(12,9). The result of logical AND operation on the region codes is
Option A:	0101
Option B:	1010
Option C:	1111
Option D:	0000
4.	A conceptual line is drawn starting from the particular point and extending to a distance point outside the coordinate extends of the object in direction of X-axis, the line intersects twice with the polygon edges and once with the polygon vertex. Then according to inside outside test, the point lies
Option A:	Outside the polygon
Option B:	Inside the polygon

Option C:	On the boundary of the polygon
Option D:	Cannot say
5.	In window to viewport mapping, which of the following set of transformations are involved
Option A:	Translation and scaling
Option B:	Scaling and rotation
Option C:	Scaling and reflection
Option D:	Rotation and translation
6.	The process of converting the picture definition into a set of pixel-intensity for storage in the refresh buffer is called
Option A:	Rendering
Option B:	Shadowing
Option C:	Scan Conversion
Option D:	Transformation
7.	Given a circle with center (0,0) and radius $r = 12$, the midpoint circle drawing algorithm starts by plotting its first point as
Option A:	(0,12)
Option B:	(12,0)
Option C:	(0, 0)
Option D:	(12,12)
8.	For a scan line polygon fill algorithm which of the following statements is not correct?
Option A:	It processes the polygon one scan line at a time
Option B:	It takes the advantage of edge coherence property to calculate X intersections
Option C:	It is a recursive algorithm to fill the polygon
Option D:	It calculates the X-intersections of a scan line with polygon edges and fills the pixels between the pair of X-intersections.
9.	In Cohen Sutherland line clipping algorithm if the region code is decided by ABRL where A is Above , B is Below , R is Right and L is Left, then the region code for top right region will be _____
Option A:	0000
Option B:	0100
Option C:	1010
Option D:	0101
10.	Sutherland Hodgman algorithm may not clip _____ successfully.
Option A:	Convex Polygon
Option B:	Concave Polygon
Option C:	A polygon which falls totally outside the Window
Option D:	A polygon which falls totally inside the Window

Q2	Solve any Two Questions out of Three 10 marks each
A	Given radius $r = 12$ and center coordinates $(50,50)$, compute the coordinates of points lying on the circle using Mid point circle algorithm
B	Derive transformation matrix for perspective projection.
C	What is keyframing and explain character and facial animation

Q3.	Solve any Four Questions out of Six 5 marks each
A	What is computer graphics? Discuss application areas in computer graphics
B	Derive the composite matrix to scale an object with respect to a fixed point
C	What is aliasing and explain any one antialiasing technique.
D	Prove that 2D rotations are additive
E	Write a boundary fill procedure to fill a polygon using 8-connected approach.
F	Define the following terms with suitable example/diagram a. Variation diminishing property b. Order of continuity

Q4.	
A	Solve any Two 5 marks each
i.	Write algorithm to clip line using Liang Barsky line clipping algorithm.
ii.	Differentiate between Random scan display and Raster scan display.
iii.	Explain the procedure to generate Bezier curve.
B	Solve any One 10 marks each
i.	Explain Midpoint circle algorithm. Explain the same to plot a circle whose radius is 10units.
ii.	Explain DDA line drawing algorithm.