University of Mumbai
Program: Computer Engineering
Curriculum Scheme: 2019
Examination: Second year Semester IV
Course Code: CSC305 and Course Name: Computer Graphics

Time: 2.5 hour   Max. Marks: 80

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Q1.	Choose the correct option for following questions. All questions compulsory 2 marks each (20 Marks)
1.	What does Aspect ratio means?
Option A:	Number of pixels
Option B:	Ratio of vertical points to horizontal points
Option C:	Ratio of horizontal points to vertical points
Option D:	Ratio of Diagonal points to vertical points
2.	Consider the line from (1,1) to (5,5). Use the simple DDA algorithm to rasterize this line. Which are the correct sequence of plotted pixels
Option A:	(2,2) (3,3) (4,5)
Option B:	(2,1) (3,3) (4,5)
Option C:	(2,2) (3,2) (4,5)
Option D:	(2,1) (3,3) (4,4)
3.	In midpoint method of circle generation, if decision function (Pk) value is negative then decision function for the next iteration is given as _____ otherwise Pk gets updated as _____
Option A:	Pk + 2 Xk+1 + 1 and Pk + 2 Xk+1 + 1 − 2Yk+1
Option B:	Pk + 2 Xk+1 -1 and Pk - 2 Xk+1 + 1 − 2Yk+1
Option C:	Pk + 2 Xk+1 + 1 and Pk + 2 Xk+1 + 1 + 2Yk+1
Option D:	Pk -2 Xk+1 + 1 and Pk + 2 Xk+1 + 1 − 2Yk+1
4.	After rotating a triangle having A(0,0), B(6,0), C(3,3) by 90° about origin in anticlockwise direction, then resulting triangle will be_____.
Option A:	A(0,0),B(-3,-3),C(0,6)
Option B:	A(0,0),B(-3,3),C(0,6)
Option C:	A(0,0),B(3,-3),C(0,6)
Option D:	A(0,0),B(0,6),C(-3,3)
5.	Which of the following algorithms is used when we want to fill the area bounded by different color boundaries?
Option A:	Boundary-fill Algorithm
Option B:	Scan-line Algorithm
Option C:	Flood-fill Algorithm
Option D:	Seed-fill Algorithm
6.	Positive values for the rotation angle Ө defines
Option A:	Counterclockwise rotations about the end points
Option B:	Counterclockwise translation about the reference point

Option C:	Counterclockwise rotation about the reference point
Option D:	Negative direction
7.	Two consecutive scaling transformations are always commutative and ____.
Option A:	Additive
Option B:	Subtractive
Option C:	Multiplicative
Option D:	Division
8.	A Bezier curve is a polynomial of degree _____ the no of control points used.
Option A:	One more than
Option B:	One less than
Option C:	Two less than
Option D:	Two more than
9.	The orthographic parallel projection, projection lines are ____ to each other.
Option A:	Inclined
Option B:	Perpendicular
Option C:	Diagonal
Option D:	Parallel
10.	The_____ method is based on the principle of comparing objects and parts of objects to each other to find which are visible and which are hidden and In _____algorithm visibility is decided point by point at each pixel position on the projection plane.
Option A:	Image space, Object-space
Option B:	Object-space , Image space
Option C:	Surface-space, Object-space
Option D:	Object-space , Surface-space

Q2. (20 Marks)	Solve any Four Questions out of Six 05 marks each
A	Explain any two different antialiasing techniques in detail.
B	Compare Raster scan and Random scan display.
C	Identify the pixel position along the line between (10,10)and (18,16) using Bresenham line drawing algorithm.
D	Apply Liang Barsky line clipping algorithm clip the line with coordinates (5,10) and (35,30) against the window (Xwmin,Ywmin)=(10,10) and (Xmax, Ymax)=(20,20)
E	What is the purpose of the inside out test? Explain any one method.
F	Explain Animation and its techniques.
Q3. (20 Marks)	Solve any Two Questions out of Three 10 marks each
A	Explain, what is meant by the Bezier curve? State various properties of the Bezier curve.
B	Explain steps for 2D rotation about arbitrary point and provide a composite transformation matrix for the same.

C	Write a short note on
	    a) Depth buffer
	    b) Area subdivision method

Q4. **(20 Marks)**	**Solve any Two Questions out of Three** **10 marks each**
A	Define window, viewport and derive the equation for window to viewport transformation.
B	Explain the following terms with suitable example/diagram a) Variations diminishing property b) Order of continuity
C	What is key framing and explain character and facial animation