University of Mumbai
Examination 2020 under cluster 5 (APSIT)
Program: Computer Engineering
Curriculum Scheme: Rev 2016
Examination: Second Year Semester IV
Course Code: CSC404 and Course Name: Computer Graphics
Time: 1hour
Max Marks: 50

All Questions are compulsory and carry equal marks

Q1. Consider the window is located from 0 to 100 and a point is located in (30,30). Identify the new location in the viewport. Consider the viewport size as 0 to 50.

Option A: (30,30)
Option B: (15,15)
Option C: (30,15)
Option D: (15,30)

Q2. In window to viewport transformation, (Xw,Yw) are the coordinates for a window and (Xv,Yv) are the co ordinates of the viewport. The window spans from (Xwmin,Ywmin) to (Xwmax,Ywmax). The viewport spans from (Xvmin,Yvmin) to (Xvmax,Yvmax). Sx and Sy are the scaling fctors along x and y respectively. Given the values of (Xwmin,Ywmin), (Xwmax,Ywmax), (Xvmin,Yvmin), (Xvmax,Yvmax), Sx and Sy, the corresponding co ordinates of a point in Viewport can be obtained using the formula:

Option A: Xv=Xvmin+(Xw-Xwmin).Sx and Yv=Yvmin+(Yw-Ywmin).Sy
Option B: Xv=Xvmax+(Xw-Xwmin).Sx and Yv=Yvmax+(Yw-Ywmin).Sy
Option C: Xv=Xwmin+(Xw-Xwmin).Sx and Yv=Ywmin+(Yw-Ywmin).Sy
Option D: Xv=Xvmin+(Xwmax-Xwmin).Sx and Yv=Yvmin+(Ywmax-Ywmin).Sy

Q3. A window can be defined as:

Option A: World co-ordinate area selected for display
Option B: An area on the display device to which the viewport is mapped
Option C: An area in the world to which the display device is mapped
Option D: World coordinate area clipped as rejected for display

Q4. A viewport can be deined as:

Option A: An area on the display device to with the object is mapped
Option B: An area on the display device to which a window is mapped
Option C: An area on the world co ordinate system that will be viewed
Option D: An area on the display device which is irrelevant

Q5. Window to Viewport transformation is also called as the following

Option A: Viewing device Transformation
Option B: Windowing Transformation
Option C: View Transformation
Option D: World to Device Transformation

Q6. A major task of the display processor is digitizing a picture definition given in an application program into a set of pixel-intensity values for storage in the frame buffer. What is this digitization process is called?

Option A: Rendering
Option B: Digitization
Option C: Scan Conversion
Option D: Windowing

Q7. The electron beam is swept across the screen, one row at a time from top to bottom. As the electron beam moves across each row, the beam intensity is turned on and off to create a pattern of illuminated spots. Picture definition is stored in a memory area called the refresh buffer or frame buffer. This memory area holds the set of intensity values for all the screen points. What is such a display system called?

Option A: Random-Scan Displays
Option B: Scan Converted Displays
Option C: Raster-Scan Displays
Option D: Frame Buffer Displays

Q8. A CRT has the electron beam directed only to the parts of the screen where a picture is to be drawn. What is such a display system called?

Option A: Random-Scan Displays
Option B: Scan Converted Displays
Option C: Raster-Scan Displays
Option D: Frame Buffer Displays

Q9. What will be the co-ordinates of a circle having radius 10 and centre at (100,100) by using Midpoint circle drawing algorithm?

Option A: {(101,110)(102,110)(103,109)(104,109)(105,108)(106,107)}
Option B: {(101,110)(102,110)(103,109)(104,109)(105,108)(106,107)(107,110)}
Option C: {(101,110)(102,110)(103,109)(104,109)(103,108)(106,107)}
Option D: {(111,110)(102,110)(103,109)(104,109)(105,108)(106,107)}

Q10. If point are expressed in homogeneous coordinates, then how is the pair of (x, y) represented?

Option A: (x', y', z')
Option B: (x, y, z)
Option C: (x', y', w)
Option D: (x', y', w)

Q11. What property is exhibited by two successive translations?

Option A: Multiplicative
Option B: Inverse
Option C: Subtractive
Option D: Additive

Q12. In which Visible Surface detection method is the space divided into smaller areas such that the area consists of one surface or no surface at all

Option A: Area Sub-Division method
Option B: Scan line method
Option C: Depth buffer method
Option D: z-buffer method

Q13. Which are the three data structures present in Scan line Visible surface detection Method?

Option A: Edge Table, Active Edge Table, Polygon table
Option B: Edge Table, Shadow Table, Polygon table
Option C: Edge Table, Geometric Data Table, Polygon table
Option D: Geometric Data Table, Active Edge Table, Polygon table

Q14. What are the two buffers used in Depth Buffer Method?

Option A: Depth Buffer and Refresh Buffer
Option B: Depth Buffer and Data Buffer
Option C: Depth Buffer and Pixel data Buffer
Option D: Depth Buffer and Image Buffer

Q15. The matrix for 3D clockwise rotation about x-axis is given by

Option A: [{1,0,0,0},{0,cos a,-sin a, 0},{0,sin a,cos a,0} {0,0,0,1}]where ‘a’ is the angle of rotation and the matrix is represented rowwise
Option B: [{1,0,0,1},{0,cos a,-sin a,0},{0,sin a,cos a,0} {0,0,0,1}]where ‘a’ is the angle of rotation and the matrix is represented rowwise
Option C: [{1,0,0,0},{0,cos a,-sin a,0},{0,sin a,1,0} {0,0,0,1}]where ‘a’ is the angle of rotation and the matrix is represented rowwise
Option D: [{1,0,0,0},{0,cos a,-sin a, 0},{0,sin a,cos a,0} {1,0,0,1}]where ‘a’ is the angle of rotation and the matrix is represented rowwise

Q16. How is Rotation in 3D around z-axis represented?

Option A: 2D Rotation in XY Plane
Option B: 2D Rotation in XZ Plane
Option C: 2D Rotation in YZ Plane
Option D: 2D Rotation in Z Plane

Q17. Which is the spline approximation method that was developed for use in the design of Renault automobile bodies

Option A: Bezier Curves
Option B: Koch Curves
Option C: B-Spline Curves
Option D: Cubic Curves

Q18. The equation of a plane surface can be expressed in the form:

Option A: Ax+By+Cz+D=0, where (x,y,z) is any point on the plane the coefficients A, B, C, and D are constants describing the, spatial properties of the plane
Option B: Ax+By+Cz+D=2, where (x,y,z) is any point on the plane the coefficients A, B, C, and D are constants describing the, non- spatial properties of the plane
Option C: Ax+By+Cz+D=1, where (x,y,z) is any point on the plane the coefficients A, B, C, and D are constants describing the, non- spatial properties of the plane
Option D: Ax+By+Cz+D=10, where (x,y,z) is any point on the plane the coefficients A, B, C, and D are constants describing the, non- spatial properties of the plane

Q19. In 3D Object Representation schemes for solid objects are often divided into two broad categories. What are they?

Option A: B-reps and Space Partitioning
Option B: Polyhedrons and ellipsoids
Option C: Polygon surfaces and Octrees
Option D: Physical based modeling and CGS

Q20. In Weiler-Atherton Polygon Clipping algorithm, clockwise processing of polygon vertices, we use the following rules:

Option A: For an outside-to-inside pair of vertices, follow the polygon boundary AND For an inside-to-outside pair of vertices,. follow the window boundary in a clockwise direction.
Option B: For an inside-to-inside pair of vertices, follow the polygon boundary AND For an outside-to-outside pair of vertices,. follow the window boundary in a clockwise direction.
Option C: For an inside-to-outside pair of vertices, follow the polygon boundary AND For an outside-to-inside pair of vertices,. follow the window boundary in a clockwise direction.
Option D: For an inside-to-inside pair of vertices, follow the window boundary AND For an outside-to-outside pair of vertices,. follow the polygon boundary in a clockwise direction

Q21. Name the polygon clipping algorithm that describes the procedure given below:
Beginning with the initial set of polygon vertices, we could first clip the polygon against the left rectangle boundary to produce a new sequence of vertices. The new set of vertices could then be successively passed to a right boundary clipper, a bottom boundary clipper, and a top boundary clipper. At each step, a new sequence of output vertices is generated and passed to the next window boundary clipper.

Option A: Liang- barsky’s polygon clipping algorithm
Option B: Weiler- Artheton Polygon clipping algorithm
Option C: Sutherland-Hodgemanl Polygon Clipping
Option D: Curve Polygon Clipping Algorithm

Q22. Consider the window size from 5 to 9. Clip the following line using Liang- barsky Line clipping Algorithm. What are the coordinates of the clipped line?

Option A: (7,9) to (5,9)
Option B: (7,9) to (9,9)
Option C: (7,9) to (8,8)
Option D: (7,9) to (5,5)

Q23. According to Cohen- Sutherland Line Cliping Algorithm, if the Line P(x1,y1) to Q(x2,y2) crosses YwMin or YwMax coordinates of the Window, then the new x-coordinate of the clipped line is calculated by the formula:

Option A: x=x1+{(y-y1)/m}, where m is the slope and y= YwMin or YwMax
Option B: x=y1+m/(y+x1), where m is the slope and y= YwMin or YwMax
Option C: x=x1-m(y+y1), where m is the slope and y= YwMin or YwMax
Option D: x=m/(y+x1), where m is the slope and y= YwMin or YwMax

Q24. Region Code/ Outcodes are used in the following type of clipping algorithm

Option A: Cohen- Sutherland Line Cliping Algorithm
Option B: Area Subdivsion clipping algorithm
Option C: Liang-Barsky's clipping algorithm
Option D: Sutherland- Hodgeman clipping algorithm

Q25. Which of the following is NOT a type of clipping algorithm?

Option A: Point Clipping
Option B: Ellipse Clipping
Option C: Curve Clipping
Option D: Line Clipping