29. a.	Explain reflection and shearing in detail with suitable illustration.				12	2	2	2
		(OR)							
	b.	Discuss Nichall-Lee-Nichall line clipping algorithm in detail with neat diagrams.			12	2	2	2
30. a.	Write short notes on					2	3	3
		(i)	Polygon surfaces		4			
		(ii)	Polygon meshes		4			
		(iii)	Torus representation		4			
		(OR)						
	b.	Explain in detail how B-Spline curves and surfaces are used in computer graphics.			12	2	3	3
31. a.	Explain how area subdivision method is used for hidden surface elimination.				12	2	4	3
		(OR)						
	b.	Explain Sutherland Hodgeman polygon clipping algorithm in detail.			12	2	4	4
32. a.i.	List the properties of light.				4	4	5	4
	ii.	Explain CIE chromaticity diagram in detail.			8	4	5	4
		(OR)						
	b.	Explain halftone patterns and dithering techniques in detail.			12	4	5	4

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Reg. No.															

B.Tech. DEGREE EXAMINATION, JUNE 2023
Sixth Semester

18CSE338J – COMPUTER GRAPHICS
(For the candidates admitted during the academic year 2018-2019 to 2021-2022)

Note:
(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
(ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours Max. Marks: 100

PART – A (20 × 1 = 20 Marks)
Answer **ALL** Questions

		Marks	BL	CO	PO
1.	Which of the following statements define computer graphics? (A) It refers to designing plans (B) It refers to designing images (C) It refers to designing computers (D) It refers to designing programs	1	1	1	1
2.	In computer graphics, pictures or graphics objects are presented as a collection of discrete picture elements called _____. (A) Pixels (B) Dots (C) Points (D) Coordinates	1	1	1	1
3.	With respect to CRT, the horizontal retrace is defined as _____. (A) The path of an electron beam take when returning to the left side of the CRT (B) The path of an electron beam takes when returning to the right side of the CRT (C) The technique of turning the electron beam on/off while retracing (D) The technique of turning the electron beam off while retracing	1	2	1	1
4.	If the boundary is specified in a single colour, and if the algorithm proceeds pixel by pixel until the boundary colour is encountered is called _____. (A) Flood fill algorithm (B) Boundary fill algorithm (C) Scan time algorithm (D) Colour fill algorithm	1	1	1	1
5.	The object is displayed in a given distance and direction from its original position is called _____. (A) Translation (B) Rotation (C) Scaling (D) Transformation	1	1	2	2
6.	_____ is a generalized line clipping algorithm and is applicable to an arbitrary _____ region. (A) Cyrus beck, convex (B) Cohen Sutherland, concave (C) Cyrus beck, concave (D) Cohen Sutherland, convex	1	1	2	2

7. Positive values for the rotation angle θ defines _____. 1 2 2 2
   (A) Counter clockwise rotation about the end points (B) Counter clockwise translation about the pivot point
   (C) Counter clockwise rotation about the pivot point (D) Negative direction

8. Transpose of a column matrix is _____. 1 1 2 2
   (A) Zero matrix (B) Identity matrix
   (C) Row matrix (D) Diagonal matrix

9. What should be the sequence of transformations that are required to perform rotation of an object around an arbitrary point? 1 1 3 3
   (A) Inverse translation, rotation, translation (B) Scaling, translation, rotation
   (C) Translation, rotation, inverse translation (D) Rotation, translation, scaling

10. In perspective projection, what happens to the size of the image when the object moves far from the project plane? 1 2 3 3
   (A) There is no change in size of image (B) Size of image gets bigger
   (C) Size of image gets smaller (D) There is no image in perspective projection

11. Which types of lines are used to transform coordinate points to the view plane in parallel projection? 1 1 3 3
   (A) Intersecting lines (B) Parallel lines
   (C) Perpendicular lines (D) Bisecting lines

12. Which of the following parameter defines the shape of the view volume of a scene? 1 1 3 3
   (A) Window boundaries (B) Size of the window
   (C) Type of projection (D) Window edges

13. A spline can be defined as _____. 1 1 4 4
   (A) Curved strip (B) A smooth curve drawn using a pencil
   (C) A flexible strip used to generate a smooth curve through a designated set of points (D) Parallel projection

14. The process of displaying 3D into a 2D display unit is called as _____. 1 1 4 4
   (A) Resolution (B) Projection
   (C) Rasterization (D) Transformation

15. How many data elements for each region in octree data structure? 1 1 4 3
   (A) 2 (B) 4
   (C) 6 (D) 8

16. The sweep representation of an object refers to the _____. 1 1 4 3
   (A) 2D representation (B) 3D representation
   (C) Both 2D and 3D representation (D) Increased number of resolution

17. Which of the following colour models are used for colour printing? 1 1 5 3
   (A) RGB (B) CMY
   (C) YIQ (D) CMY and CMYK

18. Which colour has the shortest wavelength? 1 1 5 3
   (A) Yellow (B) Violet
   (C) Green (D) Red

19. Zero degree of red colour in hue image will correspond to _____. 1 2 5 3
   (A) Boundary (B) Edges
   (C) White region (D) Black region

20. White colour in a Cartesian coordinate system can be represented as _____. 1 1 5 3
   (A) (0, 1, 1) (B) (0, 0, 0)
   (C) (0, 1, 0) (D) (1, 1, 1)

PART – B (5 × 4 = 20 Marks) Marks BL CO PO
Answer **ANY FIVE** Questions

21. What is DVST? Give its importance. 4 2 1 1

22. Write short notes on flood fill algorithm. 4 2 1 1

23. Explain how rotation about an arbitrary point obtained. 4 3 2 2

24. Discuss about Weiler Atherton method. 4 2 2 2

25. Differentiate parallel and perspective projection. 4 3 3 3

26. Compare Z-buffer and A-buffer method. 4 3 4 4

27. Convert the given colour value to CMY colour model where R = 0.23, G = 0.57 and B = 0.11. 4 4 5 4

PART – C (5 × 12 = 60 Marks) Marks BL CO PO
Answer **ALL** Questions

28. a. Write an algorithm for mid point circle generation and then using it produce sequence of atleast 5 points along the circumference of circle with radius = 10 and centered at (25, 25). 12 3 1 1

(OR)

b. Discuss raster scan and random scan systems in detail with neat diagrams. 12 2 1 1