B.No. 1-H

Total No. of Printed Pages: 02

PRN No.	

PAPER CODE	UB13-2105B (RE)

DECEMBER 2023 (REEXAM)

T.Y. (INFORMATION TECHNOLOGY) (SEMESTER – I)

COURSE NAME: COMPUTER GRAPHICS

COURSE CODE: ITUA31205B

(PATTERN 2020]

Time: [2Hrs] **[Max. Marks: 60]**

(*) Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **Use of scientific calculator is allowed**
3) **Use suitable data wherever required**
4) **All questions are compulsory. Solve any two sub questions each from each Question 1 ,2, 3,4,5,and 6 respectively**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Give difference between random scan display and raster scan display?	[5]	1	3
	b) What is a frame buffer, and how does it contribute to displaying images on a screen? Discuss the concepts of resolution and aspect ratio in computer graphics.	[5]	1	3
	c) Explain the Digital Differential Analyzer (DDA) line drawing algorithm.	[5]	1	3
Q2	a) Enumerate and explain some key features of OpenGL.	[5]	2	3
	b) Differentiate between GL, GLU, and GLUT in the context of OpenGL.	[5]	2	3
	c) Explain the stages of the 3D viewing pipeline in OpenGL.	[5]	2	3
Q3.	a) Explain Flood fill and boundary fill algorithm with a suitable example.	[5]	3	4
	b) Could you provide an illustration of the Cohen-Sutherland line clipping algorithm along with an appropriate example for better understanding?	[5]	3	4
	c) Explain the methods used for representing polygons in computer graphics. How are the vertices and edges of a polygon stored to facilitate efficient rendering?	[5]	3	4
Q.4	a) Rotate a line segment with endpoint A (3,3) to B(10,10) in a clockwise direction by an angle 45 degrees by keeping A (3,3) as fixed point. Find new transformed coordinates of a line	[5]	4	4
	b) Scale a triangle A(4,4), B(12,4) and C(8,10) with scaling factor Sx= 2 and Sy=1.	[5]	4	4

	c) What are homogeneous coordinates? Calculate a homogenous transformation matrix for translation and scaling.	[5]	4	4
Q.5	a) Construct the structure of segment table.	[5]	5	3
	b) Derive the segment creation algorithm.	[5]	5	3
	c) Explain any 5 principles of animation.	[5]	5	2
Q.6)	a) How can you describe the process of color selection within the context of color models and their applications?	[5]	6	3
	b) Can you elaborate on the various illumination techniques?	[5]	6	3
	c) Discuss the Phong's shading model, and elucidate it's respective applications in computer graphics.	[5]	6	4

1. Remember 2. Understand 3. Apply 4. Analyze 5. Evaluate 6. Create