Total No. of Printed Pages: 2

PRN No.	

PAPER CODE	U314-2105-B (ESE)

(AY:2024-25) December 2024 (ENDSEM) EXAM

TY (SEMESTER - I)

COURSE NAME: COMPUTER GRAPHICS Branch: IT COURSE CODE: ITUA31205B

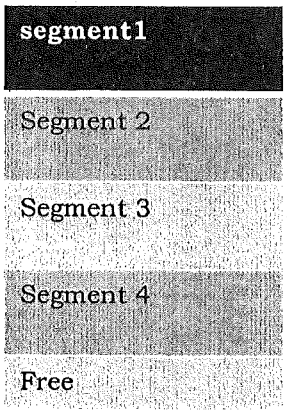
(T.Y PATTERN 2020)

Time: [1Hr 30 Min] **[Max. Marks: 40]**

Instructions to candidates:

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

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Differentiate between raster scan systems and random scan systems.	[4]	1	2
	b) Draw a line using Bresenham's line drawing algorithm. Consider the line from (4,9) to (7,7).	[4]	1	3
	c) Explain DDA line drawing algorithm. Using DDA algorithm draw line from (1,1) to (5,3).	[4]	1	3
Q2	a) Explain the features in OpenGL with OpenGL operations	[4]	2	2
	b) Discuss the role of shaders in OpenGL and differentiate between a Vertex Shader and a Fragment Shader	[4]	2	2
	c) Write a pseudocode to draw a triangle using OpenGL	[4]	2	3
Q3	a) Draw different types of polygons OR	[2]	3	2
	b) Discuss the working of Flood Fill Algorithm	[2]	3	2
	c) Use Cohen-Sutherland out code algorithm to clip two lines P1(40,15) – P2(75, 45) and P3(70,20) – P4(100, 10) against a window A(50, 10), B(80, 10), C(80, 40), D(50,40).	[4]	3	3

Q4	a) Do translation on below points i) P=(2,4), T=(-1,14), P'=(?,?) ii) P=(8.6,-1), T=(0.4,-0.2), P'=(?,?) iii) P=(0,0), T=(1,0), P'=(?,?)	[2]	4	2
	OR			
	b) Perform scaling on a triangle (1,1) (8,1) and (1,9) with scaling factor pf 2 in both x and y directions. Find the final co-ordinates of triangle.	[2]	4	2
	c) A polygon coordinates are A(7,3) , B(9,3), C(9, 5) and D (7,5). We have done scaling Sx = Sy = 2 and reflection through origin and translation by 1 in both X and Y direction. Find original figure. Show transformation and inverse transformation method both.	[4]	4	2
Q.5	a) Rename segment 2 by segment 5, draw segment table. 	[2]	5	2
	OR			
	b) Describe Keyframing with its applications.	[2]	5	2
	c) Explain different operations of segment table.	[4]	5	2
Q.6	a) Justify any two properties of light.	[2]	6	2
	OR			
	b) Discuss RGB colour model.	[2]	6	2
	c) Differentiate between Flat Shading, Gouraud Shading, and Phong Shading?	[4]	6	3

NOTES :-[BT LEVELS: 1: REMEMBER 2: UNDERSTAND 3: APPLY 4: ANALYZE 5: EVALUATE 6: CREATE]