Total No. of Printed Pages: 2

PRN No.	

PAPER CODE	U313-2105-B-ESE

DECEMBER 2023 (ENDSEM) EXAM

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

COURSE NAME: COMPUTER GRAPHICS
COURSE CODE: ITUA31205B

(PATTERN 2020)

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

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 one sub question from Question 3 and any two sub questions each from Questions 4,5 and 6 respectively.**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Explain the concepts of pixel, frame buffer, resolution, and aspect ratio in computer graphics.	[2]	1	2
Q.2	a) Discuss the prominent features of OpenGL that contribute to its popularity as a graphics API.	[2]	2	2
Q.3	a) Differentiate between convex, concave, and complex polygons. Provide examples of each type and discuss the implications of their characteristics in computer graphics.	[6]	3	4
	b) Examine the inside test for polygons. How is it used to determine whether a point lies inside or outside a polygon.	[6]	3	4
Q.4	a) Consider a square ABCD in a 2D coordinate system with vertices A(2, 2), B(2, 4), C(4, 4), and D(4, 2). Perform the following transformations: Translation: Translate the square by (-2, 3). Scaling: Scale the square by a factor of 1.5 with respect to the origin.	[5]	4	4
	b) Explore the process of window-to-viewport coordinate transformation. How does this transformation enable the mapping of a specified window area onto the viewport for display?	[5]	4	4
	c) Compare and contrast homogeneous and non-homogeneous coordinate systems in the context of transformation conventions.	[5]	4	4
Q.5	a) Delve into the fundamentals of animation, including its introduction, the design of animation sequences, and the role of animation languages in the creation of animated content.	[5]	5	3
	b) Could you elaborate on the concept of visibility in the context of segments, and its significance in computer graphics?	[5]	3	3

	c) Provide an overview of the segment, covering aspects like introduction, the purpose of segment tables, and the processes involved in segment creation, closing, deleting, and renaming.	[5]	3	3
Q.6)	a) Explore the intuitive color concepts encompassing the HSV, and HLS color models, highlighting their distinctive features.	[5]	6	3
	b) What are the fundamental aspects of light sources, basic illumination models, and the utilization of halftone patterns?	[5]	6	3
	c) Outline the Fong's shading model , elucidate it's respective characteristics and applications in computer graphics.	[5]	6	3

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