Semester:7 ECS	Department of ECE	AY: 2026-27
Course Code:BUE703	Course Name:Computer graphics and image processing	

Question Bank

Q.	Module-01	M	L	C
1	Define Computer Graphics. Explain the applications of computer graphics.	10	L2	CO1
2	Explain the architecture of a raster-graphics system with a display processor.	10	L2	CO1
3	Define the following terms: Resolution, Aspect Ratio, Pixel, Bitmap and Frame Buffer.	10	L2	CO1
4	Explain the operations for displaying a picture using GLUT.	10	L2	CO1
5	Explain the DDA line drawing algorithm with its procedure.	10	L2	CO1
6	Explain Bresenham's Line Drawing Algorithm with an example. Apply it to digitize a line segment with suitable endpoints.	10	L3	CO1
7	Explain coordinate reference frames in OpenGL.	10	L2	CO1
8	Explain OpenGL point and line functions and their relevant attributes.	10	L2	CO1
9	Explain OpenGL fill area functions.	10	L2	CO1
10	Explain the basic concepts and applications of computer graphics systems.	10	L2	CO1
	Module-02			
11	Explain the basic 2D geometric transformations in detail with matrix representations.	10	L2	CO2
12	Write a note on inverse transformations and derive the corresponding matrices.	10	L2	CO2
13	Show that two successive rotations are additive.	10	L3	CO2
14	Show that two successive scalings are multiplicative.	10	L3	CO2
15	Explain two-dimensional pivot point scaling with neat sequences of an object, including matrix representations and equations.	10	L3	CO2
16	What are homogeneous coordinates? Explain their need in geometric transformations.	10	L2	CO2
17	Explain 3D transformations using the homogeneous-coordinate approach and derive the matrices for translation, rotation and scaling.	10	L2	CO2
18	Explain reflection transformation with matrix representation.	10	L2	CO2
19	Explain shear transformation with matrix representation.	10	L2	CO2
20	Explain transformation between 2D coordinate systems with suitable matrix representations.	10	L2	CO2
	Module-03			

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21.	Define computer animation. Explain the stages involved in designing animation sequences.	10	L2	CO3
22.	Explain OpenGL interactive input device functions: GLUT keyboard functions and GLUT mouse functions.	10	L2	CO3
23.	Discuss interactive picture construction techniques.	10	L2	CO3
24	Explain the logical classification of input devices with suitable examples.	10	L2	CO3
25	Explain how menus and submenus are created in OpenGL, with an example.	10	L2	CO3
26	Write a complete OpenGL program to demonstrate animation effects on a simple object.	10	L3	CO3
27	Explain computer-animation languages with suitable examples.	10	L2	CO3
28	Explain character animation and its applications.	10	L2	CO3
29	Explain any five input devices used in the logical classification of input devices.	10	L2	CO3
30	Explain traditional animation techniques and their role in designing animation sequences.	10	L2	CO3
	Module-04			
31	Define image processing. List and explain the types of images.	10	L2	CO4
32	Given a grayscale image of specified size scanned at a specified dpi, calculate the number of bits required to represent it and the transmission time for a given modem rate. Repeat for a binary image.	10	L3	CO4
33	Consider an image point [2,2]. Perform translation, scaling and rotation operations and show the results.	10	L3	CO4
34	Discuss the practical applications of arithmetic operations in image processing.	10	L2	CO4
35	Discuss the practical applications of logical operations in image processing.	10	L2	CO4
36	Discuss the practical applications of geometric operations in image processing.	10	L2	CO4
37	Define Euclidean distance, D4 distance and D8 distance. Compute these distances between two given pixels.	10	L3	CO4
38	Explain the fundamental steps in image processing with a suitable block diagram.	10	L2	CO4
39	Explain clipping window and viewport transformations with an example.	10	L2	CO4
40	Differentiate between the RGB and CMY color models.	10	L2	CO4
	Module-05			
41	Explain in detail the stages of the edge detection process with a block diagram.	10	L2	CO5
42	Explain the steps in automatic image analysis and interpretation.	10	L2	CO5
43	Explain the Canny edge detection algorithm.	10	L2	CO5
44	What is image segmentation? Classify the image segmentation algorithms.	10	L2	CO5
45	Explain the Roberts first-order edge detection operator.	10	L2	CO5

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46	Explain the Prewitt first-order edge detection operator.	10	L2	CO5
47	Explain the Sobel first-order edge detection operator.	10	L2	CO5
48	Explain edge detection with a suitable example.	10	L2	CO5
49	List and explain the types of edges in an image.	10	L2	CO5
50	Compare Roberts, Prewitt and Sobel edge detection operators.	10	L3	CO5

Faculty Signature

***Note:**

1. All modules should contain a minimum of **10** questions each and the total number of questions must be **50**.
2. Questions can carry marks of 06, 07, 08, 09, 10 and for problems: 04 or 05.
3. Follow the RBTL as per the keywords used to frame the questions.
4. Maintain the Course Outcomes (COs) as per the syllabus.
5. M: Marks, L: RBTL, C:COs.

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