CBCS SCHEME

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21CS63

Sixth Semester B.E. Degree Examination, June/July 2024
Computer Graphics and Fundamentals of Image Processing

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. What is computer graphics illustrate the application of computer graphics. **(10 Marks)**

b. Illustrate display window management system using GLUT. **(10 Marks)**

OR

2 a. Using Bresenham's line drawing algorithm digitize the line with end points (20, 10) to (30, 18). **(10 Marks)**

b. With a simple OpenGL program demonstrate the different OpenGL functions. **(10 Marks)**

Module-2

3 a. Illustrate the need of homogeneous co-ordinate system and demonstrate translation, rotation, scaling in 2D homogeneous co-ordinate system with matrix representation. **(10 Marks)**

b. Obtain a matrix representation for rotation and scalling of a object about a specified pivot point in 2D. **(10 Marks)**

OR

4 a. Illustrate the raster method for geometric transformation. **(10 Marks)**

b. List and explain all 3-D geometric transformation. **(10 Marks)**

Module-3

5 a. Illustrate the logical classification of input devices. **(08 Marks)**

b. Elaborate the following with the suitable OpenGL function using code snippet:

i) GLUT mouse function

ii) GLUT keyboard function. **(12 Marks)**

OR

6 a. Demonstrate the steps in design of animation. **(08 Marks)**

b. Illustrate the use of morphing with edge equalization and vertex equalization. **(12 Marks)**

Module-4

7 a. What is image processing? List some of the fields of I_P. **(04 Marks)**

b. List the types of images based on nature, attribute and colour. **(06 Marks)**

c. Let V = {0, 1}, compute the D_e, D_4, D_8 and D_m distance between 2 pixel p and q. Let the pixel coordinates of p and q be (3, 0) and (2, 3). **(10 Marks)**

0	1	1	1
1	0	0	1
1	1	1	1(q)
1	1	1	1
(p)			

OR

8	a.	Describe image interpolation technique.	**(10 Marks)**
	b.	List and explain arithmetic operations by considering an example.	**(10 Marks)**

Module-5

9	a.	What is image segmentation? Describe the types of segmentation algorithm.	**(10 Marks)**
	b.	With the help of flow chart. Explain the stages of edge detection.	**(10 Marks)**

OR

10	a.	Write a brief note on: i) Canny edge detection ii) Graph theoretic algorithm	**(10 Marks)**
	b.	Explain the basic type of grey level discontinuities in a digital image.	**(10 Marks)**

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