P P SAVANI UNIVERSITY

Fourth Semester of B. Tech. Examination

May 2022

SECE2051 COMPUTER GRAPHICS & MULTIMEDIA

27.05.2022, Friday **Time: 9:00 a.m. To 11:30 a.m.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in same answer sheet.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

Q - 1 Answer the Following: (Any 5) **[05]**

(i) Which of the following statements define Computer Graphics?
- (a) It refers to designing plans
- (b) It means designing computers
- (c) It refers to designing images
- (d) None of the mentioned

(ii) Define Vector Graphics.

(iii) What do you mean by frame buffer?

(iv) Define clipping. State types of clipping.

(v) Explain BITMAP file format.

(vi) Define Point.

Q - 2 (a) Explain in detail various application areas where graphics is applied. **[05]**

Q - 2 (b) Explain CRT display system. **[05]**

OR

Q - 2 (a) Write a note on DDA algorithm. **[05]**

Q - 2 (b) Explain different character generation methods in detail. **[05]**

Q - 3 (a) Differentiate between convex and concave polygon. **[05]**

Q - 3 (b) Define flood fill algorithm. Explain eight connected flood fill algorithm with suitable example. **[05]**

OR

Q - 3 (a) Define transformation. Explain 2D translation along with suitable example and matrix representation. **[05]**

Q - 3 (b) Write a note on rotation with suitable example. **[05]**

Q - 4 Attempt any one: **[05]**

(a) Write a short note on – Cohen Sutherland Line Clipping Algorithm.

(b) Solve the following:
- (a) A line has a starting point (1, 7) and ending point (11, 17). Apply the Digital Differential Analyzer algorithm to plot a line. **[03]**
- (b) Given a square with coordinate points A (0, 3), B (3, 3), C (3, 0), D (0, 0). Apply the translation with distance 1 towards X axis and 1 towards Y axis. Obtain the new coordinates of the square. **[02]**

SECTION – II

Q - 1	Answer the Following: (Any 5)	**[05]**
(i)	What is homogenous coordinate?	
(ii)	Give the matrix representation for 3D Translation.	
(iii)	Define interpolating and approximating curve.	
(iv)	State two approaches used for removing hidden surface problems.	
(v)	What is multimedia? List components of multimedia.	
(vi)	What do you mean by additive and subtractive color model?	
Q - 2 (a)	Define curve. List various types of curves. Explain parametric curve in detail.	**[05]**
Q - 2 (b)	Define Bezier curve. Explain applications, properties and equation of Bezier curve with suitable example.	**[05]**
	OR	
Q - 2 (a)	Define projection. List various types of projection. Explain parallel projection in detail.	**[05]**
Q - 2 (b)	Write 3D matrix representation for (a) scaling, (b) rotation and (c) shear.	**[05]**
Q - 3 (a)	Why identification and removal of hidden surface is required? Explain back face detection approach in detail.	**[05]**
Q - 3 (b)	Differentiate between object space and image space methods.	**[05]**
	OR	
Q - 3 (a)	List different types of color models. Explain CMYK in detail.	**[05]**
Q - 3 (b)	Explain areas of application were multimedia is utilized.	**[05]**
Q - 4	Attempt any one:	**[05]**
(i)	Define following terms – (a) control point, (b) convex hull and (c) polygon table.	
(ii)	Write a C program to perform translation on 3D object.	

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