P P SAVANI UNIVERSITY

Fourth Semester of B. Tech. Examination

May 2019

SECE2051 Computer Graphics & Multimedia

22.05.2019, Wednesday **Time: 09:00 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 separate answer sheets.
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 Five)	**[05]**
(i)	Define Persistence.	
(ii)	List out the methods used for color CRT display.	
(iii)	Define Horizontal and Vertical Retrace.	
(iv)	Brightness of the line is dependent on orientation. Justify.	
(v)	Define Interlaced Display.	
(vi)	What is called Video Adapter Card?	
(vii)	What is called refreshing?	
Q - 2 (a)	Briefly explain graphics input devices.	**[05]**
Q - 2 (b)	Write an algorithm to scan convert a line using DDA line drawing algorithm. Also derive the equations for line having slope < 1. Write the pseudo code for generating dotted line (Like .....) using the derived equations.	**[05]**

OR

Q - 2 (a)	Explain working of raster scan display.	**[05]**
Q - 2 (b)	Derive the equations to scan convert a line using Mid-point line drawing algorithm. Consider the line with slope < 1. Also write a pseudo code to draw the line having width of 3 pixels.	**[05]**
Q - 3 (a)	Consider a polygon with vertices A(2,2), B(7,2), C(7,8) and D(2,8). Clip a line PQ having vertices P(1,3), Q(9,9) against polygon ABCD using Cohen Sutherland Line clipping algorithm.	**[05]**
Q - 3 (b)	Explain boundary fill algorithm with its merits and demerits.	**[05]**

OR

Q - 3 (a)	Reflect the diamond shape polygon having vertices A(-1,0), B(0,-2), C(1,0) and D(0,2) about line y = x + 2 (diagonal line). Find the coordinates of reflected polygon.	**[05]**
Q - 3 (b)	Explain flood fill algorithm with its merits and demerits.	**[05]**
Q - 4	Attempt any one.	**[05]**
(i)	Find the conditions under which we can switch the order of a rotation and simultaneous shearing and still get the same result.	
(ii)	Briefly explain working of Weiler Atherton Polygon clipping algorithm.	

SECTION – II

Q - 1	Answer the following (Any Five)	**[05]**
(i)	List different methods for 3D display.	
(ii)	State the properties of light.	
(iii)	Write 3D rotation (with reference to X, Y and Z axis) matrices.	
(iv)	What is Unicode Standard?	
(v)	Which are text compression techniques?	
(vi)	Name a few audio editing software.	
(vii)	Define vanishing point.	

Q - 2 (a)	The pyramid defined by the coordinates A(0,0,0), B(1,0,0), C(0,1,0) and D(0,0,1) is to be rotated 45 about line L that has direction vector V = J + K and passing through point C(0,1,0). Find the composite transformation matrix.	[05]
Q - 2 (b)	Differentiate between perspective projection and parallel projection. Give schematic diagram to explain the same.	[05]
	OR	
Q - 2 (a)	Find the transformation matrix for 3D mirror reflection with respect to the plane passing through origin and having a normal vector having direction N = I + J + K.	[05]
Q - 2 (b)	Find the general form of an oblique projection on the xy plane.	[05]
Q - 3 (a)	Differentiate between diffuse reflection and specular reflection.	[05]
Q - 3 (b)	Write the applications of different color models. Explain any one-color model in brief.	[05]
	OR	
Q - 3 (a)	Explain Depth buffer (z-buffer) algorithm.	[05]
Q - 3 (b)	Explain Bezier curve and derive the equations of G_1 and C_1 continuity.	[05]
Q - 4	Attempt any one.	[05]
(i)	Briefly explain digital audio & video processing with applications.	
(ii)	Briefly explain different methods of Polygon mesh representation.	

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