GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V (NEW) EXAMINATION – WINTER 2021

Subject Code:3151607   **Date:01/01/2022**
Subject Name:Computer Graphics and Visualization
Time:02:30 PM TO 05:00 PM   **Total Marks: 70**
Instructions:
1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

			MARKS
Q.1	(a)	Define: Frame buffer, Shearing, Image Processing.	03
	(b)	What is Computer Graphics? Write applications of CG.	04
	(c)	What is OpenGL? Explain primitives of OpenGL.	07
Q.2	(a)	What is Polygon? Explain types of polygon.	03
	(b)	Explain Odd-even method in detail.	04
	(c)	Explain Z-buffer method in detail.	07
		OR	
	(c)	Explain BSP trees in detail.	07
Q.3	(a)	Prove that two successive scaling is commutative. S1S2=S2S1	03
	(b)	Explain back face detection method in detail.	04
	(c)	What is need of homogeneous coordinate? Give homogeneous coordinate matrix for translation, rotation and scaling.	07
		OR	
Q.3	(a)	Explain diffuse reflection and specular reflection.	03
	(b)	Explain Non zero winding rule in detail.	04
	(c)	Perform $45°$ rotation of triangle A(0,0), B(1,1) and C(5,2) about P(-1,-1).	07
Q.4	(a)	What do you mean by scaling? Explain uniform and differential scaling in detail.	03
	(b)	Explain gouraud and phong shading in detail.	04
	(c)	Explain 4-connected boundary fill and flood fill algorithm in detail.	07
		OR	
Q.4	(a)	Explain interpolation process in detail.	03
	(b)	What is clipping? Explain types of clipping in detail.	04
	(c)	Explain scan line polygon fill algorithm in detail.	07
Q.5	(a)	Explain OpenGL culling.	03
	(b)	Explain marching square algorithm.	04
	(c)	Explain properties of Bezier curve in detail.	07
		OR	
Q.5	(a)	Explain various light sources in detail.	03
	(b)	Difference between parallel and perspective projection.	04
	(c)	Explain Cohen Sutherland line clipping algorithm in detail.	07

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