GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V(NEW) EXAMINATION – SUMMER 2022

Subject Code:3151607   **Date:04/06/2022**

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: (1) Pixel (2) Frame Buffer (3) Graphics Processing Units	**03**
	(b)	Enlist various applications of computer graphics and discuss anyone in detail.	**04**
	(c)	Describe the points, line segments and polygons OpenGL primitives with necessary function.	**07**
Q.2	**(a)**	Differentiate parallel and perspective projection.	**03**
	(b)	Describe orthographic projection in detail.	**04**
	(c)	Discuss the RGB color model and related OpenGL functions to assign a color to the vertex in detail.	**07**
		OR	
	(c)	Discuss translation, scaling and rotation about a fixed point in OpenGL with related functions.	**07**
Q.3	**(a)**	Explain the Flood Fill algorithm in brief.	**03**
	(b)	Discuss one point, two point and three point perspectives with reference to perspective viewing in detail.	**04**
	(c)	Discuss rotation about a fixed point with the sequence of transformation.	**07**
		OR	
Q.3	**(a)**	Discuss the limitation of DDA line drawing algorithm.	**03**
	(b)	Describe translation transformation in homogeneous coordinates.	**04**
	(c)	Discuss perspective projection with its related OpenGL viewing functions in detail.	**07**
Q.4	**(a)**	Discuss 3 dimensions clipping with necessary diagram.	**03**
	(b)	Discuss light material interaction with specular surfaces, diffuse surfaces and translucent surfaces.	**04**
	(c)	Briefly explain z-buffer visible surface determination algorithm.	**07**
		OR	
Q.4	**(a)**	Discuss Phong Shading for polygons in brief.	**03**
	(b)	Describe the BSP trees in detail.	**04**
	(c)	Discuss the Cohen-Sutherland line clipping algorithm with an example.	**07**
Q.5	**(a)**	Describe the texture object with related OpenGL functions.	**03**
	(b)	Compare Bezier curve and B-spline curve.	**04**
	(c)	Demonstrate the working of ray tracing with necessary figures.	**07**
		OR	
Q.5	**(a)**	Explain various properties of the Bezier curve.	**03**
	(b)	Discuss 2D texture mapping with the required figures.	**04**
	(c)	What is the use of control points in interpolation? Discuss blending polynomials interpolation in detail.	**07**

****