

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
