

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
M.SC INTEGRATED - SEMESTER - VI EXAMINATION - WINTER 2025

Subject Code: 1360502

Date: 17-11-2025

Subject Name: Computer Graphics

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. Use of simple calculators and non-programmable scientific calculators are permitted.**

	Marks
Q.1 (a) Define the following fundamental terms used in computer graphics. 1. Aspect Ratio, 2. Persistence, 3. Frame Buffer	03
(b) Explain the architecture and working of a Raster Scan display system.	04
(c) Describe the working principle of a CRT display with a well-labeled, neat diagram.	07
Q.2 (a) Explain 2D Reflection and Shearing transformation.	03
(b) Explain the concept of the inside-outside test in computer graphics. List and describe the different methods used to perform this test.	04
(c) Explain midpoint ellipse generation algorithm.	07
OR	
(c) Determine the Digital Differential Analyzer (DDA) line drawing algorithm with a suitable example.	07
Q.3 (a) Define the following terms: a) Polygon Surface b) Mesh c) Quadric Surface	03
(b) Explain the process of cubic spline interpolation.	04
(c) Explain window to view port transformation in detail.	07
OR	
(a) What is a spline in 3D modeling? List two types of spline curves.	03
(b) Describe how polygon meshes are used for object representation in 3D graphics.	04
(c) What is polygon clipping? Explain Sutherland-Hodgman polygon clipping algorithm with the help of an example.	07
Q.4 (a) Define the following 3D transformations: a) Translation b) Rotation c) Scaling	03
(b) Differentiate between Parallel and Perspective Projection in terms of depth perception.	04
(c) Explain three methods of character generation.	07
OR	
(a) Describe the structure and components of the 3D Viewing Pipeline.	03

- (b) Explain the concept of 3D translation in computer graphics. 04
- (c) Explain the Boundary-fill and Flood-fill algorithms in detail. 07
- Q.5** (a) Define the following terms: a) Visible Surface Detection b) Illumination c) Hue 03
- (b) Explain YIQ and CMY color Model. 04
- (c) What are the main properties of B-spline curves? Explain each in detail. 07

OR

- (a) Differentiate between Ambient and Diffuse reflection in illumination models. 03
- (b) Describe the RGB color model. Mention its significance in computer graphics. 04
- (c) Explain Bezier curve with the necessary equations. List all properties of a Bezier curve. 07
