

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER-IV • EXAMINATION – SUMMER 2017

Subject Code: 2640008

Date: 08/06/2017

Subject Name: Computer Graphics (CG)

Time: 10.30 AM TO 01.00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is Computer Graphics? Discuss any three applications. **07**
(b) 1. Differentiate Raster Scan and Random Scan Displays **04**
2. Define: Persistence, Resolution, Refresh rate **03**
- Q.2** (a) Write a Midpoint Circle Algorithm. **07**
(b) Describe OpenGL with basic syntax and explain OpenGL POLYGON Fill-Area functions. **07**
- OR**
- (b) Explain Inside-Outside Test. **07**
- Q.3** (a) Discuss line caps and joins in detail. Write OpenGL line-width function and line-style function. **07**
(b) Write a short note on General Two-Dimensional Pivot-Point Rotation. **07**
- OR**
- Q.3** (a) Explain general scan-line polygon-fill algorithm. **07**
(b) 1. Write a 4-connected boundary fill algorithm. **03**
2. Discuss Antialiasing in brief. **04**
- Q.4** (a) Explain Basic Three-Dimensional Geometric Transformations in detail. **07**
(b) Discuss Cohen-Sutherland Line Clipping Algorithm. **07**
- OR**
- Q.4** (a) Show that the composition of two rotations is additive by concatenating the matrix representations for $R(\theta_1).R(\theta_2) = R(\theta_1+\theta_2)$ **07**
(b) Discuss Sutherland-Hodgman Polygon Clipping Algorithm. **07**
- Q.5** (a) Write a short note on two-dimensional viewing pipeline. **07**
(b) Explain Perspective Projections in detail. **07**
- OR**
- Q.5** (a) What is Shear? Discuss various cases of shear in detail. **07**
(b) Explain Orthogonal Projections in detail. **07**
