

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VI(OLD) – EXAMINATION – SUMMER 2019**

**Subject Code:160703**

**Date:10/05/2019**

**Subject Name: Computer Graphics**

**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) Discuss various applications of computer graphics. **07**  
(b) Write a detail note on CRT **07**
- Q.2** (a) Differentiate: Raster Scan vs. Random Scan **07**  
(b) 1). If transfer rate of system is  $10^4$  bits / second then what amount of time is require to load frame buffer of size  $400 \times 300$  which supports 256 colors? **07**  
2). If a true color display system has 300 scan lines and aspect ratio of 3:4, how many bits per second are required to show 60 frames per second?
- OR**
- (b) Explain DDA line drawing algorithm with its limitations **07**
- Q.3** (a) Calculate the pixel position along circle path with radius  $r=10$  centered on the origin using midpoint circle algorithm up to  $x = y$  **07**  
(b) Write an algorithm for midpoint ellipse. **07**
- OR**
- Q.3** (a) Explain various methods of inside-outside tests. **07**  
(b) Derive the 2D rotation matrix for rotation about origin and rotation with respect to reference point. **07**
- Q.4** (a) Explain Cohen-Sutherland line clipping algorithm. **07**  
(b) Discuss properties of Bezier curve. **07**
- OR**
- Q.4** (a) Differentiate: Parallel vs. Perspective Projection **07**  
(b) Explain cavalier and cabinet projection with suitable diagram **07**
- Q.5** (a) The pyramid with co-ordinates A (0, 0, 0), B (1, 0, 0), C (0, 1, 0) and D (0, 0, 1) is to be rotated by  $90^\circ$  about line L that has direction vector  $v = j + k$  and passing through point (0, 1, 0). Find the co-ordinates of transformed pyramid. **07**  
(b) Explain XYZ and RGB color model. **07**
- OR**
- Q.5** (a) Write a short note on back face detection **07**  
(b) Write a short note on Gouraud shading **07**

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