

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (OLD) - EXAMINATION – SUMMER 2018

Subject Code:160703

Date:28/04/2018

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)** What do you understand by computer graphics? Explain the basic components of a computer graphics display. **07**
- (b)** Derive and explain DDA line drawing algorithm. **07**
- Q.2 (a)** Compare and contrast the raster and random scan systems. Mention some applications of raster scan system. **07**
- (b)** What do you mean by aliasing and anti-aliasing? Discuss one method of anti-aliasing. **07**
- OR**
- (b)** Develop Bresenham's algorithm to generate a line segment with positive slope greater than one and use it to find the points need to be rasterized along the path of the line segment from (1,2) to (3,10). **07**
- Q.3 (a)** Explain shearing and reflection with examples. **07**
- (b)** Define window, viewport, user and screen coordinates. Derive window to viewport transformation matrix. What is the factor that decides the size of image in viewport? **07**
- OR**
- Q.3 (a)** Write down the Liang-Bersky algorithm for line clipping. **07**
- (b)** Write a short note on composite transformations in 3Dimension and demonstrate it with composite transformation matrix (CTM). **07**
- Q.4 (a)** Explain the following with the reference of 3D geometrical transformations **07**
- 1) Translation 2) Scaling 3) Rotation
- (b)** What is the role of Bezier curves in designing curves and surfaces? Discuss its properties. **07**
- OR**
- Q.4 (a)** What is parallel and perspective projection methods. **07**
- (b)** Find the transformation matrix for rotating three dimensional objects about an arbitrary axis. **07**
- Q.5 (a)** What are Color models compare and contrast between RGB and CMY systems. **07**
- (b)** Explain B-spline curves. Also describe its salient properties. **07**
- OR**
- Q.5 (a)** What is hidden surface detection? Explain Depth buffer or Z-buffer algorithm. **07**
- (b)** Discuss relative advantages and disadvantages of Gouraud Shading and Phong Shading **07**
