

(Following Paper ID and Roll No. to be filled in your  
Answer Books)

**Paper ID : 110411**

Roll No.

**B.TECH.**

**Theory Examination (Semester-IV) 2015-16**

**COMPUTER GRAPHICS**

*Time : 3 Hours*

*Max. marks : 100*

**Note: Attempt questions from all Sections as per directions.**

**Section-A**

**Attempt all parts of this section. Answer in brief. [2×10=20]**

1. (a) Explain the role of pixel and frame buffer in graphics devices.
- (b) What do you understand by the video controller?
- (c) Justify the composite transformation.
- (d) What is specular reflection?
- (e) Write the properties of B-Spline curve.

(1)

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- (f) What do you understand by the Raster scan display?
- (g) Write the rotation matrix about x, y and z axis in 3D.
- (h) Write the Bresenham's algorithm of a line.
- (i) Give window to viewport transformation matrix.
- (j) What is the persistence of phosphor?

**Section-B**

**2. Attempt any five questions from this section. [10×5=50]**

- (a) Compare the computation done in digital differential analyzer (DDA) algorithm with Bresenham's line drawing algorithm.
- (b) Write a procedure for rotation. Drive reflection metrics for reflection about X axis.
- (c) Consider two raster systems with resolutions of  $640 \times 480$  and  $1280 \times 1024$ . How many pixels could be accessed per second in each of these systems by a display controller that refreshes the screen at a rate of 60 frames per second?
- (d) Write an algorithm for Cohen-Sutherland line clipping algorithm. Compare it with Liang-Barsky line clipping algorithm.

(2)

- (e) What is window to view point coordinate transformation? What are the issues related to multiple windowing?
- (f) Explain parallel and perspective projection. Justify the depth culling projection for 3-D display methods.
- (g) What are the criteria that should be satisfied by a good line drawing algorithm? Explain in detail.
- (h) Explain the midpoint circle generation algorithm.

### Section-C

Attempt any two questions from this section. [15×2=30]

3. List the advantages and disadvantages of back-face detection and A-buffer method. Write the algorithm for back-face detection.
4. Explain the different illumination methods and different rendering methods in detail. Write its advantages and disadvantages.
5. Compare and contrast among spline, B-spline and Bezier algorithms for curve generation and write the algorithm for Bezier curve generation.