

7. Explain the following :

- (a) Illumination Models
- (b) Hermite Curve

8. (a) What is meant by viewing pipeline ? Illustrate.

- (b) What is general projection transform ? How is it significant ? Illustrate.

9. Explain the following :

- (a) 3D Reflection
- (b) 3D Composite Transformations

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**97678**

**BCA 5th Semester (Re-appear)  
Examination – October, 2020**

**COMPUTER GRAPHICS**

Paper : BCA-302

*Time : 1.45 Hours ]*

*[ Maximum Marks : 80*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt any *three* questions. All questions carry equal marks.

1. (a) What is 2D viewing transformation ?

(b) What is quadric surface ?

(c) What is 3D shearing ?

(d) What is interactive computer graphics ? State its relevance.

- (e) What are viewing coordinates? Illustrate.
  - (f) What is random scan system?
  - (g) Why Bresenham's line algorithm is preferred over DDA line algorithm?
  - (h) What is meant by coordinate systems transformation?
2. (a) What is flood-fill algorithm? What is its relevance? Illustrate.
- (b) What steps are required to plot a line whose slope is between  $0$  and  $30^\circ$  using Bresenham's method? Indicate which raster locations would be chosen by Bresenham's algorithm when scan-converting a line from screen coordinate  $(1,3)$  to screen coordinate  $(6,11)$ .
3. Explain the following:
- (a) Ellipse algorithm
  - (b) Plasma Displays

4. (a) Find the normalization transformation that maps a window whose lower left corner is at  $(2,3)$  and upper right corner is at  $(7,10)$  onto:
- (i) A viewport that is the entire normalized device screen and
  - (ii) A viewport that has lower left corner at  $(0,0)$  and upper right corner  $(\frac{1}{2}, \frac{1}{2})$ .
- (b) What is Cyrus-beck Line Clipping algorithm? Illustrate through a suitable example.
5. Explain the following:
- (a) Sutherland-Hodgeman polygon clipping algorithm
  - (b) 2D Shearing Transformation
6. (a) What are Bezier surfaces? How are these represented? Illustrate their relevance in graphics.
- (b) What are polygon-rendering methods? Which method is most popular? Justify your answer.