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

9. Explain the following :

(a) Composite Transformations 8

(b) 3D Shearing 8

Roll No. .....

97678

BCA 5th Semester (New)

Examination – November, 2018

COMPUTER GRAPHICS

Paper : BCA-302

Time : Three 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 : Question No. **1** is ***compulsory***. Attempt ***four*** questions by selecting ***one*** question from each Unit. All questions carry equal marks.

1. (a) What is interactive computer graphics ? State its relevance. $2 \times 8 = 16$

(b) What is random scan system ?

(c) Why Bresenham's line algorithm is preferred over DDA line algorithm ?

(d) What is meant by coordinate systems transformation ?

(e) What is quadric surface ?

(f) What are viewing coordinates ? Illustrate.

(g) What is Cyrus-beck line clipping algorithm ?

(h) What is flickering ? What causes flickering ?

UNIT – I

2. (a) What are raster-scan systems ? how do these work ? Illustrate. 7

(b) What is scan conversion ? What steps are required to plot a line whose slope is between 0 and 45° using Bresenham's method ? Indicate which raster locations would be chosen by Bresenham's algorithm when scan-converting a line from screen coordinate (2,3) to screen coordinate (7,12). 9

3. (a) What are plasma displays ? How do these work ? Illustrate. 6

(b) What is flood-Fill algorithm ? What is its relevance ? Illustrate. 5

(c) What is mid-point circle algorithm ? How does it work ? Illustrate. 5

UNIT – II

4. (a) What is 2D composite transformation ? Illustrate through a suitable example. 6

(b) What is 2D viewing transformation ? Find the normalization transformation that maps a window whose lower left corner is at (1,2) and upper right corner is at (5,8) onto. 10

(i) A viewport that is the entire normalized device screen and

(ii) A viewport that has lower left coner at (0,0) and upper right corner $\left(\frac{1}{2},\frac{1}{2}\right)$

5. Explain the following :

(a) Cohen-Sutherland line-clipping algorithm 8

(b) Sutherland-Hodgeman polygon clipping algorithm 8

UNIT – III

6. (a) What are polygon-rendering methods ? Which method is most popular ? Justify your answer. 8

(b) What are Bezier surface ? How are these represented ? Illustrate their relevance in graphics. 8

7. Explain the following :

(a) Hermite Curve 8

(b) Basic Illumination Models 8

UNIT – IV

8. (a) What is general projection transform ? How is it significant ? Illustrate. 8