Paper Code & Roll No. to be filled in your Answer Book

Roll No. | | | | | | | | | | | |

# B.Tech. (VI - Sem.)

## Even Semester Examination - 2016

## COMPUTER GRAPHICS

*[Time : 3 Hours]* *[Maximum Marks :100]*

**Note:** Attempt **all** questions :

Q1. Attempt **any Four** parts of the following: (5×4=20)

(a) Explain the concept of working of interactive Computer Graphics with suitable example.

(b) Explain Bresenham's straight line algorithm to produce a line from (0, 0) to (17, 12).Show the result in cartesian graph.

(c) Describe character generation in computer graphics.

(d) Explain the function of Frame Buffer. What is Horizontal and vertical Retrace?

(e) How much time is spent scanning across each row of pixel during screen refresh on a raster

system with a resolution of 1280 by 1024 and a refresh rate of 60 frames per second?

(f) Explain following term in brief:

(i) Display File Structure

(ii) Resolution of an image

(iii) Image aspect ratio

Q2. Attempt **any Four** parts of the following: (5×4=20)

(a) What is segmentation? Explain various operation perform on the segment and give an example of segment table.

(b) Show that scaling followed by rotation is equivalents to shearing.

(c) Define polygon. Describe Even and odd method to determine whether a given point is inside the polygon.

(d) Write in brief about the principle of working of liquid crystal display.

(e) What is CRT? What is the problem with CRT as a computer display device?

(f) Explain following term in brief:

(i) Cohen Sutherland line clipping algorithm

(ii) shadow mask CRT

Q3. Attempt **any two** parts of the following: (10×2=20)

(a) Draw a flowchart illustrating the logic of Sutherland-Hodgeman polygon clipping algorithm.

(b) Write short notes on following :

(i) Windowing

(ii) Viewport

(iii) Clipping

(iv) Double buffering

(c) Perform the 45degree rotation of triangle A(0,0), B(1,1) & C(5,2)

(i) About the origin

(ii) About the point P(-1,-1)

Q4. Attempt **any two** parts of the following: (10×2=20)

(a) What do you mean by a hidden line or surface? Explain. Describe the Back Face removal algorithm of hidden line removal.

(b) Determine 3D transformation matrix to scale the line PQ in the x direction by 3 by keeping point P fixed. Then rotate this line by $45^{\circ}$ anticlockwise about the Z-axis. Given P(1,1.5,2) and Q(4.5,6.3).

(c) Explain parallel projection, perspective projection And depth curing projection for 3-D display methods.

Q5. Attempt **any two** parts of the following: (10×2=20)

(a) Make a comparison of Bezier, Hermite and B-spline algorithms for curve generation.

(b) What do you mean by animation? Explain. Describe the Z buffer algorithm of hidden line Removal.

(c) Write short notes on following:

(i) OPENGL

(ii) Fractals

(iii) Oblique projection

(iv) Color model

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