Paper Code : ECS-504

(Following Paper ID and Roll No. to be filled in your Answer Book)										
Paper ID : 110514 **Roll No.**										

B. TECH

(Odd Sem.-V) Theory Examination, 2016-17

COMPUTER GRAPHICS

Time : 3 : 00 Hr.] **[Maximum Marks : 100**

Note : Attempt question from all Section as per direction.

Section-A

1. Attempt all parts of this Section. Answer in brief : 2×10=20

   (a) Where and why clipping is needed in graphics ?

   (b) Explain phong illumination model in brief.

   (c) Give parametric and non-parametric representation of curve in 3-D.

   (d) Define Random scan/Raster scan displays.

   (e) Define pixel.

   (f) What is aspect ratio ?

   (g) What is frame buffer ?

   (h) What is point in the computer graphics system ?

   (i) Write short note on line.

   (j) What are the various attributes of a line ?

Section-B

Attempt any five questions. Each question carries equal marks.

5×10=50

2. Explain concave and convex polygons with proper example. Discuss Sutherland-Hodgeman polygon Elipping algorithm by all possible cases.

3. Specify the significance of continuity conditions. Discuss parametric continuity conditions and differentiate it with geometric continuity conditions.

4. Explain diffuse reflection and Gouraud model.

5. Derive a general form of 3D rotation about :
   (i) X-axis
   (ii) Z-axis.

6. Write mid-point circle algorithm and predict the pixels in any octant of circle for radius = 10 pixels with its centre at origin.

7. Show that the uniform scaling and rotation make commutative pairs but in general scaling and rotation are not commutative.

8. Write DDA algorithm for line drawing Rasterized the line between the points (20, 10) and (30, 18) by using the same.

9. Implement a back-face detection procedure using an orthographic parallel projection to view visible faces of a convex polyhedron. Assume that all parts of the object are in front of the view plane and provide a mapping onto a screen viewport for display.

Section - C

Attempt any two questions. Each question carries equal marks.

15×2=30

10. Write short notes on any two of the following :
    (a) 3-D transformation
    (b) 3-D projection.
    (c) 3-D clipping.

11. Explain the following :
    (a) Illumination models
    (b) Text clipping.

12. Discuss the following transformations with a relevant example :
    (a) Composite transformation
    (b) Reflection and shearing.