Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

BCSE 3401

Seventh Semester (Special) Examination – 2013

COMPUTER GRAPHICS AND MULTIMEDIA

BRANCH : CSE, IT

QUESTION CODE : D 394

Full Marks – 70

Time – 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*
The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

   (a) What is CAD and how graphics is used here ?

   (b) Differentiate between Raster-Scan and Random-Scan display.

   (c) How the screen position is selected in a touch panel ? Explain its working.

   (d) Give the transformation for 2D reflection along x axis and using it transform a triangle with vertices (1,0), (5,0) and (2,3).

   (e) Give the matrix format of a window-to-viewport transformation.

   (f) What is a random fractal ? Give example and explain its construction.

   (g) What is the knot vector in a B-spline curve ? Why it is required ?

   (h) Differentiate between backface detection method and depth buffer method.

   (i) Give the equation for combining diffuse and specular reflection from multiple light sources. Explain the terms.

   (j) Differentiate between kinematics and dynamics.

2. (a) Give an account of various applications of computer graphics. 5

   (b) How an image drawing command can display the image in a raster scan display device ? Explain using the block diagram. 5

P.T.O.

3. (a) Write an Bresenham's circle drawing algorithm and using it draw a circle with radius 6 using centre point (0,0). 5

(b) Rotate a polygon with vertices (1,1), (5,1), (5,4), (3,6), (1,5) through 60° anticlockwise. Use rotation transformation to draw the initial polygon with the rotated one. 5

4. (a) How do you create composite transformation for scaling by half and translation in x axis by 10 units ? Use homogeneous coordinates for this purpose. 5

(b) What is Sutherland Hodgemen Algorithm for polygon clipping ? Explain using an example. 5

5. (a) What is a B-spline curve ? How to draw a uniform periodic B-spline curve ? Explain. 6

(b) What is fractal dimension ? How the fractal dimension of a fractal can be measured ? Explain using an example. 4

6. (a) What are the various dithering techniques ? Explain using example. 5

(b) Give an account of basic illumination models. 5

7. (a) How depth buffer algorithm can be extended to A-buffer ? Explain. 5

(b) How Gouraud technique can be used for surface rendering and shading ? How it will differ from Phong shading ? 5

8. Write short notes on any **two** of the following : 5×2

(a) Anti aliasing

(b) Deterministic fractals

(c) Polygon rendering methods.
