

Registration No. :

--	--	--	--	--	--	--	--	--	--

Total number of printed pages – 2

B. Tech
PCCS 4401

Seventh Semester Examination – 2013

COMPUTER GRAPHICS

BRANCH : AEIE, IT, CIVIL, ETC, EC, IEE, BIOMED

QUESTION CODE : C- 165

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
- What is the difference between LCD and LED ?
 - How the screen position is selected in a touch panel ? Explain its working.
 - What is necessity of having homogeneous coordinate system while using transformation? Explain.
 - Write down the region code for Cohen-Sutherland line clipping.
 - Differentiate between aliasing and antialiasing.
 - What is the knot vector in a B-spline curve? Why it is required ?
 - Can you have a fractal dimension greater than 4 ? If yes, in which cases ? Explain how and why its dimension will be greater than 4.
 - Differentiate between backface detection method and depth buffer method.
 - Give the equation for combining diffuse and specular reflection from multiple light sources. Explain the terms.
 - Differentiate between kinematics and dynamics.
2. (a) How an image drawing command can display the image in a raster scan display device ? Explain both horizontal and vertical retrace in connection to this. 5
- (b) Write an Bresenham's circle drawing algorithm and using it draw a circle with radius 6 using centre point (0, 0). 5

P.T.O.

3. (a) Rotate a polygon with vertices (1,1), (5,1), (5,4), (3,6), (1,5) through 60° anticlockwise. Then scale the polygon 2 times. Use composite transformation for both rotation and scaling. 5
- (b) Derive the transformation in 2D for converting world coordinates to viewing coordinates. Write down the transformation in matrix format. 5
4. (a) What is Sutherland Hodgemen Algorithm for polygon clipping ? Clip a star like polygon using this algorithm. 5
- (b) Write down the properties of a B-spline curve. How can you get a uniform periodic B-spline curve ? Explain. 5
5. (a) What is a self-squaring fractal ? Explain the possible fractals. 6
- (b) What is fractal dimension ? How the fractal dimension of a self similar fractal is measured ? Explain using an example. 4
6. (a) How visible surface detection can be made using scan-line algorithm ? Explain. 5
- (b) How Phong model is used for specular reflection ? Explain. 5
7. (a) Give an account of different methods for controlling animation. What is the difference between key frame animation and procedural animation ? 5
- (b) Give an account of various input and output virtual reality devices. 5
8. Answer any **two** of the following : 5×2
- (a) Reflection transformation in both 2D and 3D
- (b) Scan conversion of a character
- (c) Morphing.