Sem-III - M C A. (CBSGS) 17/5/17 (30)

Computer Graphics.

Q.P. Code :05403

[Time: 3 Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B:
1. **Question No.1 is compulsory.**
2. **Solve any four from Question 2 to Question 7.**
3. **Use of non-programmable calculators allowed.**
4. **Mixing of sub-questions is not allowed.**

1. (a) Discuss the implementations issues of Sutherland Hodgeman and polygon clipping Algorithm. 10
   (b) How region filling algorithms are developed for polygons and curved boundary objects? 10

2. (a) Compare and contrast Parallel and perspective projections. 08
   (b) Write the matrices for following transformations : 07
   i) Rotation about a pivot point ii) Scaling wrt a fix point iii) Translation iv) X-Y shear
   v) reflection about X axis vi) Reflection about a line L vii) Translation matrix

3. (a) Perform Histogram Equalization on the given image and draw the original as well as Equalized Histogram. 08

Gray Level	0	1	2	3
Number of pixel	70	20	7	3

   (b) What is visible surface detection? Differentiated between Z-buffer A-buffer algorithms of visible surface detection. 07

4. (a) Find out the final co-ordinates of a figure bounded by the co-ordinates (1,1), (3,4), (5,7), (10,3) when rotated about a point (8,8) by 300 in clockwise direction and scaled by two units in x-direction and three units in y-direction. 08
   (b) What is fractal? What are different types of fractals? Explain the Kotch curve in brief. 07

5. (a) Derive Bresenham's line drawing algorithm. 08
   (b) Clip the Lines AB and GH against the window lower left (-3,1) and upper right (2,6) using Cohen Sutherland algorithm. (Lines end points A(-4,2) B(-1,7) G(1,-2) H(3,3)) 07

6. (a) Define window and viewport. Derive the window to viewport transformation. 08
   (b) Rasterize the circle having r=10 in first quadrant. 07

7. (a) Compare and contrast Raster-Scan System and Random-Scan Systems 07
   (b) Prove: Two successive Rotations are additive 08
   Two successive scaling are multiplicative