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| <b>7E4241</b>   | Roll No. _____ | [Total No. of Pages : 3] |
|   | <b>7E4241</b>  |                          |
| <b>B.Tech.VII Semester (Main/Back) Examination - 2013</b><br><b>Computer Engg.</b><br><b>7CS5 Computer Graphics &amp; Multimedia Techniques</b><br><b>Common to CS &amp; IT</b> |                |                          |

Time : 3 Hours

Maximum Marks : 80  
Min. Passing Marks : 24

**Instructions to Candidates:**

Attempt any **five** questions, selecting **one** question from each **unit**. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

**Unit - I**

1. a) Explain the functions of display processor in raster scan display. Compare the merits and demerits of raster and vector devices (10)
- b) Explain the methods (any two) for producing color displays with the help of suitable diagrams (6)

**OR**

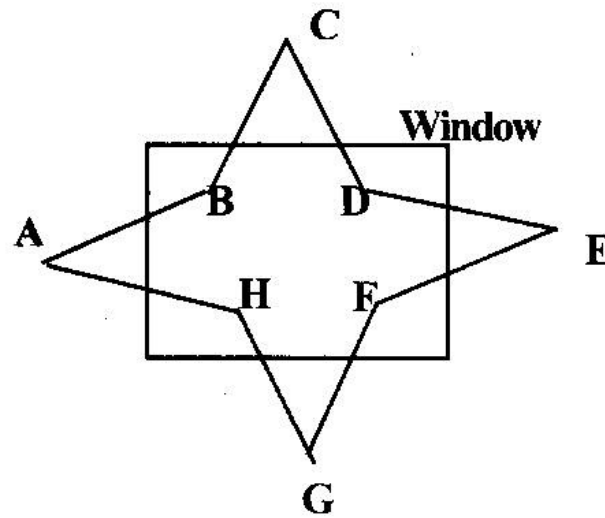
1. a) What is scan conversion? What are the major adverse side effects of scan conversion? (4)
- b) Show why the point-to-line error is always  $\leq \frac{1}{2}$  for the midpoint line scan-conversion algorithm (4)
- c) What steps are required to scan convert a circle using bresenham's algorithm. Also, Derive the equation of decision variable with the help of neat diagram (8)

**Unit - II**

2. a) Use Cohen-Sutherland line clipping algorithm to find the visible portion of the line P(40,80), Q(120,30) inside the window, the window is defined as ABCD: A(20,20), B(60,20), C(60,40) and D(20,40) (8)
- b) What is homogeneous coordinate? Discuss the composite transformation matrices for two successive translation and scaling. (8)

OR

2. a) Reflect the triangle  $\triangle ABC$  about the line  $3x-4y+8=0$ . The position vector of the coordinate ABC is given as  $A(4,1)$ ,  $B(5,2)$  and  $C(4,3)$  (10)
- b) Clip the given polygon using Sutherland. Hodgeman algorithm. The polygon is defined using set of vertices  $\{A, B, C, D, E, F, G, H\}$ . What will be the new set of vertices after clipping, show through a diagram. (6)



Unit - III

3. a) Prove that "The Sum of blending functions is unity for every value of parameter in Bezier curves". (6)
- b) Differentiate between image space and object space methods (5)
- c) Differentiate B-Splines with Bezier curves (5)

OR

3. (a) A cubic bezier curve segment is described by control points  $P_0(2,2)$ ,  $P_1(4,8)$ ,  $P_2(8,8)$  and  $P_3(9,5)$ . Another curve segment is described by  $q_0(a,b)$ ,  $q_1(c,2)$ ,  $q_2(15,2)$  and  $q_3(18,2)$ . Determine the values of  $a, b$  and  $c$  so that the two curve segments Join smoothly. (6)
- (b) Explain Depth-Buffer method for visible surface detection. How is it different from scan-line method of visible surface detection? (10)

Unit - IV

4. a) Explain Gouraud shading and compare it with phong shading (8)
- b) Explain in brief about RGB, CMY and HSV color models. (8)

OR

4. (a) Explain how to simulate reflections from surfaces of different roughness using a reflection map. (8)
- (b) Write short note on simple recursive ray tracing without antialiasing (8)

**Unit - V**

5. a) Explain the followings:-

i) SCSI

ii) MIDI

(8)

b) Explain the TIFF file format with its merits and demerits

(8)

**OR**

5. a) What do you mean by frame rate and pixel depth in digital video?

(4)

b) Write short notes on:-

i) Animation Techniques

ii) Multimedia storage technologies

(12)