

7E4241

Roll No. _____

[Total No. of Pages : 3]

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B.Tech.VII Semester (Main/Back) Examination - 2013
Computer Engg.
7CS5 Computer Graphics & Multimedia Techniques
Common to CS & IT

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

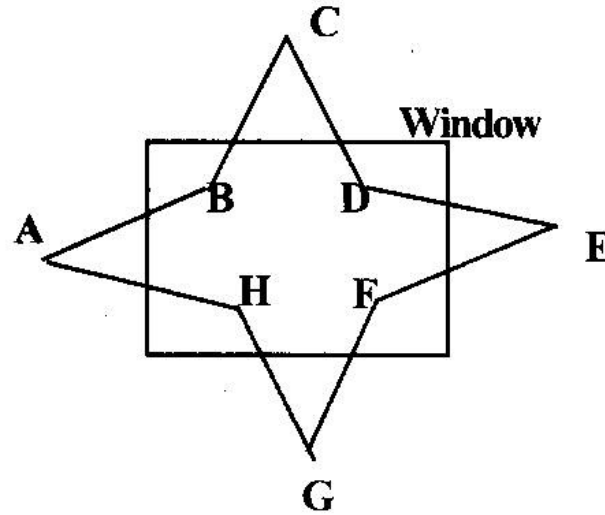
1. a) What is scan conversion? What are the major adverse side effects of scan conversion? (4)
- b) Show why the point-to-line error is always $\leq \frac{1}{2}$ for the midpoint line scan-conversion algorithm (4)
- c) What steps are required to scan convert a circle using bresenham's algorithm. Also,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