PAPER ID-410484

Roll No: | | | | | | | | | | | | |

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B.TECH
(SEM V) THEORY EXAMINATION 2021-22
COMPUTER GRAPHICS

Time: 3 Hours *Total Marks: 100*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. What is the difference between Raster and Random Scan?

b. What is the role of a frame buffer in raster method?

c. What is the difference between computer graphics and image processing?

d. Distinguish between pixel ratio and aspect ratio.

e. What is the difference between generation of character by stroke and bitmap method?

f. What do you mean by 3-D geometry?

g. What do you mean by composite transformation?

h. Explain 2 D Translation with diagrams.

i. List the properties of Bezier Curves.

j. What is Specular reflection.

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SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. What do you understand by shadow mask CRT? Give its advantages and disadvantages.

b. Explain 3-dimensional clipping? What are the problems that are encountered in perspective projections?

c. What do you understand by clipping? Give Liang Barsky's line clipping algorithm.

d. Explain reflection in detail. What is reflection about an arbitrary line?

e. Draw a simple Illumination model. Include the contribution of Diffuse, Ambient and Specular Reflection.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Consider two raster systems with resolutions of 640* 480 and 1280* 1024. How many pixels could be accessed per second in each of these systems by a display controller that refreshes the screen at a rate of 60 frames per second?

(b) Consider the line from (5, 5) to (13, 9). Use the bresenham algorithm to rasterize the line.

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4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Use the Cohen –Sutherland algorithm to clip line P_1 (70, 20) and P_2 (100, 10) against a window lower left hand corner (50, 10) and upper right hand corner (80, 40).

(b) Obtain the mirror reflection of the triangle formed by the vertices A(0,3),B(2,0) and C(3,2) about the line passing through the points (1,3) and (–1, –1).

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) What is window-to-view point coordinate transformation? What are issues related to multiple windowing?

(b) What do you mean by projection? Differentiate between parallel projection and perspective projection.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) What do you understand by the term "Back- Face Removal"? Explain a Back-Face Removal algorithm, you find convenient to implement. Justify your answer.

(b) Explain Z-Buffer algorithm.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) What do you understand by quadratic surfaces

(b) Explain the difference between: -
(i) Bezier and B-Spline curves (ii) Bezier and Hermite curves

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