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B.TECH
(SEM V) THEORY EXAMINATION 2022-23
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 are the components of computer graphics?
(b) Explain aliasing and ant aliasing.
(c) Explain curve clipping and text clipping with examples.
(d) Why are Homogeneous co-ordinates used for transformation computations in computer graphics?
(e) What do you mean transformation in computer graphics?
(f) Explain 3-D geometric primitives.
(g) Explain important terms used in projection.
(h) What is the difference between interpolation spline and approximation spline?
(i) What do you understand by quadratic surfaces? Explain Sphere.
(j) Explain different type of coherence.

SECTION B

2. Attempt any *three* of the following: 10x3 = 30

(a) What is the difference between Bresenham and DDA Line drawing algorithms?
(b) Describe Cohen Sutherland line Clipping Algorithm what is its limitations?
(c) Explain 3-dimensional clipping? What are the problems that are encountered in perspective projections?
(d) Discuss relative advantages and disadvantages of Gouraud Shading and Phong Shading.
(e) What is hidden surface detection? Explain Depth buffer or Z-buffer algorithm.

SECTION C

3. Attempt any *one* part of the following: 10x1 = 10

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

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4. Attempt any *one* part of the following: 10x1 = 10

(a) Describe Weiler Atherton Polygon Clipping Algorithm with example.
(b) Given a clipping window A(20,20),B(60,20), C(60,40),D(20,40).Using Sutherland Cohen Algorithm find the visible portion of line segment joining the points P(40,80),Q(120,30).

5. Attempt any *one* part of the following: 10x1 = 10

(a) What do you mean by projection? Differentiate between parallel projection and perspective projection with the help of diagram.
(b) Explain 3-dimensional clipping? What are the problems that are encountered in perspective projections?

6. Attempt any *one* part of the following: 10x1 = 10

(a) Explain B-spline curves. Also describe its salient properties.

(b) What is the role of Bezier curves in designing curves and surfaces? Discuss its properties.

7. Attempt any *one* part of the following: 10x1 = 10

(a) What is back face removal algorithm? Describe the limitations of back face algorithm.

(b) Describe the Phong's illumination model.

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