

**BTECH(CSE),MAY –2014**  
**COMPUTER GRAPHICS**  
**Paper Code (BTCS-504)**  
**Paper Id. [A2100]**

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Time Allowed: 3 Hrs.

Maximum Marks: 60

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Note: Attempt four questions from Section-B and two questions from Section-C. Section-A is mandatory.

**Section-A**

- I. Give short answers of the following:
- What is meant by differential scaling? What are its effects?
  - What is meant by interlacing?
  - What is meant by diffuse reflection and specular reflection?
  - What are vanishing points?
  - What are homogenous coordinates?
  - In interactive curve generation, what do you mean by linear precision property and property of local control?
  - What do you mean by coherence?
  - Define scan conversion.
  - What do you mean by interior clipping and exterior clipping?
  - Differentiate between image space methods and object space methods for hidden surface elimination.

[10×2=20]

**Section-B**

- II. Describe the sequence of steps involved in clipping line using Cohen-Sutherland line clipping algorithm.
- III. What are orthogonal and oblique projections? Give their transformation matrices.
- IV. What are Bezier curves? How are they generated?
- V. Explain in detail working of shadow mask and beam penetration CRT.
- VI. What is meant by window and viewport? Write a transformation matrix for mapping the contents of a window to viewport.

[4×5=20]

**Section-C**

- VII. Explain in detail floating horizon algorithm for hidden surface removal.
- VIII.
- Derive the decision parameter expressions for Bresenham line drawing algorithm. Write Bresenham line drawing algorithm and explain how it is better than DDA algorithm for line generation.
  - Indicate which raster locations would be chosen by Bresenham's algorithm when scan-converting a line from pixel coordinate (1,1) to pixel coordinate (8,5).
- IX.
- Write short note on Phong's method for smooth shading.
  - Derive the equations of parallel projections onto the xy plane in the direction of projection  $V = aI + bJ + cK$ .

[2×10=20]

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