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[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2064)

14645

B. Tech 4th Semester Examination

Computer Graphics (N.S.)

CS-224

Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt in all five questions. Pick one question each from sections A-D. Section E is compulsory.

SECTION - A

1. (a) Compare and contrast raster and vector graphics systems. (10)

   (b) Differentiate between shadow mask and penetration CRT. (10)

2. (a) What are the design issues involved in display processors? (10)

   (b) What are the characteristics of flat panel displays? (10)

SECTION - B

3. (a) Describe the DDA algorithm for line drawing. (8)

   (b) Explain basic and composite 2-D transformation systems. (12)

4. (a) Write and explain mid-point circle-drawing algorithm. (10)

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(b) What are antialiasing area boundary method? (10)

SECTION - C

5. (a) Describe the method of Bezier curves. Show parametric equations for individual curve coordinates. (12)

   (b) Explain general technique for three-dimensional rotation. (8)

6. (a) Describe the Sutherland-Hodgeman polygon clipping algorithm. (12)

   (b) What are viewport boundaries? Explain the method of viewport clipping. (8)

SECTION - D

7. (a) What is the painter's algorithm for solving the hidden-surface problem? Give examples of surfaces with no-depth and also two surfaces with depth overlap but no overlap in the x-direction. (12)

   (b) Explain scan-line method for removing hidden surfaces. (8)

8. (a) Describe Gouraud shading method for polygon surface rendering. (8)

   (b) How do you detect a transparent surface? What are the factors to measure transparency of 3-D objects? (12)

SECTION - E

9. (i) Give the working principle of laser printer.

   (ii) What are random scan systems?

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(iii) What is the basic principle of line-drawing algorithms?

(iv) Discuss the term halftoning.

(v) Draw rotation matrix.

(vi) How to convert a unit square into a parallelogram?

(vii) What is perspective projection? What is parallel projection?

(viii) Write blending functions for B-spline curves.

(ix) What is back-face detection strategy?

(x) Explain the steps involved in morphing. (2×10=20)

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