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Question Paper Code : 80299

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Fifth Semester

Computer Science and Engineering

CS 6504 — COMPUTER GRAPHICS

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the major application areas of Graphics?
2. Brief on the governing equation of a circle.
3. Mention the uses of translation and rotation with matrix representation.
4. Brief on window to viewpoint coordinate transformation.
5. What are blobby objects? Give two examples.
6. State the applications of Bezier splines.
7. Highlight on diffuse reflection and specular reflection?
8. What are half tones and dithering with respect to half tones?
9. Differentiate Key frame systems from Parameterized Systems.
10. Mention the importance of morphing.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Write and explain Bresenham's line drawing algorithm and trace the algorithm for the given points (2,1) to (10,12). (12)
- (ii) List the advantages of Bresenham's algorithm over DDA algorithm. (4)

Or

- (b) (i) Explain the working principle of CRT with a neat diagram. (9)
- (ii) Differentiate raster scan and random scan display systems. (7)

12. (a) Explain about Composite transformation in general and Explain the following with matrix representations: (6)
- (i) Two Successive Translations (5 × 2 = 10)
- (ii) Two Successive Rotations
- (iii) Two Successive Scaling
- (iv) General Pivot Point Rotation
- (v) General fixed point Scaling.

Or

- (b) (i) Brief on viewing Pipeline. (3)
- (ii) Explain Sutherland-Hodgeman algorithm for polygon clipping. (13)

13. (a) (i) Discuss about 3Dimensional display methods. (7)
- (ii) Explain in detail about quadratic surfaces. (5)
- (iii) Brief on Polygon Meshes. (4)

Or

- (b) (i) Derive the 3D transformation matrix for rotation about: (6)
- (1) an arbitrary axis
- (2) an arbitrary plane.
- (ii) Write short notes about viewing coordinates. (5)
- (iii) Differentiate parallel projection and perspective projection in detail. (5)

14. (a) Explain the following color models in detail:
- (i) RGB color model (5)
 - (ii) YIQ color model (5)
 - (iii) HSV color model. (6)

Or

- (b) Explain about Halftone approximation and Dithering techniques in detail. (16)
15. (a) (i) Explain the different methods of motion specifications. (10)
- (ii) Brief on the forces affecting object motion.
- (1) gravitational (3 × 2 = 6)
 - (2) electromagnetic
 - (3) friction.

Or

- (b) (i) Brief on fractals and ray tracing. (4)
- (ii) An e-publishing company is in the process of converting e-books in the form of document images to text. Discuss on the challenges faced by the company in implementing the process. (12)
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