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Question Paper Code : 52869

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Fifth Semester

Computer Science and Engineering

CS 6504 — COMPUTER GRAPHICS

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term resolution.
2. How to compute the address of a location in frame buffer?
3. Mention the uses of translation and rotation with matrix representation.
4. Brief on window to viewpoint coordinate transformation.
5. What is a Quadric surface?
6. Differentiate parallel projection from perspective projection.
7. Define dithering. When does this occur?
8. Convert the given colour value to CMY colour mode where $R = 0.23$ $G = 0.57$ $B = 0.11$.
9. What is a scripting system ?
10. What is a turtle graphics program?

PART B — (5 × 13 = 65 marks)

11. (a) Explain the working of DDA line drawing algorithm with the procedure and with an example.

Or

- (b) Describe the functionalities of Refresh Cathode Ray Tube with suitable diagram.

12. (a) Explain on the following 2D transformations.
- (i) General Pivot point rotation
 - (ii) General Fixed Point Scaling
 - (iii) Perform 45 degree rotation of a triangle A(90, 0), B(1,1) and C(5, 3) about P(-1,1).

Or

- (b) Explain in detail the Cohen-Sutherland line clipping algorithm with an example.
13. (a) (i) Discuss about 3Dimensional display methods.
- (ii) Explain in detail about quadratic surfaces.
 - (iii) Brief on Polygon Meshes.

Or

- (b) (i) Derive the 3D transformation matrix for rotation, scaling and translation about an arbitrary axis.
- (ii) Write short notes about viewing coordinates.
 - (iii) Differentiate parallel projection and perspective projection in detail.
14. (a) Briefly explain different color models in detail.

Or

- (b) (i) Explain in detail about the properties of light and draw chromaticity diagram.
- (ii) Write notes on halftone patterns and dithering techniques.
15. (a) (i) Distinguish between raster animation and key frame animation in detail.
- (ii) How will you generate grammar based model? Explain.

Or

- (b) Write short notes on:
- (i) Ray tracing
 - (ii) Koch curves
 - (iii) Morphing

PART C — (1 × 15 = 15 marks)

16. (a) Write midpoint circle algorithm and apply that algorithm to find the pixel values of the circle whose radius $r = 4$ and centre of the circle = $(0, 0)$.

Or

- (b) Demonstrate how to clip the following polygon using Sutherland — Hodgeman Polygon clipping algorithm?

