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**Question Paper Code : 21397**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Seventh Semester

Computer Science and Engineering

CS 2401/CS 71/10144 CS 702 — COMPUTER GRAPHICS

(Common to Information Technology)

(Regulations 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write down the principle of two dimensional clipping.
2. Give the general two dimensional rotation transformation matrix about a fixed point.
3. What are the categories of visible surface detection algorithms? Give example.
4. How will you represent a curve in graphics?
5. Explain the term key frames.
6. How will you open a new project in OPENGL?
7. List the various camera movements.
8. How will you add texture to an object?
9. Write down the equation of fractal similarity dimension.
10. How is Julia sets created?



PART B — (5 × 16 = 80 marks)

11. (a) (i) Plot one quadrant of a circle of radius 7 pixels with the origin at the centre using Midpoint circle drawing algorithm. (8)
- (ii) Explain text clipping algorithm in detail. (8)

Or

- (b) (i) Clip a quadrilateral ABCD with coordinates (10, 18) (22, 18) (34, 27) and (10, 37) against a window QRST with coordinates (5, 15) (30, 15) (30, 25) and (5, 25) using Cohen Sutherland algorithm. (8)
- (ii) Explain the attributes of output primitives in detail. (8)
12. (a) (i) Enumerate the differences between a window and a viewport. (8)
- (ii) Demonstrate local scaling taking scaling vectors along the  $x$ ,  $y$ ,  $z$  axes as 2, 3, 1 respectively for a cube with homogeneous position vectors. (8)

Or

- (b) (i) Explain the advantages and disadvantages of B spline surfaces over Bezier surfaces. (8)
- (ii) Explain the different types of data with the techniques of visualization applied over the data. (8)
13. (a) Compare and contrast the various colour models in detail. (16)

Or

- (b) Explain the structure and primitives of Graphics programming using OpenGL. (16)
14. (a) (i) Explain the process of mapping texture over a cylindrical surface. (8)
- (ii) Explain the vector interpolation technique used by Phong shading model. (8)

Or

- (b) (i) How does environment mapping differ from surface texturing process? What is the effect of any directional light source? (8)
- (ii) Explain the process of drawing shadows for modeled objects. (8)

15. (a) (i) Explain random midpoint displacement method of modeling terrains. (8)
- (ii) Explain the ray tracing method of rendering three dimensional objects. (8)

Or

- (b) Write short notes on :
- (i) Boolean operations on objects. (5)
- (ii) Grammar based models. (5)
- (iii) Self squaring fractals. (6)

