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**Question Paper Code : 71685**

30/05/17 AN

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

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. Define the term resolution
2. How to compute the address of a location in frame buffer?
3. Compare interior and exterior clipping.
4. Define viewport.
5. List out the various representation schemes used in three dimensional objects.
6. What is projection? List out the types of projection?
7. Write any two Drawbacks of Phong Shading?
8. State the use of chromaticity diagram.
9. Define morphing.
10. What is fractal?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the steps in mid point circle drawing algorithm with an example. (16)

Or

- (b) Explain on the following:
  - (i) Direct View Storage Tubes (6)
  - (ii) Flat Panel Displays (6)
  - (iii) Liquid Crystal Displays. (4)

12. (a) (i) Explain in detail on any two basic two dimensional geometric transformations. (8)
- (ii) Rotate the point P (2, -4) about the origin  $30^\circ$  in anti-clockwise direction. (8)

Or

- (b) (i) Derive the matrix representation of composite transformation. (8)
- (ii) What are the stages involved in 2D viewing transformation pipeline? Explain briefly about each stage. (8)
13. (a) (i) Determine the 3D transformation matrices to scale a line PQ in the  $x$  direction by 3 by keeping point P fixed. The rotate this line by  $45^\circ$  anticlockwise about the Z axis. Give P (1, 5, 2) and Q (4, 5, 6, 3). (8)
- (ii) Explain the different 3D object representations in detail. (8)

Or

- (b) (i) Find the points on the Bezier curve which has starting and ending points  $P_0(2, 3)$  and  $P_3(4, -3)$  and is controlled by  $P_1(5, 6)$  and  $P_2(7, 1)$  for  $u = 0.9$ . (8)
- (ii) Show that the Bezier curve always touches the starting point (for  $u = 0$ ) and the ending point (for  $u = 1$ ). (8)
14. (a) Briefly explain different color models in detail. (16)

Or

- (b) (i) Explain in detail about the properties of light and draw chromaticity diagram. (8)
- (ii) Write notes on halftone patterns and dithering techniques. (8)
15. (a) (i) Discuss on the Grammar-based models in detail. (8)
- (ii) Give a detailed note on the ways in which motion of objects can be specified in an animation system. (8)

Or

- (b) (i) Explain ray tracing method in detail. (8)
- (ii) What is Morphing? Explain in detail about morphing with an example. (8)