Reg. No. :

**Question Paper Code : 27174**

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

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. Compute the resolution of a 2 × 2 inch image that has 512 × 512 pixels.
2. Give the contents of the display file.
3. Derive the general form of scaling matrix about a fixed point $(x_f, y_f)$.
4. Write down the conditions for point clipping in window.
5. Represent the parametric representation of a cubic Bezier curve.
6. Define projection plane and centre of 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. Give the basic principle of animation.
10. List the attributes of turtle in graphics.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Define and Differentiate random scan and raster scan devices. (8)

(ii) Using Bresenhams circle drawing algorithm plot one quadrant of a circle of radius 7 pixels with origin as centre. (8)

Or

(b) (i) How are event driven input devices handled by the hardware? Explain. (8)

(ii) Discuss the primitives used for filling. (8)

12. (a) (i) Flip the given quadrilateral A(10.8) B(22,8) C(34,17) D(10,27) about the origin and then zoom it to twice its size. Find the new positions of the quadrilateral. (8)

(ii) Derive the viewing transformation matrix. (8)

Or

(b) (i) Clip the given line A(1,3) B(4,1) against a window $P(2,2)\,Q(5,2)\,R(5,4)\,S(2,4)$ using Liang Barsky line clipping algorithm. (8)

(ii) Explain the two dimensional viewing pipeline in detail. (8)

13. (a) (i) Derive the parametric equation for a cubic Bezier curve. (8)

(ii) Compare and contrast orthographic, Axonometric and Oblique projections. (8)

Or

(b) (i) Write down the Back face detection algorithm. (8)

(ii) How will you perform three dimensional rotation about any arbitrary axis in space? (8)

14. (a) Discuss on colour spectrum, colour concepts and colour models in detail. (16)

Or

(b) Explain the illumination models in detail. (16)

15. (a) (i) Distinguish between raster animation and key frame animation in detail. (8)

(ii) How will you generate grammar based model? Explain. (8)

Or

(b) Write short notes on:

(i) Ray tracing (6)

(ii) Koch curves (5)

(iii) Morphing. (5)