Reg. No. :

Question Paper Code : 42394

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018
Seventh Semester
Computer Science and Engineering
CS 2401 – COMPUTER GRAPHICS
(Common to Information Technology)
(Regulations 2008)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   (10×2=20 Marks)

1. What is scaling ? How do you obtain transformed coordinates ?

2. What is meant by clipping ? List the different types of clipping methods.

3. Write down the differences between parallel and perspective projection.

4. Give the different representation schemes for a 3D object.

5. Mention the steps used to create animation sequence.

6. What is the use of CMY color model ?

7. What is the need for adding texture to faces and what are the sources of textures ?

8. What is meant by rendering ?

9. Define fractals.

10. Write the properties of peano curves.

PART – B   (5×16=80 Marks)

11. a) Explain the midpoint circle algorithm in detail and apply the algorithm to determine the pixel values of circle which is centered at (– 3, 6) and radius = 7.   (16)

(OR)

b) Briefly explain the logic of Cohen Sutherland line clipping algorithm and apply the algorithm to clip the lines P1P2, P3P4 and P5P6 where P1 = (80, 120), P2 = (100, 40), P3 = (50, 10), P4 = (80, 10), P5 = (50, 30) and P6 = (120, 20) and the window size is given by $(X_{wmin}, Y_{wmin}, X_{wmax}, Y_{wmax})$ = (40, 30, 120, 110).   (16)

12. a) Illustrate the effect of the following 3D transformations on the points A $(3, -5, 10)$, B $(6, -12)$, C $(5, 8, 6)$ and D $(2, -6, 6)$.

    i) X direction shearing when $sh_{xy} = 7$ and $sh_{xz} = -4$.   **(5)**

    ii) Scaling with respect to pivot point $(3, -4)$ and the scaling factor is given by $(2, 5, 3)$.   **(5)**

    iii) 3 D rotation about Z-axis with respect to pivot point $x_r = 5$, $y_r = 4$ and degree = 60.   **(6)**

(OR)

  b) Explain in detail about visible surface identification methods.   **(16)**

13. a) Briefly explain the methods used to draw 3D objects and 3D Scenes.   **(16)**

(OR)

  b) Discuss about various color models in detail.   **(16)**

14. a) Explain flat and smooth shading methods based on their characteristics and types.   **(16)**

(OR)

  b) Explain the methods of adding shadows to objects.   **(16)**

15. a) i) Discuss about random fractals in detail.   **(8)**

    ii) Explain in detail about ray tracing methods.   **(8)**

(OR)

  b) Write short notes on the following :

    i) Mandelbrot sets   **(8)**

    ii) Julia sets.   **(8)**