Question Paper Code : 40912

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

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. Differentiate raster scan system with random scan systems.

2. Mention the approaches used to fill an area on raster systems.

3. Write the equation for 2D rotation with respect to pivot point.

4. What is meant by window-to-viewport transformation ?

5. What are blobby objects ?

6. How a parallel projection differs from perspective projection ?

7. Give the properties of light.

8. What is HSV colour model ? Draw the HSV hexcone.

9. What is the role of storyboard in designing an animation ?

10. What is meant by ray tracing ?

PART – B (5×13=65 Marks)

11. a) Explain the working of following input devices :

    i) Trackball and spaceball. (4)

    ii) Lightpens. (3)

    iii) Joysticks. (3)

    iv) Image scanners. (3)

    (OR)

    b) Apply the DDA line drawing algorithm to find the intermediate pixel values for the following lines :

    Line : 1 : A(15, 20) B(13, 18) Line 2 : C(2, 40) D(32, 35) Line 3 : E(10, 10) F(16, 30). (13)

12. a) Explain the types of 2D reflection along with their transformation matrices. (13)

    (OR)

    b) Illustrate the working of Cohen Sutherland line clipping algorithm and apply the algorithm to clip the following lines P1P2 and P3P4 where P1 = (140, 45) P2 = (100, 60) P3 = (20, 50) P4 (60, 10) and the window size is given by (30, 40, 120, 90). (13)

13. a) Explain the following 3D object representations :

    i) Polygon Surfaces. (4)

    ii) Polygon Tables. (3)

    iii) Plane Equations. (3)

    iv) Polygon Meshes. (3)

    (OR)

    b) i) Write the transformation equations for different types of 3D rotation. (8)

    ii) Describe the logic of the Depth-buffer method to identify the visible surfaces on the 3D object. (5)

14. a) Explain in detail about halftone approximations and dithering techniques. (13)

    (OR)

    b) Write notes on the following colour models :

    i) YIQ colour model. (3)

    ii) CMY colour model. (3)

    iii) HLS colour model. (3)

    iv) RGB colour model. (4)

15. a) i) Discuss about the steps involved in designing an animation sequence. (6)

   ii) What is called tweening ? Explain in detail about motion tweening with an example. (7)

   (OR)

   b) Write notes on the following :

   i) Koch curves. (6)

   ii) Grammar based models. (7)

PART – C (1×15=15 Marks)

16. a) Illustrate how to create a running tiger from moving auto mobile using "morphing effect" along with its pre processing steps. Also explain about its simulating accelerations. (15)

   (OR)

   b) Illustrate the design of a bicycle wheel by using appropriate graphics algorithms. (15)

14. a) i) Discuss about the steps involved in designing an animation sequence. (8)

ii) What is called tweening? Explain in detail about motion tweening with an example. (7)

(OR)

b) Write notes on the following

i) Koch curves (8)

ii) Bresenham based models (7)

PART – C   (1 × 15 = 15 Marks)

15. a) Illustrate how to create a running text from moving auto module without "morphing effect" along with its own processing steps. Also explain about its simulating an animation. (15)

(OR)

b) Illustrate the design of a bicycle wheel by using appropriate graphics algorithms. (15)