

Computer Graphics

P. Pages : 2

Time : Three Hours



NKT/KS/17/7352

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Due credit will be given to neatness and adequate dimensions.
 9. Illustrate your answers whenever necessary with the help of neat sketches.
 10. Use graph paper if require.

1. a) What are the computer Graphics application and software Standards? **6**
- b) Explain video controller in detail. **7**

OR

2. a) What you mean by hardcopy technologies? **7**
- b) Explain difference between Raster and Random scan display. **6**
3. a) Write Edge Flag Algorithm fill the polygon define by vertices. **8**
P₁(1,1) P₂(3,3) P₃(5,3) P₄(7,1) P₅(7,7)
P₆(5,5) P₇(3,5) P₈(1,7)
Using Edge flag Algorithm.
- b) What do you mean by Aliasing? State and explain different methods for Anti-Aliasing. **6**

OR

4. a) Explain seed fill algorithm. Fill the polygon define by vertices. **8**
A(1,1) B(7,1) C(7,6) D(5,4) E(3,4) F(1,6)
Using simple seed fill Algorithm. Also Show the content of the stack. Consider seed pixel at (3,2)
- b) Define scan conversion List of scan line algorithm. **6**
5. a) Write an OPEN GL Program to draw a square. **5**
- b) Explain Animation in OPEN GL. **8**

OR

6. a) Explain the abstraction in OPEN GL 6
i) GLU
ii) GLUT
iii) GL

b) Draw and explain flow for operation in OPEN GL. 7

7. a) Explain Sutherland Cohen algorithm in detail with example. 6

b) A polygon window is defined by vertices A (1,1), B(5,2), C(9,1), D(5,5). Clip line from P₁(1,2) and P₂(9,4) about the given window using Cyrus – Beck Algorithm. 7

OR

8. a) Find the reflection of diamond shaped polygon whose vertices are A(-1,0), B(0,2), C(1,0) and D(0,2) about the line $y = x+2$. 7

b) Explain Midpoint subdivision algorithm with suitable example. 6

9. a) Find the Normalization transformation 'N' Which uses the rectangle defined by vertices V₁(1,1), V₂(5,3), V₃(4,5) and V₄ (0,3) as a window and the normalized device screen as a viewport. 7

b) What is parallel and perspective projections? Derive a transformation matrix for perspective projection. Consider plane X Y as a viewing plane. 7

OR

10. a) Explain various algorithm for hidden surface removal with their advantages and disadvantages. 7

b) Explain 3-D transformation. 4

c) Explain the need of normalized device coordinates. 3

11. a) Explain the Basic Ray tracing algorithm. 5

b) Four control point of the Bezier curve are P₁(2,2,0) P₂(2,3,0) P₃(3,3,0) P₄(3,2,0). write the equation of Bezier curve. Also draw the curve by finding the coordinates $u = 0$, $u = 0.25$, $u = 0.5$ and $u = 0.75$ 8

OR

12. a) Explain Ideal specular Reflection and Diffused Reflection in detail. 6

b) Explain the concept of shading and shadows. 7
