

Computer Graphics

P. Pages : 2

TKN/KS/16/7440

Time : Three Hours



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. Assume suitable data whenever necessary.
 10. Illustrate your answers whenever necessary with the help of neat sketches.
 11. Use graph paper wherever necessary.

1. a) Explain Graphics Pipeline in detail. 5
- b) Define and differentiate between random scan and raster scan. 5
- c) Give the various application of computer graphics. 4

OR

2. a) Explain video display controller. 6
- b) Explain Hardcopy Technology in Computer Graphics? 8
3. a) Fill the polygon define by vertices : 8
 $P_1(1,1)$, $P_2(3,3)$, $P_3(5,3)$, $P_4(7,1)$, $P_5(7,7)$, $P_6(5,5)$, $P_7(3,5)$ and $P_8(1,7)$ using
 i) Fence fill
 ii) Edge Flag
- b) Explain seed fill algorithm in detail. 5

OR

4. a) Explain Half toning techniques. 4
- b) Fill the polygon defined by vertices $P_1(1,1)$, $P_2(8,1)$, $P_3(8,6)$, $P_4(5,3)$ and $P_5(1,7)$ using simple ordered edge list algorithm. Also mention advantages and disadvantages. 6+3
5. a) What is the role of Open GL in Computer Graphics. 5
- b) Write short note on :
 - i) GL 3
 - ii) GLU 3
 - iii) GLUT 2

OR

6. a) Draw and explain Open GL architecture in details. **6**
- b) Write a program to draw line in Open GL. **7**
7. a) A window is defined by Co-ordinates 0, 50, 0, 50 respectively and a line $P_1(-10, 40)$ and $P_2(30, -20)$. Clip a line using mid – point subdivision algorithm. **7**
- b) Explain Sutherland Cohen algorithm in detail with example. **6**

OR

8. a) What is the need of transformation? Explain reflection and rotation transformation in detailed. **7**
- b) 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 $y = x + 2$. **6**
9. a) Explain viewing transformation? Differentiate between window and viewport. **6**
- b) Find the normalization transformation 'N' which uses the rectangle defined as $V_1(1, 1)$, $V_2(5, 3)$, $V_3(4, 5)$ and $V_4(0, 3)$ as a window & the normalized device screen as a viewport. **7**

OR

10. a) Explain various algorithm for hidden surface removal with their advantages and disadvantages. **6**
- b) What do you mean by projections? What are the different types of projection? Compare different types of projection. **7**
11. a) Construct the Bezier Curve of order 3 and with 4 polygon vertices A (1, 1), B (2, 3), C (4, 3) and D (6, 4). **8**
- b) Explain Basic Ray tracing algorithm. **6**

OR

12. a) Explain different types of shading? **5**
- b) Explain Polygon Mesh. **4**
- c) Explain Ideal specular reflection. **5**
