Total Number of printed pages = 3

19//6th Sem/UCSE 611

2022

COMPUTER GRAPHICS

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. Answer briefly the following questions : 5×4=20

   (a) What do you mean by clipping ? Give an example for text clipping.

   (b) What is 4-connected and 8-connected approaches for boundary fill algorithm.

   (c) Prove that two successive 2-D translations are additive.

   (d) Represent the three basic transformation matrices using homogeneous coordinate representation.

[Turn over

2. (a) Distinguish among the Input Devices Trackballs, Spaceballs, Data glove, Digitizer and Touchpanel. 10

(b) Discuss the Digital differential analyzer algorithm to draw a straight line then write the C code to implement it. 10

3. (a) Derive the decision parameters P_k, P_{k+1} and P_0 to draw a straight line using Bresenhum line drawing algorithm. 10

(b) Calculate and plot the pixels along the circle path in the first quadrant from $x = 0$ to $x = y$, having radius 10, using Midpoint circle generation algorithm. 10

4. (a) Explain briefly the three basic 2D transformations with their matrix representations. 10

(b) What is scan line polygon fill algorithm ? Discuss how can we fill a region considering the three different cases for scanline. 10

5. (a) What is line clipping? Explain Cohen-Sutherland line clipping algorithm with suitable diagram. 10

(b) Describe two-dimensional viewing transformation pipeline with a diagram. 10

6. Write short notes on any *four*: 5×4=20

(i) Homogeneous coordinate representation

(ii) Viewport transformation

(iii) Video controller

(iv) RGB colour model

(v) Plasma panels.