BE PRINTING ENGG. FOURTH YEAR EIGHT SEMESTER - 2023

Subject : Computer Graphics

Time : 3 hrs   Full Marks : 100

Ref. No. : Ex/PRN/PC/B/CSE/T/422

Group / Part (in case of half paper)

Instructions : Use Separate Answer scripts for each Group. The figures in the margin indicate

full marks. Candidates are required to give their answers in their own words as far as practicable.

5×20 = 100

Answer any five of the following.

1) Explain CRT with all components and their functions. Write application of computer graphics. What is vector graphics. Write characteristics of bitmap and vector graphics. Write DDA Algorithm for line drawing. Write is run length encoding of scanning pixels.

4+3+2+3+5+3

2) Explain Additive and Subtractive color model. What is HSI Color Model. Explain Color and Gray Scale Image. Compute the size of 800*600 Image at 240 pixels/Inch. Perform 45° rotation of triangle A(0,0), B(1,1), C(5,2) about origin and about (-1, -1).   5+2+3+3+7

3) Write Bresenham Line Drawing Algorithm. Draw Line segment in between (0,0) and (5,4) using Bresenham Line Drawing Algorithm. Compute resolution of 2*2 inch of image that has 512*512 pixels. Explain boundary fill algorithm for 8-connected pixels. What is half toning.

5+5+3+5+2

4) What is Flood Fill Algorithm. What are Benefits and Pitfalls Of Flood Fill. Find Reflection of line y=6x+5 and find transformation matrix in terms of θ. Also find θ. What is edge fill. Using Scaling magnify the triangle ABC with vertices A(0,0), B(1,1) and C(5,2) to five times.   4+3+6+2+5

5) If a TV Screen has 525 scan lines and aspect ratio 3:4, each pixel contains 8 bit work of intensity information. How many bit/s are needed to show 30 frames/s. Explain any two 3 d transformation methods. Derive the transformation matrix in 3D for rotation about an arbitrary axis that passes through points [2 1 1 1] and [3 2 2 1]. Perform Shearing Transformation in the given cuboid(OABCDEFG) along Z-direction if a shearing parameter is as follows S_x=2, S_y=3.

3+3+4+5+5

6) Write the concepts of perspective projections. Explain orthographic projection in detail. What are cavalier, axonometric and isometric projections. Explain polygon clipping concepts. How antialiasing can be performed.   5+4+5+4+2

7)   Short Notes   5*4
  a) Scanners   b) Laser Printers   c) Light Pens   d) Monitors   e) Hidden Surface