CE/IT

Roll No. ..... Total Pages : 4

201503

Dec., 2018

B.Tech. (CE/IT) Vth Semester

COMPUTER GRAPHICS AND MULTIMEDIA

(CE-305C)

Time : 3 Hours] [Max. Marks : 75

Instructions :

(i) It is compulsory to answer the questions of Part-1. Limit your answers within 20-40 word in this part.

(ii) Answer any four questions from Part-2 in detail.

(iii) Different parts of the same question are to be attempted adjacent to each other.

(iv) Assume suitable standard data wherever required, if not given.

PART–1

1. (a) Explain the terms: Hypertext and hypermedia. CO4 (1.5)

(b) Generate the set of points that will be plotted if the point (x, y) has been recently generated in an octant when scan-converting a circle? CO1 (1.5)

(c) What is the size in bytes of the frame buffer needed for a raster system of 1024×728 to store 12 bits per pixel? CO1 (1.5)

(d) Differentiate between Affine and Rigid Body transformations. CO2 (1.5)

(e) How does 4-connected and 8-connected approaches to fill the graphical primitives differ? CO1 (1.5)

(f) What are the different file formats for multimedia application? CO4 (1.5)

(g) Using DDA Algorithm, digitize the line from (10, 16) and (16, 12). CO1 (1.5)

(h) What is coherence and how is it useful ? CO3 (1.5)

(i) What is the basic principle for each of the two types of hidden surface removal algorithms? CO3 (1.5)

(j) What is the basic difference between the techniques for text compression and image compression? CO4 (1.5)

PART–2

2. (a) The coordinates of the vertices of a polygon are as V1(2,4), V2(9,4), V3(9,7), V4(8,7), V5(8,9), V6(4,9), V7(4,7), V8(2,7). Write the initial edge list for the polygon. State which scan lines will be active on scan lines $y = 6, 7, 8, 9$ and 10 ? CO1 (5)

(b) What is Area Filling? Explain the Scanline Polygon Filling method. CO1 (10)

3. (a) How can hidden surfaces be located in the view (2 steps) ? How can they be removed to form a view as realistic as the given one? CO3 (5)

(b) Discuss any one algorithm used for the above purpose with the help of suitable example. CO3 (10)

4. (a) What is a Graphics pipeline ? Explain the operational organization of 2-D pipeline. CO2 (5)

(b) What is the standard perspective view? How can it be obtained and what types of problem are encountered when generating such a view of an object? CO3 (10)

5. (a) Find the transformed view of the Triangle ABC Considering A (1,2), B (5,3), C (3,3) when rotated by 90° about a fixed point P (2,2). CO2, CO4 (5)

(b) Write the general form of scaling matrix with respect to a fixed point P(h, k) CO2, CO4 (5)

(c) What do you mean by homogeneous coordinates? Why is it useful ? Specify its different rules. CO2, CO4 (5)

6. Discuss the Cohen-Sutherland Line clipping algorithm. Draw a picture to show the worst-case scenario (one that involves maximum number of clipping iterations) in the implementation of the algorithm. CO2, CO3 (15)

7. (a) Explain and compare the different color models. CO4 (8)

(b) Explain JPEG Image compression standard. CO4 (7)