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CSE 1815 PE 14

Roll No. of candidate | | | | | | | | | | |

2022

B.Tech. 5th Semester End-Term Examination

Computer Science and Engineering

COMPUTER GRAPHICS

(New Regulation & New Syllabus)

Full Marks – 70 Time – Three hours

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

Answer Question No. 1 and any *four* from the rest.

1. Answer the following : (MCQ/Fill in the blanks) (10 × 1 = 10)

(i) Which of the following is commonly known as frame buffer on a black and white system with one bit per pixel?

(a) Pixmap (b) Bitmap

(c) Multimap (d) All of the above

(ii) In a graphical system, an array of pixels in the picture is stored in which of the following locations?

(a) Frame buffer (b) Main memory

(c) Display processor (d) None of the above

(iii) Which of the following operations can be used to zoom in or out around any axis on a three-dimensional object from its original position?

(a) Rotation (b) Translation

(c) Shearing (d) Scaling

(iv) Which of the following is the process of digitizing a given picture definition into a set of pixel-intensity for storage in the frame buffer?

(a) True color system (b) Scan conversion

(c) Rasterization (d) Encoding

(v) Which of the following is the purpose for using clipping in computer graphics?

(a) Copying (b) Zooming

(c) Adding graphics (d) Removing objects and lines

(vi) If the boundary is specified in a single color, and if the algorithm proceeds pixel by pixel until the boundary color is encountered is known as _____

(a) Parallel curve algorithm (b) Flood-fill algorithm

(c) Scan-line fill algorithm (d) Boundary-fill algorithm

(vii) Which of the following stores the picture information as a charge distribution behind the phosphor-coated screen?

(a) Direct-view storage tube (b) Flat panel displays

(c) 3D viewing device (d) Cathode ray tube

(viii) Which one of the following terms is used for the area of the computer captured by an application?

(a) Display (b) Window

(c) Viewport (d) None of the above

(ix) The process of positioning an object along a straight line path from one coordinate point to another is called

(a) Translation (b) Reflection

(c) Shearing (d) Transformation

(x) A positive value of the rotation angle

(a) Rotates an object in the clockwise direction

(b) Rotates an object in the counter-clockwise direction

(c) Both of the above

(d) None of the above

2. (a) What do you mean by computer graphics? List any three application areas of computer graphics. (2+3=5)

(b) Describe the working of Refresh cathode ray tube with a suitable diagram. (6)

(c) Discuss briefly about the role of video controller. (4)

3. (a) Differentiate between Random scan and Raster scan display systems. (5)

(b) Briefly explain about the different techniques used to produce color display in CRT monitors. (10)

4. (a) What is an output primitive? List some of the common output primitives. (2 + 2 = 4)

(b) Describe the DDA Line drawing algorithm. (6)

(c) Consider the line from (5,5) to (13, 9). Use the Bresenham's algorithm to rasterize this line. (5)

5. (a) Explain the 2D Viewing pipeline in brief. (6)

(b) What are the basic two-dimensional transformations in computer graphics? Discuss about each of them with suitable example. (3 + 6 = 9)

6. (a) Explain window to viewport coordinate transformation. (8)

(b) Discuss about the working of Boundary fill algorithm to fill polygons. (7)

7. (a) What is clipping? What are the different clipping operations in computer graphics? (2+3=5)

(b) Explain the Sutherland – Hodgman polygon clipping algorithm with suitable diagrams. (10)