CS 131503 (NR)

Roll No. of candidate

24/2/22   **2021**

B.Tech. 5th Semester End-Term Examination

Computer Science Engineering

COMPUTER GRAPHICS

(New Regulation)

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) In which of the following transformation methods of Computer Graphics is the Shape of the Object not deformed?

    (a) Translation   (b) Shearing

    (c) Both a. and b.   (d) None of the above

    (ii) Which of the following transformation techniques is responsible for altering (either enlarging it or diminishing it) the size of the object?

    (a) Translation   (b) Rotation

    (c) Scaling   (d) None of the above

    (iii) Bezier curve :

    (a) Allows local control

    (b) Does not allows local control

    (c) Sometimes allows local control

    (d) None of these

[Turn over

(iv) Degree of B-spline curve polynomial is :

    (a)   One less than the number of control points

    (b)   Two less than the number of control points

    (c)   Three less than the number of control points

    (d)   It does not depend on control point

(v) To generate a rotation , we must specify

    (a)   Rotation angle θ (b)   Distances dx and dy

    (c)   Rotation distance   (d)   All of the mentioned

(vi) What is the primary use of clipping in computer graphics?

    (a)   adding graphics   (b)   removing objects and lines

    (c)   zooming   (d)   copying

(vii) In line clipping, the portion of line which is _____ of window is cut and the portion that is _____ the window is kept.

    (a)   outside, inside   (b)   inside, outside

    (c)   exact copy, different   (d)   different, an exact copy

(viii) Which of the following statements is not true with respect to the Digital Differential Analyzer (DDA) algorithm?

    (a)   It is an incremental method of scan conversion of line

    (b)   In this method, calculation is performed at each step but by using the results of previous steps.

    (c)   This algorithm can also be used to draw circle

    (d)   None of the above

(ix) Which of the following options is not correct according to the definition of Bresenham's line drawing algorithm?

    (a)   It gives a close approximation of points of line by determining n-dimensional raster that should be selected.

    (b)   It is an incremental error algorithm.

    (c)   It gives exact line points.

    (d)   None of the above

(x) Which of the following ports resembles the coordinates from the real-world system?

    (a)   Window port   (b)   View Port

    (c)   Universal Port   (d)   None of the above

2. (a) Use DDA algorithm to draw a line from (2,3) to (9,8).   (7)

    (b) Why is the illumination model used?Explain each illumination model.   (8)

3. (a) Explain the working of Raster scan with its architecture.   (7)

    (b) What do you mean by GKS, PHIGS? Explain various functions available in GKS, PHIGS.   (8)

4. (a) Explain two dimension viewing pipeline with diagram.   (7)

    (b) Given a 3D object with coordinate points A(0, 3, 1), B(3, 3, 2), C(3, 0, 0), D(0, 0, 0). Apply the translation with the distance 1 towards X axis, 1 towards Y axis and 2 towards Z axis and obtain the new coordinates of the object.   (8)

5. (a) What is RGB color model? How it is different from CMY model.   (7)

    (b) What is the difference between Bezier curve and B-spline curve. What do you mean by local control and global control ?   (5+3)

6. (a) Write various logical classification of input devices.   (7)

    (b) What do you mean by Line clipping? Explain with example any one of the line clipping algorithm.   (3+5)

7. (a) What do you mean by scan conversion? Explain aliasing effects produce during scan conversion.   (7)

    (b) Write short notes on   (8)

        (i)   Ray tracing

        (ii) Animation