Roll No.

Total Pages : 03

J-FB-22-00306

B. Tech. EXAMINATION, 2022

Semester V (CBCS)

COMPUTER GRAPHICS (CSE, IT)

CS-503

Time : 3 Hours *Maximum Marks : 60*

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary continuation sheet will be issued.

Note Attempt *five* questions in all, selecting *one* question from each Sections A, B, C and D. Q. No. **9** is compulsory

Section A

1. Draw a line by using DDA line algorithm from (1, 2) to (7, 6) ? Explain in brief which line algorithm is more efficient and why ? **10**

2. What is Computer Graphics ? Also, explain types and applications of computer graphics. **10**

Section B

3. Use the Liang-Barsky line clipping algorithm to clip the line P1(–15, –30) to P2(30,60) against the window having diagonally opposite corners as (0, 0) and (15, 15) ? **10**

4. What are problems with the Sutherland-Hodgeman algorithm ? How Weiler-Atherton polygon clipping algorithm is efficient than Sutherland-Hodgeman ? **10**

Section C

5. The pyramid defined by the co-ordinates A(0, 0, 0), B(1, 0, 0), C(0, 1, 0) and D(0, 0, 1) is rotated 450 about the line L that has direction $\vec{v} = j + k$ and passing through the point C(0, 1, 0). Find the coordinates of the rotated figure. **10**

6. What is the projection ? Explain various types of parallel projection with neat and clean diagram. Compare parallel projection and perspective projection. **10**

Section D

7. Why do we require hidden surface removal algorithms ? Explain the Z-buffer method and area subdivision method for removing hidden surfaces. **10**

8. Explain the following with neat and clean diagram : **10**
   (i) RGB color model
   (ii) CMY color model.

(Compulsory Question)

9. Explain the following : **2×10=20**
   (a) Anti-aliasing
   (b) Random Scan Display and Raster Scan Display
   (c) 3D Viewing Transformation
   (d) YIQ Color Model
   (e) BSP Tree
   (f) Hermite Curve
   (g) Geometric and Coordinate Transformation
   (h) Homogeneous Coordinates
   (i) Curves and Surfaces
   (j) Composite Transformation.