Total Number of Pages: 02

Course: B.Tech
Sub Code: RCS5D006

5th Semester Regular/Back Examination: 2022-23
SUBJECT: COMPUTER GRAPHICS
BRANCHE(S): CSE,CSEAIME,CSIT,CST,IT
Time: 3 Hours
Max Marks: 100
Q Code L449
Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10) (02x10)

a) What is raster scan and random scan systems?
b) What is DDA? What are the disadvantages of DDA algorithm?
c) Define pixel and resolution.
d) What do you mean by animation?
e) How CMY is converted to RGB?
f) Mention the importance of homogeneous coordinate system.
g) What is transformation? What are the steps involved in 3D transformation?
h) List two polygon filling methods.
i) State four properties of light.
j) State the concept of vanishing point.

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (06x08)

a) Explain 2D transformations with its basic types.
b) Write scan line polygon fill algorithm. Explain each step of the algorithm with appropriate example.
c) Explain back-face removal algorithm for hidden surface elimination.
d) Explain what do you mean by augmented reality?
e) Explain perspective projection with its types.
f) Explain what do you mean by dithering? How is it overcome?
g) What is animation? Compare key frame and procedural animation.
h) Use the Cohen Sutherland algorithm to clip two lines P1(40,15)-P2(75,45) and P3(70,20)-P4(100,10) against a window A(50,10),B(80,10),C(80,40),D(50,40).
i) Explain the working principle of Gouraud surface rendering algorithm.
j) Consider the line from (5, 5) to (13, 9).Use the Bresenham's algorithm to rasterize this line
k) Consider the line from (0, 0) to (4, 6). Use DDA algorithm to rasterize this line.
l) What is the use of ray tracing methods? Describe basic ray tracing algorithm in detail.

Only Long Answer Type Questions (Answer Any Two out of Four)

(02X16)

Q3 What is Bezier curve? Write the basic equations for generating Bezier curve. Discuss its properties. Derive Bezier matrix for cubic Bezier curve.

(16)

Q4
  a. Derive the expression for decision parameter used in Bresenham's Circle algorithm.
  b. Apply the Shearing transformation to square with A(0,0),B(1,0),C(1,1) and D(0,1) as given below : (i) Shear parameter value of 0.5 relative to the line Yref= -1;
  (ii) Shear parameter value of 0.5 relative to the line Xref= -1;

(16)

Q5 Why illumination models are used? Explain the various kinds of illumination models.

(16)

Q6 Write short notes on the followings:
  a. Bazier curve
  b. Window-to-viewport transformation
  c. Half toning
  d. YIQ colormodel

(16)