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322655(22)

B. E. (Sixth Semester) Examination, April-May 2021

(New Scheme)

(CSE Branch)

COMPUTER GRAPHICS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all units. Part (a) of each unit is compulsory carry 2 marks. Attempt any 2 part from (b), (c) and (d) carry 7 marks.*

Unit-I

1. (a) What do you mean by resolution? 2

   (b) What is computer graphics? What are the different uses and applications of computer graphics? 7

(c) Compare the merits and demerits of raster scan and random scan system. 7

(d) Discuss the various types of graphics monitor with proper net sketch. 7

Unit-II

2. (a) What do you mean by clipping and clip window? 2

(b) Give the drawback of DDA algorithm and discuss bresenhams line generation algorithm in detail. 7

(c) Plot a circle using mid-point algorithm whose radius = 10 and center is at (0, 0). 7

(d) Rasterize the elipse by using mid-point ellipse method with parameter $r_x = 8$ and $r_y = 6$. 7

Unit-III

3. (a) Why homogenous coordinates are used for transformation computation? 2

(b) Translate the square *ABCD* whose coordinate *A* (0, 0), *B* (3, 0), *C* (3, 3), *D* (0, 3) by 2 units in both direction then scale it by 1·5 unit in *x* direction and 0·5 unit in γ direction. 7

(c) Compute the visible portion of the line sgement doining *P* (15, 0) and *Q* (15, 40) for the window area P_0 (10, 10), P_1 (20, 10), P_2 (20, 30) and P_3 (10, 30) by using cyrus beck line clipping algorithm. 7

(d) Use the Cohen sutherland algorighm to find the visible portion of the line *P* (40, 80), *Q* (120, 30) the window is defined as *ABCD* : *A* (20, 20), *B* (60, 20), *C* (60, 40) and *D* (20, 40). 7

Unit-IV

4. (a) List the types of projection. 2

(b) Write the properties of Bezire curve and B-spline curve. 7

(c) Explain 3 D translation and scalling with matrix representation and homogeneous co-ordinate. 7

(d) Determine the basic functions of non-uniform B-spline given that $d = 3$ and $n = 4$ and the knot vector is specified as (0, 0, 1, 1, 2, 2, 3, 3). 7

Unit-V

5. (a) What is key framing? 2

(b) Discuss the BSP-tree and Octree method with suitable example. 7

(c) Explain merits and demerits of z-buffer hidden surface ellimination algorithm. 7

(d) Discuss design of animation sequence and general computer animation functions. 7