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Roll No. :

337411(37)

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

(Old Scheme)

(Mech. Engg. Branch)

COMPUTER GRAPHICS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

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

Unit-I

1. (a) Write the name of two input device and two output device.

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- (b) What is the difference between Raster and Random scan display? 7
- (c) Write application and features of computer graphics. 7
- (d) Write short notes on : 7
- (i) Data Glove
 - (ii) Colour CRT monitor

Unit-II

2. (a) Define pixel and aspect ratio. 2
- (b) Plot the straight line from (10, 15) to (20, 21) in pixel coordinator using symmetric DDA method. 7
- (c) Generate one quadrant of an ellipse from (0, 5) to (10, 0) using midpoint ellipse algorithm 7
- (d) Explain boundary fill-algorithm and flood fill algorithm. 7

Unit-III

3. (a) Define window. 2
- (b) For the quadrilateral ABCD with vertex co-ordinate A (10, 8), B (22, 8), C (34, 17), D (10, 27) apply the following composite transformation. 7
- (i) O-flip and scalling to twice the size.

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- (ii) Combination of twist with $x = 0.05$ and $y = -0.1$ and rotation by 60° counter - clockwise.
- (c) Find the reflection of point (3, 11) about a line $y = 3x + 4$ 7
- (d) Consider the square ABCD of 50 units side with the origin at the lower left hand corner, placed on a downward slope of 2 : 1 as in figure 1 subjected to a move of 100 units down the slope, followed by a salling of 1.5 times, along the slope only. Find the coordinates in x & y axis 7

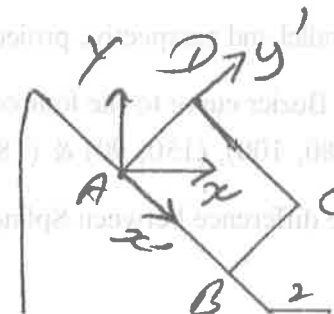


Fig. 1

Unit-IV

4. (a) Define clipping. 2
- (b) Explain : 7

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- (i) Word co-ordinate system.
- (ii) Normalized coordinate system
- (iii) Device coordinate
- (c) Write down the algorithm for Cohen-Sutherland clipping method. 7
- (d) Derive Viewing Transformation Matrix. 7

Unit-V

5. (a) Write transformation matrix for 3D rotation about x - axis. 2
- (b) Explain parallel and perspective projections. 7
- (c) Generate a Bezier curve to the four control points (60, 20), (80, 100), (150, 90) & (180, 50). 7
- (d) Explain the difference between Spline and Bezier curves. 7