Total No. of Questions—8] [Total No. of Printed Pages—3

Seat No.	

[5352]-176

S.E. (Inform. Tech.) (Second Semester) EXAMINATION, 2018

COMPUTER GRAPHICS

(2012 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. :— (*i*) Solve Question Nos. Q. **1** *or* Q. **2**, Q. **3** *or* Q. **4**, Q. **5** *or* Q. **6**, Q. **7** *or* Q. **8**.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

(*iv*) Use of calculator is allowed.

(*v*) Assume suitable data if necessary.

1. (*a*) Explain DDA algorithm and rasterize the line from (6, 0) to (–8, –4) using simple DDA algorithm. [6]

(*b*) Describe Bresenham's algorithm for line drawing. Explain gentle slope and sharp slope cases. [6]

Or

2. (*a*) List various polygon filling algorithms. Explain scan line algorithm with mathematical formulation. [6]

(*b*) Write a pseudo-C algorithm for polygon filling by Boundary fill and Flood fill recursive method. [6]

P.T.O.

3. (*a*) What is a segment ? How do we create it ? Why do we need segments ? Explain in detail the various operations of segments. [6]

(*b*) Use the Cohen-Sutherland Outcode algorithm to clip *two* lines : [6]

$P_1(40, 15)$, $P_2(75, 45)$ and $P_3(70, 20)$, $P_4(100, 10)$ against a window A(50, 10), B(80, 10), C(80, 40), D(50, 40).

Or

4. (*a*) Describe Sutherland-Hodgman polygon clipping algorithm. What is its limitation ? [6]

(*b*) Perform *x*-shear and *y*-shear on a triangle having A(2, 1), B(4, 3), C(2, 3). Consider the constant value $a = b = 2$. [6]

5. (*a*) Explain RGB, HSV and HLS color models. [7]

(*b*) What is surface rendering ? Explain Gourand method of shading. [6]

Or

6. (*a*) Explain CIE chromaticity diagram. Also explain two RGB to CMY conversion is done. [7]

(*b*) Explain Pseudo-C algorithm for Gourand shading. [6]

7. (*a*) Explain how fractals are used to generate fractal surfaces. [7]

(*b*) Explain Bezier curve and B-spline curve functions for generating curves. [6]

Or

8. (*a*) What is true curve generation ? Write a pseudo code to implement DDA arc generation. [7]

(*b*) Write a short note on : Curve generating by using approximation. [6]