H Roll No. .....

TMC–401

M. C. A. (FOURTH SEMESTER)
MID SEMESTER
EXAMINATION, May, 2023

GRAPHICS AND VISUAL COMPUTING

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any ***one*** of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) Derive DDA line generation algorithm. Calculate the pixel positions along a straight line between A (10, 12) and B (20, 20) using DDA algorithm. (CO1)

OR

(b) Derive the initial decision parameter equation for Bresenham's line generation algorithm. (CO1)

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2. (a) Perform the rotation of a triangle A (4, 1), B (5, 2) and C (4, 2) by angle 90 degree about point A. (CO1 and C02)

OR

(b) Explain Sutherland Hodgeman Polygon clipping algorithm in detail. (CO1 and CO2)

3. (a) Derive the 3D rotation matrix about x-axis, y-axis and z-axis. (CO2)

OR

(b) Discuss the working of 2-D scaling with respect to origin and with respect to a fixed point. (CO2)

4. (a) Explain Flood fill and Boundary fill algorithm in detail. (CO2)

OR

(b) Distinguish between window and viewport. In 2-D clipping how are lines grouped into visible, invisible and partially visible categories. Explain with the help of an example. (CO2)

5. (a) Derive Bresenham's circle generation algorithm. (CO1)

OR

(b) Draw a circle having centre (0, 0) of radius r = 10 using mid point circle generation algorithm. (CO1)