SOMAIYA VIDYAVIHAR UNIVERSITY

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| Semester: July 2024 – November 2024<br>Maximum Marks: 30 Examination: In-Semester Examination Duration : 1 hr 15 min | | |
| **Programme code: 01**<br>**Programme: Computer Engineering** | **Class:** TY | **Semester:** V (SVU 2020) |
| **Name of the Constituent College:**<br>**K. J. Somaiya College of Engineering** | | **Name of the department:** COMP |
| **Course Code: 116U01E511** | **Name of the Course: Computer Graphics** | |

| Question No. | | Max. Marks |
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| Q1 | **Attempt any TWO (2)**<br>A. Write a pseudo-code to describe the DDA algorithm for scan-converting a line whose slope is between $-45°$ and $45°$(i.e. $\|m\| \leq 1$)<br>B. Explain 2D viewing pipeline with diagram.<br>C. Suppose that in an implementation of the Cohen-Sutherland algorithm we choose boundary lines in the top-bottom-right-left order to clip a line in category 3, draw a picture to show a worst-case scenario, i.e., one that involves the highest number of iterations | 10 Marks |
| Q2 | A. Magnify the triangle with vertices $A(2,3)$, $B(4,1)$, and $C(6,4)$ to twice its size while keeping $C(6,4)$ fixed. Then rotate triangle by $35°$ (<br>**or**<br>B. Reflect the diamond-shaped polygon whose vertices are $A(-2,0)$, $B(0,-3)$, $C(2,0)$, and $D(0,3)$ about (a) the horizontal line $y = 1$, (b) the vertical line $x = -1$, and (c) the line $y = -x + 1$. | 10 Marks |
| Q3 | A. Find the complete viewing transformation that maps a window in world coordinates with x extent 2 to 8 and y extent 3 to 9 onto a viewport with x extent 1/3 to 2/3 and y extent 0 to 1/3 in normalized device space, and then maps a workstation window with x extent 1/5 to 3/5 and y extent 1/5 to 2/5 in the normalized device space into a workstation viewport with x extent 5 to 15 and y extent 5 to 15 on the physical display device. | 10 marks |