Tribhuvan University
Institute of Science and Technology
2081
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Bachelor Level / Second Year/ Third Semester/ Science   Full Marks: 60
Computer Science and Information Technology (CSC 209)   Pass Marks: 24
(Computer Graphics)   Time: 3 hours.
(OLD COURSE)

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Section A

Attempt any TWO questions.   (2×10=20)

1. Explain Bresenham's Line Drawing Algorithm for the line segment |m|<1. Digitize the line with end points A(11,5) and B(5,13) using DDA line drawing algorithm.   (4+6)

2. Hidden surface removal is very important in computer graphics. Justify it. Explain in detail about scan line method and ray tracing techniques.   (4+6)

3. You are given a clipping window defined by the coordinate of lower left corner (3,3) and right upper corner (7,6). Test the visibility of the line segment having two end points R(2, 4) and S(8, 7) and if necessary, determine the visible portion of the line segment using Cohen's Sutherland Line Clipping Algorithm.   (10)

Section B

Attempt any EIGHT questions.   (8×5 = 40)

4. Find composite transformation matrix for reflection about a line $y = mx + c$.   (5)

5. Find the new coordinates of the new cube rotated 90 degree anticlockwise about an axis defined by its end points A(1,2,1) and B(2,1,3).   (5)

6. Explain the working of Z- Buffer Algorithm for Visible Surface Detection.   (5)

7. Compare parallel projection and perspective projection in brief with necessary diagrams.   (5)

8. Explain Random Scan Display Architecture with suitable diagram.   (5)

9. Illustrate on the use of Hermite curve, Beizer curve and B-spline curve with an example of each.   (5)

10. What do you understand by Solid Modeling? Explain Binary Space Partition Method.   (1+4)

11. How a Realistic Image can be generated in Computer Graphics? Explain Phong Specular Reflection Model.   (2+3)

12. Write short notes   (2×2.5=5)
    a) Augmented Reality
    b) Boundary Filling Algorithm