Tribhuvan University
Institute of Science and Technology
2075

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.
(NEW COURSE)

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

Long Questions:
Attempt any Two questions: (2x 10=20)

1. Define window, viewport and viewing transformation. Let ABCD be the rectangular window with A(20, 20), B(90, 20), C(90, 70) and D(20, 70). Find the region codes for end points and use Cohen Sutherland algorithm to clip the lines P(,10, 30), Q(80, 90). (3+7)

2. List any two disadvantages of BSP tree method in visible surface detection. Make a comparison between Painter's algorithm and A — Buffer algorithm. (2+8)

3. Describe the architecture of raster scan display. Explain about sweep, octree and boundary representations for solid modeling. (4+6)

Short Questions:
Attempt any Eight questions: (8x5=40)

4. Give some basic color model. Give the basic command to draw the pixel and polygon in OpenGL. (2+3)

5. Trace the Bresenham's Line drawing algorithm for the end points (1, 1) and (8, 5). (5)

6. Derive the relation for three — dimensional translation and rotation. (5)

7. What is the **purpose of** wireframe representation? Desdribe about boundary and space partitioning. (2+3)

8. Plot the ellipse centered at (0, 0) with radius r_x =8 and r_y = 6, using midpoint ellipse drawing algorithm. (5)

9. Define clipping. Discuss about cubic spline interpolation. (2+3)

10. How can we detect shadows in computer graphics? List the challenged in computing light model. (2+3)

11. List some applications of VR. What might be the possible navigation techniques and manipulating interfaces in virtual reality? Justify. (2+3)

12. Mention any two color command in OpenGL. Explain about Hermite curve. (2+3)