Tribhuwan University
Institute of Science and Technology
2075(Old Course)

Bachelor Level / third-semester / Science — Full marks: 60
Computer Science and Information Technology(CSC209) — Pass marks: 24
(Computer Graphics) — Time: 3 hours
Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Attempt all the questions:(6 x 10 = 60)

1. Differentiate between parallel and perspective protection.

2. Compare and contrast between Gouraud and phong shading model.

3. After rotating a triangle with vertex A(0, 0), B(1, 7), C(9, 2)in 60 degree anticlockwise about point (10, 10) what will be the new vertex values?

4. How would you reflect an object about a line y = 4x? Explain the steps with the matrices.

5. How can a circle be scan converted using the mid point approach? How can the same goal be achieved if the starting point is (r, 0) and moving in the anti clockwise direction.

6. What are the key issues prevalent in producing a Virtual reality scene? Explain different hardware and software used for this purpose.

7. How would you digitize a line with end points A(6, 12) and B(10, 5) using Bresenham's line drawing algorithm?

8. On an average it takes 20 nano seconds for a Raster Graphics system to access the pixel value from the frame buffer and glow the phosphor dot on the screen. If the total resolution of the screen is 640 x 480 will this access rate produce a flickering effect?

OR

Digitize the octant of the circle with radius r = 7 and center (20, 30).

9. What is the differences between a window and a viewport? Why is required to map an object from a window to a viewport? Explain

10. What is the significance of vanishing points in perspective Projection? Explain how Z- Buffer algorithm is used for visible surface detection.

OR

Explain boundary representations techniques to represent the 3D object with suitable example.

