

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2078 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BEI	Pass Marks	32
Year / Part	II / II	Time	3 hrs.

Subject: - Computer Graphics (EX 554)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt **All** questions.
- ✓ The figures in the margin indicate **Full Marks**.
- ✓ Assume suitable data if necessary.



1. What is pixel and pixel depth? Let the resolution of screen is 1024×512 . What is the memory captured by the frame buffer that uses primary color for display? [2+3]
2. Derive the p-value for midpoint circle algorithms scanning towards anti clockwise direction starting from (r,0). [7]
3. Compare and contrast between Digital Differential Analyzer line drawing algorithm and Bresenham's Line drawing algorithm. [3]
4. Scale the triangle with vertices A (1,1), B (4,4) and C (2,3) to double along horizontal direction and triple of vertical direction about point (2,3). [6]
5. Use Cohen Sutherland clipping Method to clip a line starting from A (-1,5) and ending at B(3,8) against the window having its lower corner at (-3,1) and upper right corner at (2,6). [4]
6. Why we need projection in computer graphics? How can you reflect an object about an arbitrary axis in 3D? Explain each step in detail. [8]
7. Define Hermite curve. Write the equation of Bezier curve with four control points p_1 (2,2,0), p_2 (2,3,0), p_3 (3,3,0), and p_4 (3,2,0). Find the coordinate pixel of the curve for $u = 0, 1/4, 1/2, 3/4$ and also plot the curve on graph. [8]
8. Differentiate boundary representation and space partitioning representation of polygon surface. If three vertices of a polygon surfaces in anticlockwise direction are V1 (1,0,0), V2 (1,1,0) and V3 (1,0,1). Calculate normal vector of that surface. [4+4]
9. How Scan Line Method is used for visible surface Detection? Explain in detail. [8]
10. Define Illumination and surface rendering. Explain basic illumination model. [2+6]
11. Explain Gouraud shading method with its advantages and disadvantages. [8]
12. Explain the importance of open GL. Write a program to display Red Rectangle in open GL. [7]
