36 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2067 Mangsir

Exam.	Regular / Back		
Level	BE	Full Marks	80
Programme	BEX, BCT	Pass Marks	32
Year / Part	III / II	Time	3 hrs.

Subject: - Computer Graphics

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

1. Write down the mid point circle algorithm. How symmetry of circle helps to reduce computation steps? Explain. [6+4]
2. Write down the Bresenham's line drawing algorithm for drawing straight line with consideration of all the slope categories. [10]
3. Which transformation converts a square to a rhombus? Obtain reflection matrix to reflect a point about the line y = x. [3+7]
4. A unit length cube with a diagonal passing through (0,0,0) and (1,1,1) is sheared with respect to yz plane with the shear constants = 2 in both directions. Obtain the coordinates of all the corners of the cube after shear. [10]
5. A 3-D scene is viewed from point (1,1,1) with camera orientation described by the orientation of three orthogonal vectors (1,1,1), (1,2,-3) and (-5,4,1). Obtain the transformation matrix to describe the scene with respect to camera orientation. [10]
6. What are object space and image space method of hidden surface removal? Describe one of the image space methods of hidden surface removal. [4+6]
7. Explain the Phong shading algorithm. Mention the advantages of Phong shading over Gouraud shading. [7+3]
8. Write short notes on: (any two) [5+5]
   a) Bezier Curve
   b) Resolution and Aspect ratio of a Monitor
   c) Flat panel Displays

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