TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2078 Bhadra

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

Subject: - Computer Graphics *(EX 603)*

- ✓ 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. Distinguish between Raster and Vector graphics with suitable example. [6]
2. Digitize the endpoint (20, 10) and (30, 18) using Bresenham's algorithm. How the demerits of DDA is addressed in Bresenham's algorithm. [7+3]
3. Derive the composite matrix for rotation about arbitrary point (a, b) in clockwise direction with angle (θ). Write an algorithm for Cohen Sutherland line clipping algorithm. [6+4]
4. What are 3D Rotation and Shearing? Explain with matrix representations. A unit length cube with diagonal passing through (0, 0, 0) and (1, 1, 1) is sheared with respect to yz place with shear constants = 2 in both directions. Obtain the coordinates of all the corners of the cube after shearing. [3+7]
5. What is Parametric Cubic Curve and why do you need it? Write down the step for cubic spline interpolation. [3+5]
6. What is Wire-frame model and why do we need polygon data table? Explain with examples? [5]
7. Describe Z-Buffer method of visible surface detection. Compare this method to other methods of visible surface detection. [6+2]
8. What do understand by diffused and specular reflections and explain in detail how these terms are included in illumination model? [5+5]
9. Define the term illumination and rendering. Write down the steps for phong shading method. [2+6]
10. Write down the Open GL syntax to draw basic 2D geometric primitives with examples. [5]

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