TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2079 Baishakh

Exam.		Back	
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 *All* questions.
✓ The figures in the margin indicate *Full Marks*.
✓ Assume suitable data if necessary.

1. What are the differences between random and raster display technologies? When do we prefer them? [6]

2. Write an algorithm for Bresenham's method of line drawing. Digitize a line with end points (10, 20) and (15, 2) using this algorithm. [5+5]

3. Find the composite transformation matrix for reflection about a line $y = mx + c$. [8]

4. Describe polygon, Vertex and Edge table. How these terms can be used to construct a model of Dharahara. [2+2+2+2]

5. What do you underatand by affine transformation? Derive expressions for oblique projectiman paralle projection. [2+4+4]

6. What is a Bezier Curve? Find the coordinates of Benzier curve at $u = 0.25, 0.5$ and 0.75 with respect to the control points (10, 15), (15,20), (20, 35), (25, 10) using Bezier function. [1+5]

7. How back-face detectium method is used to detect visible surfaces? What are it's limitation? Purpose an approach to overcome it's limitations. [4+2+4]

8. Derive an expression for phong illumination model for light sources. [8]

9. Find out the total intensity at the centroid of a triangle defind by A(2,1,1), B(0,1,1), C(0,0,1), when illuminated by a point light source of intensity $IL = 0.6$ at (2,2,6) using illumination model. The viewer is at (2,3,6). Assume ambient Intensity $Ia = 0.1$ and parameters: $ka = 0.5, kd = 0.8, ks = 0.7$, take $n = 10$. [8]

   [centroid: $(x1 + x2 + x3)/3$, $(y1+y2+y3)/3$, $(z1+z2+z3)/3$]

10. What is open GL? How can we use lighting in open GL? [2+4]

***