35 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2071 Shawan

Exam	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	BEX, BCT	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

Subject: - Computer Graphics *(EX603)*

- ✓ 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. Consider a raster scan system having 12 inch by 10 inch screen with a resolution of 100 pixels per inch in each direction. If the display controller of this system refreshes the screen at the rate of 50 frames per second, how many pixels could be accessed per second and what is the access time per pixel of the system? [4]
2. What is scan conversion? Derive the Bresenham's decision parameter to draw a line with negative slope and /m/>1. [2+8]
3. Given a clipping window A (10, 10), B (40,~~40~~ 10), C(40,40) and D(10,40). Using cohen-sutherland line clipping algorithm find region code of each end points of lines P1P2, P3P4 and P5P6 where co-ordinates are P1 (5,15), P2(25,30), P3(15,15), P4(35,30), P5(5,8) and P6(40,15). Also find clipped lines using above parameters. [10]
4. Perform rotation of a line (10, 10, 10), (20, 20, 15) about Y-axis in clock wise direction by 90 degree. Explain about vector display. [6+4]
5. Derive the equation for cubic Bezier curve. Also write down its properties. [8]
6. Explain how the 3D object is represented using polygon table representation technique? Explain any one technique to calculate the spatial orientation of the individual surface component of 3D object. [4+4]
7. Describe scan line method to find visible lines with example. [10]
8. Under what condition(s) flat shading gives accurate rending? Mention the disadvantage of intensity interpolation technique and explain Phong shading with necessary mathematical calculation. Explain the diffuse reflection. [3+1+6+4]
9. Why GLUT is implemented in OpenGL? Explain OpenGL syntax to draw a parallelogram having verticals (0.0, 0.0), (1.0, 0.0), (1.5, 1.2) and (0.5,1.2). [2+4]

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