

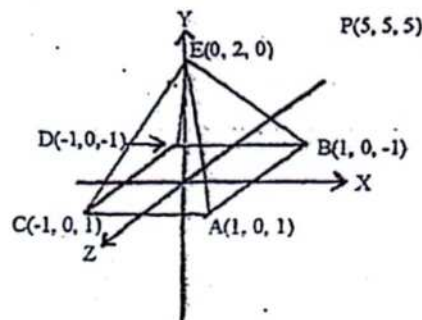
TRIBHUVAN UNIVERSITY  
INSTITUTE OF ENGINEERING  
**Examination Control Division**  
2076 Chaitra

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

1. Compare Raster-scan Display with Random-scan Display. [6]
2. Write the advantages of Bresenham's line drawing algorithm. Digitize the Ellipse with radius  $R_x = 12$  and  $R_y = 7$  and center  $(19, 10)$ . [2+8]
3. Define window and view port. Describe about two-dimensional viewing pipeline with matrix representation at each steps. [2+8]
4. Derive an expression for Perspective projection of a 3D point. Also, obtain perspective projection co-ordinates for the pyramid with vertices of base  $(15, 15, 10)$ ,  $(20, 20, 10)$ ,  $(25, 15, 10)$ ,  $(20, 10, 10)$  and apex  $(20, 15, 20)$  given that  $z_{prp} = 20$  and  $z_{vp} = 0$ . [5+5]
5. Differentiate between Interpolation and approximation. Explain the process of performing curve modeling using splines. [3+5]
6. How can we model cone or cylindrical like surfaces using boundary representation and technique? [6]
7. Explain Back-face detection algorithm for visible surface detection. Find the visibility for the surface BED and ABCD where observer is at  $P(5, 5, 5)$ . [3+5]



8. Define the term Surface rendering with Illumination model. Derive an expression to calculate the intensity of Diffuse reflection with necessary equations and figures. How do you consider the distance to calculate the intensity for Specular and Diffuse Reflection? [2+5+3]
9. What is Phong shading method? Can we use this method to reduce Mach-Band effect? [6+2]
10. What do you mean call back function? Illustrate with example. [4]

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