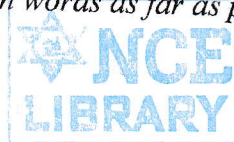


TRIBHUVAN UNIVERSITY  
INSTITUTE OF ENGINEERING  
**Examination Control Division**  
2081 Chaitra

Exam.	Regular (New Course)	
Level	BE	Full Marks 60
Programme	BEI, BCT	Pass Marks 24
Year / Part	II / I	Time 3 hrs.

**Subject:** - Computer Graphics and Visualization (ENCT 201)

- ✓ 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 is computer visualization? Calculate the frame buffer size for a raster system recording a video for 1 min with resolution of 1280 x 1024 and storing 24 bits per pixel with a refresh rate of 25 fps. [1+4]
2. a) How the decision parameter can be used to draw a Circle? Draw the circle with the radius 7 and centre (10,15). [2+5]  
b) Differentiate between boundary fill and flood fill Algorithm. [3]  
c) Use the Cohen-Sutherland line clipping algorithm to clip two lines  $P_1(40,50) - P_2(75,45)$  and  $P_3(70,20) - P_4(100,10)$  against a window A (50,10), B (80,10), C (80,40) and D (50,40). [4]
3. a) Suppose there is a rectangle whose coordinates are A(1,1), B(4,1), C(4,4), D(1,4) and the window coordinates are (2,2), (5,2), (5,5), (2,5) and the given viewport location is (0.5,0), (1,0), (1,0.5), (0.5,0.5). Calculate the viewing transformation. [4]  
b) Write the steps required to rotate an object in 3D about arbitrary axis. Explain about the perspective projection. [5]  
c) Differentiate between Parallel Projection and Oblique Projection. [3]
4. Define spline curve. Explain Hermite curve for 3-degree polynomial with required expression. [1+4]
5. Why do you mean by back face detection? Explain the Z buffer method for visible surface detection in detail with its limitation. [1+4]
6. Explain the Phong shading algorithm. Mention the advantages of fast Phong shading overphong shading method. [1+4]
7. What is raster animation? Explain about motion specification in computer animation. [2+5]
8. Explain distributed scene rendering in brief. Differentiate between AR, VR and MR technology. [3+4]

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