TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean

Full Marks: 40
Time: 2 hrs.

2016

BIM / Fifth Semester / IT 221: Computer Graphics

Candidates are required to answer all the questions in their own words as far as practicable.

Group "A"

1. Brief Answer Questions: ***[10 × 1 = 10]***

i. List any four application areas of computer graphics.

ii. How much memory is needed for frame buffer to display a 640×400 image with primary color?

iii. Distinguish between raster and random graphics methods.

iv. Define resolution and horizontal retrace.

v. Which class is used in Java 3D for animated scenes?

vi. Differentiate between beam penetration and shadow mask.

vii. How bar code reader works?

viii. For what purpose simpleUniverse class is used?

ix. What is intensity attenuation?

x. What is morphing?

Group "B"

Exercise Problems: ***[5 × 4 = 20]***

2. Write a program in Java to display "Hello World" in red color in Helvetica font.

3. Digitize line with endpoints (3, 10) and (6, 2) using Bresenham's Line Drawing Algorithm.

4. Clip line RS, R(2, 4) and S(8, 7) against clipping boundary WXYZ, W(3, 3), X(3, 6), Y(7, 6) and Z(7, 3) using Cohen-Sutherland line clipping algorithm.

5. The pyramid defined by the coordinates A(0, 0, 0) , B(1, 0, 0), C(0, 1, 0), and D(0, 1, 0) is scaled to double of its size about point (0, 1, 0), then translated to new position by translation vectors (4, 5, 6) and rotated by angle 45 degree in clockwise direction about origin. Use homogeneous transformation matrix to find the new vertices of pyramid.

6. Represent all 2D transformation matrices in homogeneous form.

Group "C"

Comprehensive Questions: ***[2 × 5 = 10]***

7. (a) Classify the different types of visible surface detection techniques? Explain depth buffer method for visible surface detection.

   (b) Write procedure to render the polygon surface by using phong shading model.

8. How polygon table is used in 3D object representation? Explain RGB color model with its geometrical representation.

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