TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean
April 2019

Full Marks: 40
Pass Marks: 18
Time: 2 hrs.

> **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.   'A video monitor refresh rate is 60 Hz'. What does it mean?
    ii. What is bitmap?
    iii. What is acoustic touch panel?
    iv. Why homogenous coordinate system is used?
    v.   Which class provides the simple color interpolation in JAVA 2D?
    vi. List the different light sources available.
    vii. What is the importance of clipping?
    viii. Why perspective projection is also called as realistic projection?
    ix. What is transparency effects?
    x.   Define virtual reality.

Group "B"

Exercise Problems: [5 × 4 = 20]

2. Write a JAVA program to display the text inside rectangle "JAVA Programming is Fun in graphics" by using Arial font type in italic and boldface style with 12 pixel point height at (100, 100) pixel position.

3. Digitize a line with end points (10, 6) and (12, 1) using Bresenham's algorithm.

4. Prove that successive rotation is equals to addition of angles.

5. Translate object ABCD with co-ordinates A(0, 0, 0), B(3, 0, 0), C(3, 3, 3), D(0, 3, 0) by 2 units in all direction and then scale it by $1\frac{1}{2}$ units in x direction and $\frac{1}{2}$ units in y direction and no change along z-direction about (1, 2, 1).

6. Derive a two dimensional window to view port transformation matrix in homogeneous co-ordinate system.

Group "C"

Comprehensive Questions: [2 × 5 = 10]

7. Classify the visible surface detection algorithms. Explain how scan line method detects the visible surface with example.

8. What are the disadvantages of flat shading? How they can be eliminated? Explain polygon rendering using intensity interpolation technique with algorithms.

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