TRIBHUVAN UNIVERSITY

FACULTY OF MANAGEMENT

Office of the Dean

April 2018

Full Marks: 40

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. List any four applications of computer graphics.

ii. Differentiate between beam penetration and shadow masking method.

iii. Which class of java3D is used to model transparency?

iv. Define projection reference point.

v. What is polygon table?

vi. Define acoustic touch panel.

vii. What is intensity attenuation?

viii. Write homogenous matrix for 3D rotation about XZ-Plane.

ix. Differentiate between RGB and HSV color model.

x. Define virtual reality.

Group "B"

Exercise Problems: ***[5 × 4 = 20]***

2. Digitize circle with radius 7 units and center at (3, 3).

3. Write program in java to translate a given 2D object. You need to take the co-ordinate values of translation vector and the object from the user.

4. Calculate region code of vertices P(1, 1), Q(9, 6), R(1, 11) and S(10, 0) against clipping boundary WXYZ: W(2, 3),X(2, 8),Y(7, 8) and Z(7, 3).

5. Digitize line with end points (3, 9) and (7, 1) using DDA line drawing algorithm. Plot the calculated intermediate points in graph.

6. Reflect a triangle which vertices are A(3,1), B(-2,5) and C(5,7) on Y=X axis and then rotate about (2, 1) in +270°. Use composite transformation matrix to find the final co-ordinates of ΔABC.

Group "C"

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

7. Define 2D viewing pipeline. Write algorithm of Z-buffer method for hidden surface removal.

8. Differentiate between ambient light and diffuse reflection. Write algorithm of Phong shading.