Reg. No.										

प्रज्ञानं ब्रह्म

Manipal

INSPIRED BY LIFE

INTERNATIONAL CENTRE FOR APPLIED SCIENCES

(Manipal University)

IV SEMESTER B.S. DEGREE EXAMINATION - MAY 2016

SUBJECT: COMPUTER GRAPHICS (CS 247)

16TH, MAY 2016

Time: 3 Hours **Max. Marks: 100**

- ✓ **Answer ANY FIVE Questions.**
- ✓ **Assume data suitably**

1A. With neat sketch, explain the operation of a delta-delta shadow-mask CRT.
1B. Explain the differences between the OpenGL, Core Library, the OpenGL Utility and the OpenGL Utility Toolkit. (14+6) M

2A. Considering the second octant from x=0 to x=y=R/√2, derive the mid-point decision parameters to draw a circle.
2B. Distinguish between flood-fill and boundary-fill algorithms.
2C. Write the 8-connected Boundary-Fill algorithm (12+4+4) M

3A. Let R be the rectangular window, whose lower left-hand corner is at L(3,4) and upper right-hand corner is at R(10,9). Use the Liang-Barsky algorithm to clip the line
(i) A(2,11) to B(9,2) (ii) C(1,4) to D(4,6)?
3B. Derive the normalization matrix that maps a window specified by coordinates (1, 1) & (4, 5) onto the a viewport specified by coordinates (2, 4) and (8, 10). (12+8)M

4A. Obtain the composite matrix for reflection of point *p* about a line Y=10X−7.
4B. Prove that the multiplication of transformation matrices for each of the following sequences is commutative.
i) Two Successive Rotations
ii) Two Successive Scaling
iii) Two Successive Translations (12+8)M

5A. Apply 3D geometric transformations to make the given tertrahedron A(0,2,1), B(0,0,2.23), C(0,0,0,) and D(1,1,1) rotate about the X-axis, making it erect with its base ABC, resting on the XZ plane, Next, magnify it four times about a fixed point P(1,1,2).
5B. Explain the various order of connectivity involved in joining two different curves.
5C. What do you mean by vanishing point? How many vanishing points a projected view may have and Explain? (10+6+4)M

6A. Derive the Bezier Matrix for cubic curves.
6B. Discuss the properties of a Bezier curve.
6C. How does the basic line algorithm determine which surfaces are hidden? (6+6+8)M

7A. With neat sketch, Explain all possible relationships between polygon surfaces and a rectangular section of the viewing plane.

7B. What is Dithering Technique? Explain clustered dot ordered dithering with an example?

7C. Briefly explain specular Reflection? (8+8+4)M

8A. Define the term Computer Animation? Differentiate between real-time animation and frame by frame animation.

8B. Briefly explain the design of animation sequences.

8C. What is the use of interpolation in animation? Explain different types of interpolation methods used. (4+8+8)M