Reg. No. : .....

Code No. : 1367 **Sub. Code : DNA 3 B**

B.C.A. DEGREE EXAMINATION, APRIL 2014.

Third Year – Non - Semester

Computer Application — Main

Paper XI – COMPUTER GRAPHICS AND MULTIMEDIA

(For those who joined in 2008 onwards)

Time : Three hours Maximum : 100 marks

PART A — ($5 \times 5 = 25$ marks)

Answer any FIVE questions out of Eight.

1. Suppose an RGB raster system is to be designed using an 8 – inch by 10 – inch screen with a resolution of 100 pixels per inch in each direction. If we want to store 6 bits per pixel in the frame buffer, how much storage do we need for the frame buffer?

2. Write the matrix representation of scaling and explain.

3. Explain perspective projection and depth cueing methods for three – dimensional display.

4. Prove that the multiplication of three – dimensional transformation matrices for the following sequence of operations is commutative.

   Any two successive scaling operation.

5. Explain the functions related to visibility – detection.

6. Explain the function used to display character strings in PHIGS.

7. What is meant by uniform scaling?

8. Write notes on splitting concave polygons for clipping.

PART B — ($5 \times 15 = 75$ marks)

Answer any FIVE questions out of Eight.

9. Write the procedure for parallel version of midpoint circle algorithm.

10. What is meant by composite rotations? Illustrate with an example.

11. Carefully discuss the rationale behind the various tests and methods for calculating the intersection parameters u_1 and u_2 in the Liang – Barsky line clipping algorithm.

12. Derive a transformation matrix for scaling an object by a scaling factor s in a direction defined by the direction angles α, β and γ.

13. Write and explain the algorithm for octree methods.

14. Write and explain the DDA algorithm for line drawing.

15. How is translation represented using matrix representation? Illustrate with an example.

16. Implement the Liang – Barsky line clipping algorithm.

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