Reg No										

MANIPAL INSTITUTE OF TECHNOLOGY

(Constituent Institute of MANIPAL University)
MANIPAL-576104

FIFTH SEMESTER B.E. (CS&E) DEGREE EXAMINATION-NOV./DEC. 2011

Subject: COMPUTER GRAPHICS AND MULTIMEDIA (CSE 305)

(Revised Credit System)

TIME: 3 HOUR **MAX.MARKS: 50 M**

Instructions to the Candidates

- Answer ANY FIVE full Questions.
- Missing data can be suitably assumed

1A. What is the necessity of a color look up table. Give the organization of a color look up table providing 12 bits per entry, per color for each pixel position and with 8 bits per pixel in the frame buffer.

1B. Explain the different representative uses of computer graphics.

1C. Considering the second octant from x=0 to x=y=R/√2, derive the mid-point decision parameters to draw a circle.

[(2+2) +3+3=10M]

2A. The coordinates of the vertices of a polygon are A(2,4), B(9,4), C(9,7), D(8,7), E(8,9), F(4,9), G(4,7), H(2,7).Draw the polygon and Use scan line polygon filling algorithm to

(i) Write the initial edge list for the polygon

(ii) State which edges will be active on scan lines y=6, 7, 8

2B. 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)?

2C. Prove that two successive rotations are additive.

[4+4+2=10M]

3A. Deriving the required transformations, determine the coordinates of the triangle ABC with A(2,4), B(4,6) and C(2,6) when it is reflected about line y=1/2(x+4).

3B. Find the window to viewport transformation matrix which uses a circle of radius 5 units and centre (1,1) as a window and the circle of radius 0.5 units and centre(0.5,0) as a viewport.

3C.Transform the square p(0,0),Q(10,0),R(10,10) and S(0,10) into a master picture coordinate system with half of its size with centre at(-1,-1).

[4+3+3=10M]

4A. How are the parallel projections being classified? Explain briefly

4B. Derive the transformation matrix for perspective projection with projection plane at z=d.

4C. Determine the projected image on to the XY plane of a tetrahedron ABCD with A(1,0,0,1) B(0,1,0,1), C(0,0,1,1), D(1,1,1,1) using standard single point perspective transformation. The distance of the vanishing point P from the view plane may be taken as 5 units.

4D. Explain the various order of connectivity involved in joining two different curves.

[3+2+2+3=10M]

5A. What is gamma correction? Explain the use of gamma correction with respect to the CRT.

5B. With proper illustration, explain the uses of CIE chromaticity diagram for:

i) Identifying Dominant wavelength and Excitation purity.

ii) Comparing color gamuts for different sets of primaries

5C. List the two approaches used to determine hidden surfaces. Explain the steps used to resolve any ambiguities caused when polygon's z extents overlap, in depth sort algorithm.

5D. Explain any four methods of controlling animation.

[2+2+(1+3)+2=10M]

6A.What is the use of interpolation in animation? Explain different types of interpolation methods used.

6B. What is multimedia? Give the advantages and disadvantages of MIDI.

6C. Explain briefly the different video compression schemes.

[2+4+4=10M]

****