T.E. (Information Technology) (2003 Course) (Semester – I)
Examination, 2009
MULTIMEDIA SYSTEMS

Time : 3 Hours   Max. Marks : 100

Instructions : *1) Answer 3 questions from Section **I** and 3 questions from*
*Section **II**. (Q. **1** or Q. **2**, Q.**3** or Q.**4**, Q.**5** or Q.**6**, Q.**7** or Q. **8**,*
*Q. **9** or Q. **10**, Q. **11** or Q. **12**)*
*2) Answer to the **two** Sections should be written in **separate***
answer books.
*3) **Neat** diagrams must be drawn **wherever** necessary.*
*4) Figures to the **right** indicate **full** marks.*

SECTION – I

1. a) Explain the need of multimedia. Explain with suitable examples the various building blocks of Multimedia.   **10**

   b) Explain the Bresenham's Line drawing algorithm. Write the sequence of pixels which will be turned on for a line segment with end points L1 (0, 0) and L2 (5, 10).   **8**

OR

2. a) Derive the expression for decision parameter used in the Bresenham's circle drawing algorithm.   **6**

   b) Write the pseudo-C code for DDA Line drawing algorithm.   **4**

   c) Explain in brief, various methods for finding out whether a given pixel is inside a polygon or not.   **8**

3. a) Define Shading. Justify statement 'Phong shading is superior to Gourand shading'.   **8**

   b) Assuming the homogeneous coordinate system for a point P, derive the transformation matrix for rotating the point P about origin (0, 0) by an angle θ in two dimensions. Also derive the matrix for rotating the point P by an angle θ about any arbitrary point (x_r, y_r).   **8**

OR

4. a) State the transformation matrix for translating a point in three dimension. Also derive the matrices for rotating the point in three dimension about all the three coordinate axes.   **8**

   b) Considering the top left corner of the screen to be the origin, clip the line with endpoints A(150, 350) and B (350, 200) against a rectangular clipping window with co-ordinates P(200, 100), Q (400, 100), R(400, 300) and S(200, 300) and find the clipped line end points through the steps of Cohen-sutherland Line

   Clipping algorithm.   **8**

P.T.O.

5. a) What is aliasing ? How does it occur in Computer Graphics ? Explain any one anti aliasing method in detail. 8

   b) A Square located in the first quadrant has following co-ordinates W (0, 0), X(0, 20), Y (20, 20) and Z (20, 0). Perform the following 2D transformations on this square by using the respective transformation matrices and write down the new co-ordinates.

   1) Scaling by 3 units in x direction and 2 units in y direction

   2) Shearing by 2 units in x direction. 8

OR

6. Write short notes on :
   1) Steps in Liang Barsky Line Clipping Algorithm. 6
   2) Scan line seed fill Algorithm. 6
   3) DVD. 4

SECTION – II

7. a) Explain Wave file format for audio. 8

   b) What is animation ? Explain any three principles of animation by giving suitable examples. 8

OR

8. a) With the help of the block diagram, explain the steps of JPEG compression technique. 8

   b) What is audio compression ? Explain DPCM in detail. 8

9. a) What is MIDI ? Explain MIDI file format. 8

   b) Explain the important frames with reference to MPEG Compression. 8

OR

10. a) Explain RGB and CMY color models in brief. 8

    b) Explain MP3 encoder in detail. 8

11. a) What is compression ? What is its need ? With the help of a suitable example explain LZW compression. 10

    b) Explain HSV color model in detail. 8

OR

12. Write short notes on **any three** : 18
    a) Huffman Coding.
    b) NTSC video standard.
    c) Segmentation in Animation.
    d) GIF File format.
    e) Run-Length Encoding.