M. C. A.

(SEM. IV) EXAMINATION, 2007-08

COMPUTER GRAPHICS AND ANIMATION

Time : 3 Hours]   *[Total Marks : 100*

Note : *Attempt* **all** *questions.*

1   Answer any **four** parts :   4x5=20

(a)   What do you mean by Computer Vision ? Explain.

(b)   Define the following :

   (i)   Printers

   (ii)   Light Pen

(c)   Explain briefly about I/O device with suitable example.

(d)   Write about Image Scanners.

(e)   Differentiate between vecter scan and raster scan.

(f)   Explain the Rubber-Band technique.

2   Answer any **four** parts :   **4x5=20**

    (a)   Writer vector generations line drawing algorithm.

    (b)   Explain Sutherland-Hodgman algorithm for clipping a polygon.

    (c)   State and explain Bresenham circle generation algorithm.

    (d)   Define polygon filling. Explain the flood filling method for area filling of a polygon with an example.

    (e)   What is a segment ? Write the algorithm steps for creation, closing and deleting segment.

    (f)   Differentiate between line clipping and point clipping.

3   Answer any **two** parts :   **2x10=20**

    (a)   Describe about Bezier curve in detail.

    (b)   What is half toning ? State its usefulness in computer graphics.

    (c)   Define the following with example :

        (i)   Approximation splines

        (ii)   Super ellipsoid.

4   Answer any **two** parts :   **2x10=20**

    (a)   What do you mean by scaling ? Discuss the basic three-dimensional transformation.

    (b)   What is matrix representation ? Give an example for Z-dimensional transformation.

(c) What do you mean by projection ? Differentiate between parallel projection and perspective projection.

Answer any **two** parts : 2x10=20

(a) Explain characteristics of a good graphics package.

(b) Define the following with suitable example :

   (i) Stochartic animation system

   (ii) Animation Hardware

(c) Write short notes on following :

   (i) Animation studio

   (ii) GKS Workstation.

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(SEM. IV) EXAMINATION, 2006-07

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: 3 Hours]   *[Total Marks : 100*

*Note : Attempt **all** questions*

1   Answer any **four** parts :   4×5=20

   (a)   What do you mean by scientific visualization? Explain.

   (b)   Is there any difference between computer graphics and image processing? Explain.

   (c)   Describe the terms persistence and resolution in reference to CRT.

   (d)   Explain the architecture of a raster system with a fixed portion of the system memory reserved for the frame buffer.

   (e)   Explain various kinds of input devices used for computer animation.

   (f)   Define the following:

      (i)   Positioning techniques

      (ii) Dragging

2   Answer any **four** parts :   4×5=20

   (a)   Give Bresenham's line dressing algorithm. Explain the same with suitable example.

   (b)   Describe boundary fill algorithm for polygon with suitable example.

   (c)   Discuss the method for storing colour values in a colour look up table(or video lookup table) where each entry in the table uses 24 bits to specify an RGB colour.

   (d)   Define the following:
      (i)   Point clipping
      (ii)   Line clipping.

   (e)   What do you mean by display file? What are the functions for segmenting the display file?

   (f)   Using midpoint method, and taking symmetry into account, develop an algorithm for the curve over the interval $-10 \leq x \leq 10$.
$$y = \frac{1}{12} \times 3$$

3   Answer any **two** parts   2×10=20

   (a)   Write an algorithm for converting, any specified sphere, ellipsoid, or cylinder to a polygon-mesh representation

   (b)   Write an algorithm to display two dimensional, cubic Bezier curves, given a set of four control points in the X-Y plane.

   (c)   Define the following with example :
      (i)   Octrees
      (ii)   B-spline curves.

Answer any **two** parts :   2×10=20

(a) (i) **Define** translation and scaling with an
          example.

     (ii) **Determine** the form of the transformation
          matrix for a reflection about an arbitrary
          line with equation $y = mx + b$.

(b) Define the following with example :

     (i) 3-D rotation

     (ii) **Parallel** projection.

(c) What do you mean by hidden surface removal?
     Describe any hidden surface removal algorithm.

Answer any **two** parts :   2×10=20

(a) Define animation sequences. What are the
     various steps involved in animation sequence?
     Describe.

(b) Define the following with example

     (i) Morphing

     (ii) Types of animation system.

(c) Write short notes on the following:

     (i) Animation tools

     (ii) Git animator : List the names and explain
          any one of them.

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