(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 214403   **Roll No.**

MCA

(SEM. IV) THEORY EXAMINATION 2013-14

COMPUTER GRAPHICS AND MULTIMEDIA

Time : 3 Hours   *Total Marks : 100*

Note :– Attempt questions from each Section as indicated.

SECTION–A

1. Attempt **all** questions. All questions carry equal marks.

   (10×2=20)

   (a) Define the term pixel and frame buffer.

   (b) What is aspect ratio ?

   (c) What is the difference between geometric transformation and coordinate transformation ?

   (d) Why Computer Graphics is called interactive ?

   (e) What are aliasing effects ?

   (f) What is morphing ?

   (g) Differentiate between Interpolation and approximation spline.

   (h) What is rasterization ?

   (i) Differentiate between window and viewport.

   (j) Compute the size of a 640 × 480 image at 240 pixels per inch.

SECTION–B

2. Attempt any **three** of the following questions. **(3×10=30)**

   (a) Explain Bresenham's Line drawing algorithm and show how it draws a line whose endpoint is (4, 4) and startpoint is (–3, 8).

   (b) (i) Differentiate between raster scan display and random scan display.

   (ii) Define viewing transformation and obtain the matrix for viewing transformation.

   (c) (i) Define polygon filling. Write down the flood fill algorithm for polygon filling.

   (ii) What are the various Anti aliasing techniques ? Explain.

   (d) (i) Perform a 45° rotation of a triangle A (0, 0), B (1, 1) and C (5, 2) about P (–1, –1).

   (ii) Show that a reflection about y = –x is equivalent to a refection relative to y axis followed by a counter-clockwise rotation of 90°.

   (e) Write down the Cohen Southerland algorithm for line clipping.

SECTION–C

   Note:–Attempt **all** questions. **(5×10=50)**

3. State the Characteristic of Bezier curve.

OR

Construct enough points on Bezier curve where control points are P0 (4, 2), P1 (8, 8) and P2 (16, 4) to draw an sketch.

(i) What is the degree of curve ?

(ii) What are the coordinates at u = 0.5 ?

4. Explain the Mid point circle drawing algorithm.

OR

Explain the back face detection method with help of an example and also explain the Z buffer algorithm for hidden surface removal.

5. What do you understand by multimedia authoring ? Explain various authoring tools.

OR

Explain different audio file formats in multimedia system.

6. Find out the rotation matrix in 3D transformation along x, y, z axis.

OR

What do you understand by shearing transformation ? Illustrate shearing transformation on square A (0, 0), B (1, 0), C (1, 1) and D (0, 1) where a = 2 and b = 3 for shearing in both directions.

7. What do you understand by viewing transformation ? Find the normalization transformation that maps a window whose lower

left corner is at (1, 1) and upper right corner is at (3, 5) onto a viewport that has lower left corner at (0, 0) and upper right corner (1/2, 1/2).

OR

Write short notes on any **two** of the following :

(i) Perspective/Parallel projection

(ii) Anti-aliasing method

(iii) Video Controller.