

(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)

- Define the term pixel and frame buffer.
- What is aspect ratio ?
- What is the difference between geometric transformation and coordinate transformation ?
- Why Computer Graphics is called interactive ?
- What are aliasing effects ?
- What is morphing ?
- Differentiate between Interpolation and approximation spline.
- What is rasterization ?
- Differentiate between window and viewport.
- Compute the size of a 640×480 image at 240 pixels per inch.

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 reflection 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 $P_0(4, 2)$, $P_1(8, 8)$ and $P_2(16, 4)$ 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
<http://www.aktuonline.com>
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.