## MCA 4th Semester Examination, 2016

## COMPUTER GRAPHICS AND MULTIMEDIA

## PAPER – 401

*Full Marks* : 100

*Time* : 3 hours

Answer any **five** questions

*The figures in the right-hand margin indicate marks*

*Candidates are required to give their answers in their own words as far as practicable*

*Illustrate the answers wherever necessary*

1. (a) With the help of a schematic diagram explain the working principle of CRT.

   (b) Compare and contrast the operating characteristics of Raster scan display system with Random scan.                7 + 7

2. (a) With a precise narrative description, write the algorithm for generating a line using

Bresenham's line drawing algorithm for all types of line.

(b) x start = 0, y start = 2, x end = 4, y end = 5. Find out using Bresenham's algorithm (for slope < 1) the pitel locations approximating a line between the given points.            8 + 6

3. (a) Mention the different standards of 2D reflections.

(b) A polygon has 4 vertices located at A(20, 10) B(60, 10), C(60, 30), D (20, 30). Indicate a transformation matrix to double the size of the polygon with point A located at the same place.                                                        7 + 7

4. (a) Show that a 2D reflection through X-axis followed by a 2 D reflection through the line $y = -x$ is equivalent to pure rotation ($\theta = 270^\circ$) about the origin.

(b) Applying a 2 D rotation followed by a scaling transformation is same as applying first the scaling and then the rotation — Justify.   7 + 7

5. (*a*) Explain the different standards of 3D rotation.

   (*b*) Write 3D transformation matrix to find reflection of a point $P(100, 200, 300)$ about plane $Z = 0$.                  9+5

6. Compare and contrast (any *two*) :                  7×2

   (*a*) Shadow mask method and Beam penetration method.

   (*b*) LCD and Plasma panel display system.

   (*c*) Parallel and perspective projection.

   (*d*) Hypertext and Hypermedia.

7. Write short notes on (any *two*) :                  7×2

   (*i*) Projection
   (*ii*) Bresenham's circle generation
   (*iii*) Morphing
   (*iv*) Bezier curve
   (*v*) 2D-shear.

[ *Internal Assessment* — 30 marks ]