

2019

MCA

4th Semester Examination

Graphics & Multimedia

PAPER – MCA-401

Full Marks : 100

Time : 3 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their

Own words as far as practicable.

Illustrate the answers wherever necessary.

Write any **FIVE** of the following questions :**14 x 5=70**

1. (a) With a precise narrative description , write the algorithm for generating a circle using Bresenham's circle generation algorithm . 8
- (b) Find out using Bresenham's algorithm, the pixel location approximating the first octant of a circle having centre at (4,5) and radius 4. 6
2. (a) With the help of a Schematic diagram explain the working principle of LCD display. 8
- (b) Compare and Contrast LCD display system with LED display system. 6
3. (a) Mention the different standards of 2D shear . 7
- (b) Show that a 2D reflection through X axis followed by a 2D reflection through the Line $y = -x$ is equivalent to pure rotation ($\theta = 270^\circ$) about the origin . 7

4. (a) A triangle is defined by

$$\begin{pmatrix} 20 & 40 & 40 \\ 20 & 20 & 40 \end{pmatrix}$$

Find out the transformation coordinates after the following transformation

- (i) 90° rotation about origin
- (ii) reflection about line $y = -x$ 8
- (b) Justify the following :
- (i) Applying a 2D rotation followed by a scaling transformation is same as applying first scaling and then rotation 3
- (ii) If rotation angle is θ the transformation matrix formed when multiplied by the transformation matrix formed when angle is $-\theta$ is equal to identity matrix . 3

5. (a) What do you mean by the term "projection" ? (1+1+6)
Why we need projection ? Differentiate between Parallel and Perspective projection ?
- (b) Mention the different standards of 3D reflection . 6
6. Write short notes on (any two) 2x7=14
- (a) 3D rotation
- (b) CRT
- (c) DVST
- (d) Orthographic Projection .
7. Compare and Contrast (any two) 2x7=14
- (a) DDA and Bresenham's line drawing algorithm .
- (b) Hypertext and Hypermedia .
- (c) Raster scan display System and Random scan display system.
- (d) Shadow mark method and Beam Penetration method .

(Internal Assessment : 30 Marks)