

MCA
(SEM. V) THEORY EXAMINATION 2018-19
COMPUTER GRAPHICS AND ANIMATION

Time: 3 Hours**Total Marks: 70****Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A**

- 1. Attempt all questions in brief. 2 x 7 = 14**
- a. Define the resolution of an image.
 - b. Can a 5X3½ inch image be presented at 6X4 inch without any geometric distortion?
 - c. What do you mean by transformation?
 - d. Define cavalier projection.
 - e. What do you understand by image processing?
 - f. Discuss positively oriented polygon.
 - g. What is story board?

SECTION B

- 2. Attempt any three of the following: 7 x 3 = 21**
- a. Write the steps required to plot a line whose slope is between -45^0 and 45^0 using DDA algorithm.
 - b. Magnify the triangle with vertices A(0,0), B(1,1), and C(5,2) to twice its size while keeping C(5,2) fixed.
 - c. Align the vector $V=I+J+K$ with vector K.
 - d. Discuss back-face removal algorithm.
 - e. Write short note on morphing.

SECTION C

- 3. Attempt any one part of the following: 7 x 1 = 7**
- (a) Write the steps required to scan-convert a circle using Bresenham's method.
 - (b) Discuss random scan graphics displays.
- 4. Attempt any one part of the following: 7 x 1 = 7**
- (a) Derive the transformation that rotates an object Θ^0 about the origin. Write matrix representation for this situation.
 - (b) Describe the transformation M_L which reflects an object about the line L.
- 5. Attempt any one part of the following: 7 x 1 = 7**
- (a) How can scaling with respect to a point $P_0(x_0, y_0, z_0)$ be defined in terms of scaling with respect to the origin.
 - (b) Discuss composite transformations in 3D.
- 6. Attempt any one part of the following: 7 x 1 = 7**
- (a) Let R be the rectangular window whose lower left hand corner is at L(-3,1) and upper right hand corner is at R(2,6). Find the region codes for the endpoints A(-4,2), B(-1,7), C(-1,5), D(3,8), E(-2,3), F(1,2), G(1,-2), H(3,3), I(-4,7), J(-2,10) for the lines AB, CD, EF, GH, and IJ.
 - (b) Discuss Cohen-Sutherland algorithm for line clipping with example.
- 7. Attempt any one part of the following: 7 x 1 = 7**
- (a) Explain design of animation sequences.
 - (b) Discuss various problems in animation,