Printed Pages: 2 **Sub Code: CA403**

Paper Id: 214403 **Roll No.** | | | | | | | | | | |

MCA
(SEM IV) THEORY EXAMINATION 2017-18
COMPUTER GRAPHICS AND MULTIMEDIA

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. What is a frame buffer?
b. Differentiate between CRT and LCD.
c. What do you mean by aliasing?
d. What is the difference between a window and a viewport?
e. Why do we need clipping?
f. What is fixed point scaling?
g. Define the term projection.
h. What do you mean by visible surface detection?
i. What are the various representation schemes used in 3D objects?
j. List any two software and hardware related to multimedia.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. Discuss any five practical applications of computer graphics.
b. Find the transformation matrix that transforms the square ABCD, whose center is at (2,2). Square is reduced to half of its size with center still remaining at (2,2). The coordinates of square ABCD are A(0,0), B(0,4), C(4,4) and D(4,0). Find the coordinates of new square.
c. Discuss 3D translation and 3D scaling with suitable example.
d. What do you mean by interpolation and approximation splines? Explain. Give the procedure for spline specification.
e. What is a multimedia authoring system? Discuss various types of authoring system.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss Bresenham's algorithm. Use this to plot a circle at origin having center at (0,0) and radius = 8.
(b) With a neat block diagram, explain the architecture of a raster scan display system.

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss Sutherland-Hodgeman algorithm for polygon clipping.
(b) Describe Flood-fill algorithm for polygon with suitable example.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss and compare parallel projection and perspective projection.

(b) Describe 3D rotation about an arbitrary axis.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Define and compare Beizer curves and B-spline curves. Also discuss the properties of Beizer curve.

(b) Describe Scan-line method for hidden surface removal. Also discuss its advantages and disadvantages.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) What do you mean by animation? Discuss various types of animation techniques used in graphics.

(b) Discuss various types of file formats used in multimedia and animation.