

Roll No. ....

Total Pages : 3

**OMCA/D-20**

**24198**

**COMPUTER GRAPHICS**

Paper–MCA-501

Time Allowed : 3 Hours]

[Maximum Marks : 80

**Note :** Attempt **five** questions in all, selecting **one** question from each Unit. Question No. 1 is compulsory. Rest questions carry equal marks.

**Compulsory Question**

1. Answer the following questions in brief :  $8 \times 3 = 24$

- (a) How does Graphics ease out interaction with the Computer?
- (b) What will be the size of the Frame buffer, if the resolution of the display device is  $1024 \times 1024$  and each pixel can glow with 128 different colors?
- (c) Illustrate the loading of Frame buffer in terms of the equation used to identify addresses of locations in frame buffer.
- (d) Write down the equation of Circle that is used in the Polynomial method of circle drawing.

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- (e) Which transformation is used when you drag an Object?
- (f) What is a Viewport and when is it said to be normalized?
- (g) What is the x-minmax test used for simplifying hidden surface elimination calculations?
- (h) Write the 3-D transformation matrix for Scaling.

### **UNIT-I**

- 2. Sketch the components of an Interactive Computer graphics system and explain the functioning of each. Also highlight the concept of a Raster scan system and the importance of a display processor in a raster scan system. 14
- 3. Highlight the distinction between a CRT display and an LCD display. How are the terms Resolution, Aspect ratio and Interlacing related with display devices? 14

### **UNIT-II**

- 4. Describe the various Coordinate systems used in graphics and illustrate their significance in drawing geometry and transformations. 14

5. (a) How is an object filled using Stack-based seed fill algorithm? 7
- (b) How is a Bezier curve drawn using parametric representation? 7

### UNIT-III

6. Scale a Rectangle with diagonal vertices at (4,4) and (10,8) to twice its size keeping vertex (4,4) fixed. 14
7. Describe the Liang-Barsky line clipping algorithm and use it to clip a line with end points (5,5) and (7,11) against a viewport with diagonal vertices at (2,3) and (12,9). 14

### UNIT-IV

8. Consider a 3-D object of your choice and describe, how it will be modeled for a Graphics application. 14
9. Describe, how Interpolation is used in Gouraud shading and Tweening. 14