

Roll No.....

Total Pages: 3  
**10514**

**MCA/M-18**  
**COMPUTER GRAPHICS**  
Paper: MCA-14-44

Time: Three Hours

Maximum Marks: 80

Note: Attempt five questions including No. 1 which is compulsory. All questions carry equal marks.

**Compulsory Question**

**1. Answer any eight of the following questions in brief:**

- (a) What does the term 'resolution' stand for?
- (b) What will be the size of a look-up table in bits if 3 bit-planes are used in the frame buffer and 9 bits are used to represent a color in the look-up table.
- (c) How is an ellipse generated using the polynomial method?
- (d) Write down the parametric representation of cubic curves.
- (e) What is the difference between pointing and positioning?
- (f) What happens to an object when it is sheared?
- (g) Write the homogeneous representation for scaling transformation.
- (h) What is the criterion for sorting polygons in the depth-sort hidden surface removal algorithm?
- (i) What is Morphing?

**UNIT-I**

- 2. Distinguish between a raster scan and a random scan system. How are pictures created on a raster scan display? Is LCD a raster scan or a random scan display? Explain its anatomy to justify your answer.
- 3. How is input given to a graphics application using digitizers and touch panels? What are the different kinds of printers used to obtain graphics output.

## UNIT-II

4. Give one example of a circle drawing algorithm that is based on Cartesian coordinate system. Explain how the algorithm is derived. Also using the same algorithm, find out the points on a circle with radius 4 and the centre at the origin.
5. What is the difference between flood fill and boundary fill algorithms? In what way is scan-line fill algorithm better than these two algorithms?

## UNIT-III

6. Which coordinate systems are used to define a window and a viewport? Find the position of a point  $P(7,8)$  defined in circular window of radius 10 units and center  $(3,5)$  transformed onto a normalized view port.
7. (a) Derive the rotation transformation for rotating a point  $(x,y)$  with respect to an arbitrary point  $(x\ y)$ .

## UNIT-IV

8. Give an overview of the various representation schemes used for modeling 3-D objects.
9. (a) Distinguish between orthographics and oblique parallel projection.  
(b) How are hidden surfaces identified using Ray casting and BSP tree methods.