

SE (CMTI) SEM IV

CG

16/6/2014

(CBQS)

QP Code : **NP-19874**

(3 Hours)

[ Total Marks : 80

- N. B. : (1) Question No. 1 is **compulsory**.  
(2) Solve any **three** questions from the remaining.  
(3) Assume any suitable data.

1. (a) Explain Bresenham's line drawing algorithm. Plot a line by using Bresenham's line generating algorithm from (1,1) to (5,3) **10**  
(b) Define window, view port and derive window to view port transformation **10**
2. (a) Explain parallel and perspective projections and derive the matrix for perspective projection. **10**  
(b) Specify mid point circle algorithm. Using the same, plot the circle whose radius is 10 units **10**
3. (a) Explain Gouraud and Phong shading along with their advantages and disadvantages **10**  
(b) Explain scan line fill algorithm with an example **10**
4. (a) Explain Liang Barsky line clipping algorithm. Apply this algorithm to the line with coordinates (30,60) and (60,25) against the window  
(X min, Y min) = (10,10) and (X max, Y max) = (50,50) **10**  
(b) Explain any one polygon clipping algorithm **10**
5. (a) Derive the matrix for 2D rotation about an arbitrary point. **10**  
(b) Explain Bezier curve and also specify the properties of Bezier curve. **10**
6. Write a short note on any **two** :- **20**
  - (a) Half toning and dithering techniques
  - (b) Raster techniques
  - (c) Describe the following 3-D representation methods:-
    - (i) Sweep representation
    - (ii) B-REP
    - (iii) CSG