

**Total No of Questions: 12**

**SEAT NO. :**

**[Total No. of Pages : 2]**

***S.E.Information Technology 2008***  
***Computer Graphics***  
***(Semester - II)***

***Time: 3 Hours***

***Max. Marks : 100***

***Instructions to the candidates:***

- 1) Answers to the two sections should be written in separate answer books.***
- 2) Answer Q.1 OR Q.2 , Q.3 OR Q.4 , Q.5 OR Q.6 from SECTION I and Q.7 OR Q.8 , Q.9 OR Q.10 , Q.11 OR Q.12 from SECTION II.***
- 3) Neat diagrams must be drawn wherever necessary.***
- 4) Figures to the right side indicate full marks.***
- 5) Use of Calculator is allowed.***
- 6) Assume Suitable data if necessary***

**SECTION I**

- Q1) a) Explain display file and its structure. [6]  
b) Explain Bresenham's circle drawing algorithm. Why do we prefer incremental algorithm over DDA. [6]  
c) Consider two raster systems with the resolutions of 640 x 480 and 1280 x 1024. How many pixels could be accessed per second in each of these systems by a display controller that refreshes the screen at a rate of 60 frames per second? [4]

**OR**

- Q2) a) Explain any two input devices in detail. [6]  
b) Explain Bresenham's line drawing algorithm in detail. [6]  
c) Differentiate between random and raster scan. [4]
- Q3) a) Describe Translation with respect to 2D transformation. [4]  
b) Explain rotation relative to a fixed point P(m, n) for any triangle object. [4]  
c) Explain 3D rotation .How it is different than 2D rotation. [8]

**OR**

- Q4) a) Explain 8- connected method of polygon filling. [4]  
b) Explain scan line polygon filling method. [6]  
c) Explain homogeneous coordinate system. [6]
- Q5) a) Explain Parallel projection. [4]  
b) Give examples, one for each case, of 3D objects having [8]  
    (i) never a vanishing point;  
    (ii) at most one vanishing point;  
    (iii) at most two vanishing points;  
    (iv) at most three vanishing points..  
c) Explain viewing pipeline. [6]

**OR**

- Q6) a) Write short note on [12]  
i) B-spline curve  
ii) Polygon tables  
iii) Polygon Mesh  
b) Explain Representation schemes for solid objects. [6]

## SECTION II

- Q7) a) What is frame by frame animation. [4]  
b) Explain different steps used in design of animation sequence. [8]  
c) Explain Goal Directed motion specification in computer animation [4]

### OR

- Q8) a) Explain types of color mixing. [4]  
b) Explain following [8]  
i) YIQ color model  
ii) CMY color model  
c) Explain direct motion specification for objects in animation. [4]

- Q9) a) What do you mean by Illumination model. Explain Diffuse Illumination. [6]  
b) Explain ray tracing to solve hidden surface problem. [6]  
c) Explain Phong shading model in detail. [6]

### OR

- Q10) a) Explain Point source illumination. [6]  
b) Explain ray tracing algorithm [6]  
c) Explain Gouraud shading in detail [6]

- Q11) a) Explain fractal lines and fractal surfaces [6]  
b) Write short note on: [10]  
ii) Hilbert's Curve  
ii) Bezier curve

### OR

- Q12) a) What is fractal dimension and Explain Triadic Koch curve in detail. [6]  
b) Write short note on: [10]  
i) Features of any graphics tool that you have studied.  
ii) Shadows