

Roll No.

Total No. of Questions : 09]

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Paper ID [B0122]

(Please fill this Paper ID in OMR Sheet)

MCA (Sem. - 5th)

COMPUTER GRAPHICS (MCA - 501)

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Attempt any one question from each Sections A, B, C & D.
- 2) Section - E is **Compulsory**.

Section - A

(1 × 10 = 10)

Q1) What is basic architecture of Cathode Ray Tube? Discuss in detail the raster and random scan displays.

Q2) Write short note on:

- (a) Touch panel
- (b) Laser printer

Section - B

(1 × 10 = 10)

Q3) What do you mean by scan converting an image? Discuss the Mid-Point algorithm for circle generation.

Q4) What is viewing transformation? Discuss Cohen-Sutherland algorithm for line clipping in detail.

Section - C

(1 × 10 = 10)

Q5) What is the difference between geometric and coordinate transformations? Discuss the various 3-D geometric transformations.

Q6) Drive the general perspective transformation onto a plane with reference point $R_0(x_0, y_0, z_0)$, normal vector $N=n_1I+n_2J+n_3K$ and using $C(a,b,c)$ as the center of projection.

Section - D

(1 × 10 = 10)

Q7) Discuss the scan line method for hidden surface removal. How it is different from Z-buffer algorithm?

Q8) Write the short note on:

- (a) Half toning.
- (b) Gourand shading.

Section - E

(10 × 2 = 20)

Q9)

- a) What are graphics tablets?
- b) What is aspect ratio of display devices? What is its importance?
- c) What is horizontal and vertical retrace in raster scan display?
- d) What is the principle of Bresenham's algorithm for line drawing?
- e) What is importance of homogeneous coordinates?
- f) What is the scan line polygon fill algorithm?
- g) What are anomalies of perspective projections?
- h) What are the limitations of Z-buffer algorithm for hidden surface removal?
- i) What is the diffuse reflection?
- j) What is the Phong shading?

