

Roll No.

Total No. of Questions : 09]

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B.Tech. (Sem. - 5th)
COMPUTER GRAPHICS
SUBJECT CODE : CS - 309
Paper ID : [A0468]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

Section - A

(10 × 2 = 20)

Q1)

- a) What is view port and window.
- b) What is a device coordinate system.
- c) What is a normalised coordinate system.
- d) What is a halftone image.
- e) Consider a raster system with a resolution of 1024 by 768. What is the size of the raster needed to store 8 bits per pixel.
- f) Consider a raster system with a resolution of 1024 by 768. How many pixels are accessed per second by a display controller that refresh the screen at the rate of 30 frames per second.
- g) List all of the possible logical operations which can be used to combine two binary raster images.
- h) How an object is specified in 3D.
- i) How raster graphics differ from vector graphics.
- j) How a coloured pixel is represented in memory.

Section - B

(4 × 5 = 20)

Q2) Write a note on any two topics:

- (a) Refresh CRT.
- (b) Raster Scan & Random Scan.

Q3) Explain concept of parallel projection & perspective projection.

Q4) Write an algorithm to continuously rotate an object about a point. Small angles may be used for each successive rotation.

Q5) What is clipping. Explain an algorithm for it.

Q6) Derive the 3 D transformation matrix for rotating an object by a angle in a direction of Y Z Plane.

Section - C

(2 × 10 = 20)

Q7) Write line drawing algorithms of DDA & Bresenham. Draw a 3 pixel thick line by taking an example. Justify the improvement one over the other.

Q8) Explain the Gouraud shading model.

Q9) What are the various graphics input-output devices. Explain the working principal of each of them.

