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Total No. of Questions : 09] [Total No. of Pages : 02

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 resoltion 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 resoltion 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 to 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.