Roll No. ☐☐☐☐☐☐☐☐☐☐☐ **Total No. of Pages : 02**

Total No. of Questions : 09

B.Tech. (CSE) (Sem.–5th)
COMPUTER GRAPHICS
Subject Code : CS-309
Paper ID : [A0468]

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTION TO CANDIDATES :
1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.**

SECTION-A

1. Answer the following :

   a. What is a Raster Scan System?

   b. What is a Random Scan System?

   c. What is view port and window?

   d. What is a Device Coordinate System?

   e. Explain the procedure to convert the normalized device coordinate to the device coordinate used by the output devices.

   f. What is a normalized coordinate system?

   g. What is a Halftone Image?

   h. What is Constant Intensity Shading?

   i. What is Parallel and Perspective projection? Explain.

   j. What is Aspect Ratio?

SECTION-B

2. Consider a raster system with a resolution of 1024 × 1024. What is the size of the raster needed to store 4 bits per pixel ?

3. Find the mirror image of the triangle ABC about $y = x$ axis with the help of matrices. What do you understand by homogeneous coordinates?

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

5. Explain the Gourard shading model.

6. Define an efficient polygon representation for the cylinder. Justify your choice of the representation.

SECTION-C

7. What are the different input devices of graphics system? Explain the working principle of each of them.

8. What do you understand by clipping, windowing and viewporting? Discuss Sutherland- Cohen Algorithm in detail.

9. What is the criteria of generating a straight line on a raster scan display device? Write an algorithm to generate a straight line using Bresenham's algorithm.