Q. P. Code : 34877

[Time: 3 Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B: (1) Question No. 1 is **Compulsory.**
(2) Attempt any **three** from **2 to 6** from remaining **five** Questions.

1. (a) Write the types of projection and differentiate between parallel and perspective projection. **10**
(b) Write the Bresenham's Line Drawing algorithm and Rasterize the line between the endpoints (4, 7) and (9, 11). **10**

2. (a) What do you mean by viewing pipeline? Explain window to viewport transformation in brief. **10**
(b) Define the different types of 2D transformations with matrix representation. **10**

3. (a) What are fractals? Write the types of fractals. **10**
(b) Apply the scaling transformation on triangle A(10,10), B(17,8) and C(13,15) by keeping C fixed. **10**

4. (a) Write the meaning and matrix representation of 3D transformations - translation, rotation, scaling, reflection and shear. **10**
(b) Explain the reflection about arbitrary axis in 3D with matrices. **10**

5. (a) Write the fundamental steps in Digital Image processing in short. **10**
(b) Apply the following transformations on the following 3 BPP image- **10**
a) Image negative
b) Gray-level slicing with background **when rl=3 and r2 6.**
c) Thresholding with **Threshold value=4**.

2	1	0	7	5
4	2	3	1	2
7	6	2	1	6
2	4	5	6	7
2	3	4	5	1

6. Write a short note on **(ANY FOUR)** **20**
(i) Cubic Bezier Curve (ii) Non-Zero winding Number Rule
(iii) Sampling & Quantization (iv) Graphics System
(v) Homogeneous Coordinates

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