

- NB: (1) All questions are compulsory.
(2) All questions carry equal marks.
(3) Draw neat, labelled diagrams wherever necessary.

Q1. Attempt the following (Any Three)

[15 Marks]

- What is computer graphics? Explain computer graphics applications and software.
- Explain the method of circle drawing using the midpoint circle algorithm.
- Consider a line AB with A = (0, 0) and B = (-5, -5). Apply a simple DDA algorithm and calculate the pixels on the line.
- Distinguish between a raster scan display device and random scan display device.
- Explain the operation of CRT with a neat labelled diagram.
- Explain the acceptance and rejection test using bit codes in Cohen-Sutherland line clipping algorithm. List the steps of the algorithm and give suitable example to explain the concept.

Q2. Attempt the following (Any Three)

[15 Marks]

- What is transformation? Explain translation transformation with the help of an example.
- Write a short note on 2D scaling and shear transformation.
- Magnify the triangle with vertices A (0, 0), B (1, 1), C (5, 2) to twice its size while keeping C(5,2) fixed.
- Define vanishing point and also explain vanishing point in different perspective projection in detail.
- What is meant by view volume? Explain orthographic projection in detail.
- Explain the concept of affine transformation.

Q3. Attempt the following (Any Three)

[15 Marks]

- Explain camera model and viewing pyramid with diagram.
- Explain with neat labelled diagram stages in the 3D viewing pipeline.
- Short note on Canonical View Volume (CVV)
- Write a short note on HSL and HSV color models?
- What is light? Explain Radiometry in brief.
- Explain in detail Subtractive color model.

Q4. Attempt the following (Any Three)

[15 Marks]

- Explain Bezier Surfaces in detail and state its any five properties.
- What is visible surface determination? Explain different methods of visible surface determination.
- What is the scan-line method? Explain with example.
- Briefly explain Painter's algorithm with an example.
- Write a short note on back face removal technique.
- Explain in brief BSP trees.

Q5. Attempt the following (Any Three)

[15 Marks]

- What is an Image? Explain any five types of Image formats.
- What is an animation? Explain any four principles of animation with suitable example.
- What is image compression? Explain lossless compression technique.
- Write a note on histogram equalization.
- Explain the concept of a high pass filter with suitable example.
- Distinguish key frame animation with procedural animation.