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]
   a. What is computer graphics? Explain computer graphics applications and software.
   b. Explain the method of circle drawing using the midpoint circle algorithm.
   c. Consider a line AB with A= (0, 0) and B= (-5 ,- 5). Apply a simple DDA algorithm and calculate the pixels on the line.
   d. Distinguish between a raster scan display device and random scan display device.
   e. Explain the operation of CRT with a neat labelled diagram.
   f. 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]
   a. What is transformation? Explain translation transformation with the help of an example.
   b. Write a short note on 2D scaling and shear transformation.
   c. Magnify the triangle with vertices A (0, 0), B (1, 1), C (5, 2) to twice its size while keeping C(5,2) fixed.
   d. Define vanishing point and also explain vanishing point in different perspective projection in detail.
   e. What is meant by view volume? Explain orthographic projection in detail.
   f. Explain the concept of affine transformation.

Q3. Attempt the following (Any Three)   [15 Marks]
   a. Explain camera model and viewing pyramid with diagram.
   b. Explain with neat labelled diagram stages in the 3D viewing pipeline.
   c. Short note on Canonical View Volume (CVV)
   d. Write a short note on HSL and HSV color models?
   e. What is light? Explain Radiometry in brief.
   f. Explain in detail Subtractive color model.

Q4. Attempt the following (Any Three)   [15 Marks]
   a. Explain Bezier Surfaces in detail and state it's any five properties.
   b. What is visible surface determination? Explain different methods of visible surface determination.
   c. What is the scan-line method? Explain with example.
   d. Briefly explain Painter's algorithm with an example.
   e. Write a short note on back face removal technique.
   f. Explain in brief BSP trees.

Q5 Attempt the following (Any Three)   [15 Marks]
   a. What is an Image? Explain any five types of Image formats.
   b. What is an animation? Explain any four principles of animation with suitable example.
   c. What is image compression? Explain lossless compression technique.
   d. Write a note on histogram equalization.
   e. Explain the concept of a high pass filter with suitable example.
   f. Distinguish key frame animation with procedural animation.