

Duration: 2 Hours

[Total Marks: 60]

N.B.: 1. All questions are compulsory.

2. Make suitable assumptions wherever necessary and state the assumptions made.

3. Answers to the same question must be written together.

4. Numbers to the right indicate marks.

5. Draw neat labelled diagrams wherever necessary.

6. Use of Non-programmable calculators is allowed.

- Q. 1** Answer *ANY FOUR* of the following: 16 M
- What is computer Graphics? Enlist and explain application of Computer Graphics
 - Write a steps for Bresenham's Circle Drawing Algorithm.
 - What is Graphics Input Devices with its type? Explain any 1 Input Device.
 - Digitize the line with endpoints (20, 10) and (30, 18) using Bresenham's Line Drawing Algorithm.
 - Write a short note on Aliasing and Anti-aliasing.
 - Write a short note on Homogeneous Coordinate System.
 - Clip a line A (-1, 5) and B (3, 8) using the Cohen - Sutherland Line Clipping Algorithm with Window Coordinates (-3, 1) and (2, 6).
 - Write a short note on 2D Shearing.
- Q. 2** Answer *ANY FOUR* of the following: 16 M
- Write a short note on 3D Rotation.
 - Write a short note on: a. Radiant Flux b. Radiant Flux Density
 - What is Parallel Projection? Explain the types of Parallel Projection.
 - Write a short note on Photometry in detail.
 - What is Colorimetry?
 - Write a short note on CMYK Color Space.
 - Draw and explain neat labelled diagram of Viewing Pipeline.
 - Explain the concept of 3D viewing.
- Q. 3** Answer *ANY FOUR* of the following: 16 M
- What is Object - Space Method?
 - What is coherence? Explain any 4 types of Coherence?
 - Write a short note on Depth - Buffer Method.
 - Write a short note on Spline Curve Design.
 - How to construct animation in sequence?
 - Write a short note on Image compression Standard - JPEG.
 - What is Histogram Equalization?
 - What is Median Filtering Method? Explain with an example.
- Q. 4** Answer *ANY THREE* of the following: 12 M
- Determine the histogram equalization of a 3-bit image ($L = 8$) of size 64×64 pixel has the intensity distribution as given in the table.
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|--------------|-----|------|-----|-----|-----|-----|-----|----|
| Grey Level | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| No. of Pixel | 790 | 1023 | 850 | 656 | 329 | 245 | 122 | 81 |
- What is Procedural and Key - Frame Animation?
 - Write a short note on Back - Face Detection.

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- d** What is 2D Scaling? Scale the polygon A (2, 5), B (7, 10) and C (10, 2) by 2-units in X direction and 2-unit in Y-direction. Find object matrix.
- e** Apply the Cohen – Sutherland Line Clipping Algorithm to clip the line segment with coordinates (30, 60) and (60, 25).
- f** Explain the cases of DDA Drawing Algorithm.

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