1. Define terms:
   - **Scan conversion**, Rasterization, Persistence, Resolution, **Aspect Ratio**, Output Primitives (97)
   - **Normalized** co-ordinates(96), World co-ordinates, Device co-ordinates, Modeling co-ordinates
2. Application of computer graphics.
3. Explain the structure of cathode-ray-tube.(Pg.62) Write various techniques to display colors on CRT monitor (beam penetration & shadow mask).
4. Explain the difference between Random scan display and **Raster scan** display. (Pg.75)
   OR Explain the function of each essential elements of raster scan system, Architecture & Scanning Method. (Pg.73)
5. Write a short note on **DVST** (advantage & disadv.) (pg. 65) / Digitizer (84) / Joystick (83) / Plasma
6. What is **frame buffer**? How its size is computed for mono & color system of different resolution? (60) And Examples related to it.

1. Write and derive following algorithms and do example for each.
   - **DDA** algorithm Bresenham’s line algorithm **Midpoint circle** & Ellipse algorithm
2. Explain:
   a. Boundary **fill** algorithm Vs Flood fill algorithm and Limitations. How would u solve it? (147)
   b. Scan line Polygon filling algorithm and **inside-outside** test.
3. What is aliasing? Explain different methods of minimizing its effect (antialiasing tech. **Supersampling**...)

1. What is **Homogeneous co-ordinates**? Why we require it?
2. Derive matrix for Rotation about an arbitrary point/ general pivot point.
3. Show that two successive rotations/translations are additive & scaling are multiplicative and all three (in successive manner) are commute.
4. Determine the form of the transformation matrix for a reflection about an arbitrary line with equation y=mx+b. Examples.
5. Draw and explain two-dimensional viewing transformation pipeline.
6. Explain & Derive the following line clipping algorithm.
a. **Cohen-Sutherland** line-clipping, Liang-Barsky line clipping, Nicholl-Lee-Nicholl line clipping

7. Explain the following Polygon clipping algorithm
a. Sutherland-**Hodgeman polygon** clipping, Weiler-Atherton polygon clipping

**Unit-4**
1. Describe the 3D display methods.
2. Write a short note on polygon **meshes**.
3. What is **interpolation**? Explain Lagrangian interpolation method.

4. Differentiate between interpolation spline and approximation spline.
5. Write a short note on **B-spline curve**, **Bezier curve** OR List out the properties of Bezier curve. List out the properties of B-spline curve.

**Unit-5**
1. Derive the transformation matrix for rotation about an arbitrary axis.
2. Draw and explain three-dimensional viewing transformation **pipeline**. (237)
3. Explain the parallel and **perspective** projections and its types.
4. Prove that the multiplication of 3-D transformation matrices for each of the successive sequences of operations is commutative.
5. Pg: 241, 246, 250 (Difference cohen-liang), 255, 258, 336 (Convex Hull), 341 (Natural Cubic), 466 (Vanishing point), 480

**Unit-6**
**Depth buffer** algorithm/Z-buffer algorithm

Explain the illumination methods

Explain the following colour models and compare each other.
**XYZ, RGB → HSV** (values), **CMY(K), YIQ**

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