Engineering Graphics - Module 2 Notes

Module 2 Topics

1. Principles of Orthographic Projections
2. Conventions in Orthographic Projection
3. Projection of Points
4. Projection of Lines inclined to HP and VP
5. Projection of Planes inclined to Planes
6. Auxiliary Planes

1. Principles of Orthographic Projection
Orthographic projection is a method of representing a 3D object in 2D views using perpendicular projectors. The main views are Front View, Top View and Side View.

Important Terms:
• HP – Horizontal Plane
• VP – Vertical Plane
• XY Line – Reference line between HP and VP

Types of Orthographic Projection
• First Angle Projection
• Third Angle Projection

2. Conventions in Orthographic Projection
• Object lines are dark and continuous.
• Hidden lines are dashed.
• Center lines are chain lines.
• Dimension lines are thin continuous lines.

3. Projection of Points
A point may lie in different quadrants depending upon its position with respect to HP and VP.

Quadrants:
• First Quadrant – Above HP and in front of VP
• Second Quadrant – Above HP and behind VP
• Third Quadrant – Below HP and behind VP
• Fourth Quadrant – Below HP and in front of VP

4. Projection of Lines Inclined to Both Planes
When a line is inclined to HP and VP, its projections are obtained by rotating the line step by step.

Important Terms:
• True Length (TL)
• Apparent Length
• Inclination with HP (θ)
• Inclination with VP (ϕ)

Procedure:
1. Draw initial projections parallel to one plane.
2. Incline line to HP.

3. Incline line to VP.
4. Obtain final front and top views.

5. Projection of Planes Inclined to HP and VP
Plane figures like triangle, square, pentagon and hexagon are projected by using change of position method.

Steps:
1. Draw true shape in simple position.
2. Tilt surface according to given angle.
3. Project final views carefully.

6. Auxiliary Planes
Auxiliary planes are used to obtain true shape and true size of inclined surfaces.

Types of Auxiliary Planes:
• Auxiliary Vertical Plane (AVP)
• Auxiliary Inclined Plane (AIP)

Applications of Auxiliary Planes
• Finding true length
• Finding true shape
• Determining inclinations
• Solving projection problems

Exam Tips
• Always draw XY line first.
• Use proper dimensioning.
• Darken final visible lines only.
• Maintain neatness and accuracy.

Important Topics Weightage

Topic	Importance
Projection of Lines	★★★★★
Projection of Planes	★★★★★
Orthographic Projection	★★★★
Auxiliary Planes	★★★★
Projection of Points	★★★