Somaiya Vidyavihar University

Faculty of Engineering and Technology

K. J. Somaiya School of Engineering

Course: Engineering Drawing

Module 1: Projection of lines and planes

a. Projection of lines

- **Line parallel to VP and inclined to HP and PP**

Q. 1) A line AB having length 50 mm has its point A 10 mm above the H.P. and 20 mm in front of the V.P. The line is parallel to V.P. and inclined at an angle $\theta = 45^0$ to the H.P. Draw the projection of a line.

- **Line parallel to HP and inclined to VP and PP**

Q. 2) A line AB having length 50 mm has its point A 10 mm above the H.P. and 20 mm in front of the V.P. The line is parallel to H.P. and inclined at an angle $\phi = 45^0$ to the V.P. Draw the projection of a line.

- **Line inclined to the both the reference planes**

Q. 3) A line AB, 70 mm long is inclined at an angle 300 to the H.P. and 450 to the V.P. Its end point A is 10 mm above the H.P. and 20 mm in front of the V.P. Draw the projections of line AB. Point B is in first quadrant. (Q.1: Booklet)

Q. 4) A line AB 70 mm long measures 50 mm and 60 mm in front view and top view respectively. Point A is 15 mm above HP and 25 mm in front of VP. Point B is in first quadrant. Draw projections of line AB and find its inclination with HP and VP. (Q. 2: Booklet)

Q. 5) The top view and the front view of a line AB measures 70 mm and 58 mm respectively. The line AB is inclined at an angle of 350 to the HP. The end A is 15 mm above the HP and 12 mm in front of VP. The other end B is also in the first quadrant. Draw the projections of line AB and find its true length and true inclination with VP. (Q.3: Booklet)

Q. 6) A line AB 70 mm long is inclined at an angle of 400 to the HP and 300 to VP. The end A is in VP and 20 mm above HP. Draw the projections of the line if point B is in the 1st quadrant. (Q.4: Booklet)

- **Line inclined to the both the reference planes (Inclination of line is to be determined)**

Q. 7) The distance between the projectors of two ends of a straight line is 40 mm. One end is 15 mm above HP and 10 mm in front of VP. The other end is 40 mm above HP and 40 mm in front of VP. Find the true length and true inclinations of the line. (Q. 5: Booklet)

Q. 8) A line AB 100 mm long has its front view inclined at an angle of 450 to XY. The point A is in the VP and 25 mm above HP. The length of the front view is 60 mm. Draw the top view of the line and measure its length. Also find the inclinations of the line AB to HP and VP. (Q. 6: Booklet)

- **Line inclined to the both the reference planes**

Q. 9) A straight line PQ 100 mm makes 45^0 to HP and 30^0 to VP. The end P is 36 mm above HP and 40 mm in front of VP. Draw the top view and front views of the line. Measure the distance between the projectors of the line. (Q.7: Booklet)

- **Line inclined to the both the reference planes (True inclination is to be determined)**

Q. 10) The plan length of line AB. 75 mm long measures 50 mm. The end A is 50 in front of the V.P. and 15 above the H.P. The end B is 15 in front of the V.P. and above the H.P. Draw the projections of line AB and determine its inclinations with the H.P. and V.P.

b. Projection of planes

Q. 1) A rectangular plane ABCD having length 60 mm and breadth 40 mm is parallel to the H.P. and perpendicular to the V.P. and the P.P. If the plane is 10 above the H.P. and one of the longest side (say AD) is 20 mm in front of the V.P. Draw the projections of the plane.

Q. 2) A rectangular plane ABCD having length 60 mm and breadth 40 mm is parallel to the V.P. and perpendicular to the H.P. and the P.P. If the plane is 20 mm in front of the V.P. and one of the longer edge side (say BC) is 10 above the H.P. Draw the projections of the plane.

Q. 3) A rectangular plane ABCD having length 70 mm and breadth 40 mm has its surface inclined to the H.P. at an angle 45^0 and perpendicular to the V.P such that its shorter side AB of a rectangular plane is 10 mm above the H.P. and longer side AD of a rectangular plane is 20 mm in front of the V.P. Draw the projections of the plane.

Q. 4) **A square** ABCD with sides 40 mm has its surface inclined at an angle 45^0 (θs) with H.P. and perpendicular to the V.P. such that one of a side of a square plane is in the H.P. Draw its projections.

Q. 5) A **square lamina** ABCD of 50 mm side rest on the corner A is in the H.P. such that the plane is seen as a rhombus in the top view with diagonal contained by corner A measuring 25 mm. Draw its projections and determine surface inclination of the plane with the H.P.

Q. 6) A **hexagonal lamina** of side 25 mm is resting in the V.P. on one of its corner. Draw the three view, if the diagonal passing through that corner makes an angle 30^0 to the V.P. Draw using 1^{st} angle method of projection.

Q. 7) (A) An **isosceles triangular** plate of 50 mm and 75 altitude appears as and equilateral triangle of 50 mm in top view. Draw the projection of a plate if its 50 mm long edge is on the H.P. What is the inclination of a plate with the H.P.?

Q. 8) (B) An **isosceles triangular** plate of 50 mm and 75 altitude appears as and equilateral triangle of 50 mm in front view. Draw the projection of a plate if its 50 mm long edge is on the V.P. What is the inclination of a plate with the V.P.?

Q. 9) A **pentagonal plate** of 30 mm side has one of its side in the V.P. The corner opposite to the this side contained by the H.P. is 20 mm in front of the V.P. Draw the projections and find the inclination of a surface with the V.P.

Q. 10) A **circular plate** of 60 mm diameter is resting on point A of its rim with its surface inclined at 30^0 to the H.P. Draw the projections of the plate.

Q. 11) A rectangular plate 50 mm X 70 mm stands on one of its shorter edges in H.P. and is raised about this edge so that the plan becomes a square of 50 mm. Draw the projections of the plate and find inclinations with H.P. (Booklet Q.1)

Q. 12) A regular pentagon of side 30 mm is resting on one of its sides with the surface making an angle of 45^0 to H.P. Draw the projections of pentagon. (Booklet Q.2)

Q. 13) One of side of regular Hexagonal plane of 30 mm side is in VP while the opposite side is 45 mm in front of VP. Draw the projections and find the inclination of plane with V.P. (Booklet Q.3)

Q. 14) A pentagonal plane lamina of side 30 mm is resting on H.P. on one of its corners so that the surface makes an angle of 60^0 with H.P. Draw front view and top view (Booklet Q.4)

Q. 15) A regular hexagon of 40 mm side has a corner in the H.P. Its surface inclined at 45^0 to the H.P. Draw its projections. (Booklet Q.5)

Q. 16) A circle of 50 mm diameter appears as an ellipse in the front view, having its major axis 50 mm and minor axis 30 mm long. Draw its views. (Booklet Q.6)

Q. 17) A circular plate of 60 mm diameter and negligible thickness. The plate is resting on VP on point A on its rim with its surface inclined at 30^0 to the V.P. Draw the projections of the plate. (Booklet Q.6) (Similar as of Q.9)