**ME1001 Engineering Graphics**

**Projections of Lines**

1. A line of 100 long, makes an angle of 35° with H.P and 45° with V.P. Its mid-point is 20 above H.P and 15 in front of V.P. Draw the projections of the line.

2. A line AB, which is inclined at 30° to H.P, has its ends A and B, at 25 and 60 in front of V.P respectively. The length of the top view is 65 and its V.T is 15 above H.P. Draw the projections of the line and locate its H.T.

3. The end C of a line CD is in third quadrant and is 50 from V.P. The end D is in first quadrant and is 40 from V.P. The top view of the line is inclined at 45° to xy and H.T of the line is 20 below xy. The line CD is inclined at 30° to V.P. Draw the projections of the line and determine (i) true length, (ii) inclination of the line with H.P and (iii) the location of V.T from H.P, stating whether it is below or above H.P.

4. A line AB of 70 long, has its end A at 10 above H.P and 15 in front of V.P. Its front view and top view measure 50 and 60 respectively. Draw the projections of the line and determine its inclinations with H.P and V.P.

5. A pipe line from a point A running due South West, has an upward gradient of 1 in 5. Another point B on the level of A is 12m due West of A. Pipe line through B running 15° West of South, meets the pipe line from A at C. Find the slope and true length of each pipe.

6. A line AB, which is inclined at 30° to H.P, has its ends A and B, at 25 and 60 in front of V.P respectively. The length of the top view is 65 and its V.T is 15 above H.P. Draw the projections of the line and locate its H.T.

7. A line PQ inclined at 40° to V.P has its ends 60 and 20 above H.P. The length of its front view is 75 and its vertical trace is 10 above H.P. Determine the true length of PQ, its inclination with H.P, and its H.T.

8. The H.T and V.T and the end A of the line AB coincide and lie on XY. The distance between the top and front views of the end B is 60. The line is equally inclined to H.P and V.P. The distance between the end projectors as measured parallel to XY is 40. Draw the projections and find the true length of the line.

9. An electric transmission line laid along an uphill from a hydroelectric power station, due West to a sub-station, is 2 km long and has a slope of 30°. Another line from the sub-station, at W45°N to a village is 4 km long, but is laid on a level ground. Determine the length and slope of a proposed telephone line, joining the power station and the village.

10. The end A of a line AB is on H.P and 25 behind V.P. The end B is on V.P and 50 above H.P. The distance between the end projectors is 80. Draw the projections of AB and determine its true length, traces and inclinations with the two planes.

11. A line is inclined at 40º to H.P. Its one end A is 25 above H.P and 30 in front of V.P. The top view of the line is 70 and is inclined at 30° to xy. Draw the projections of the line AB and determine its true length and its inclination with V.P.

12. A chimney of a boiler is 30m high and 1.5m in diameter. It is supported by three guy wires appearing at 120° to each other in the top view. The ends of the wires are pegged to the ground at distances 4m, 6m and 8m from the centre of the chimney. The other ends of the wires are connected to the chimney at 5m from the top. Find the lengths of the wires.