INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
Department of Mechanical Engineering
ME119 – Engineering Drawing and Graphics
(2021-22) Semester 2

Sheet 2: Projections of Points, Lines, Auxiliary Planes

Instructions:

- For more details of the exercises in this sheet, refer Chapters 10 & 11 of the text book (N. D. Bhatt, Engineering Drawing, 53rd Ed.).
- Scale, dimension the drawings suitably. Label the important nodes/points on the drawings.
- Mention the scale if it is not 1:1.
- Use 1st angle projection unless mentioned otherwise
- Practise the problems before coming for the doubt clearing session
- Use plain A4 sheets only. Make the borders and title block
- Indicate hidden lines and center lines clearly.

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1. The front view of a line AB measures 50 mm with an inclination of 45° to the XY. In the top view, the line AB measures 60 mm. The nearest point to the XY is at a distance of 10 mm from the HP and 20 mm from the VP. Draw the projections of the line in FV and TV and calculate the true length and true inclination angles of the line with the HP and VP.

2. The front view of a line AB measures 60 mm. The true inclination of the line with the HP is 30°. The point A lies on the XY and point B is at a height of 40 mm from the HP. Draw the projections of the line in FV and TV and calculate the true length.

3. A line of length 70 mm has one of its ends in the VP at a distance of 30 mm from XY, and the other in the HP at a distance of 40 mm from XY. Draw the projections of the line.
4. An end of a line measuring 70 mm in FV, is on the HP. FV of the line makes 30°to XY and the VT is 15 mm below the HP. Draw the projections of the line if it is inclined at 30° to the VP. Find the true length of the line, and its true inclination angle to the HP. Also locate its HT.

5. A line AB, 100 mm long, is inclined at 50° to HP. The end A is 10 mm above HP and end B is 65 mm in front of VP. Draw projections of the line if its FV measures 90 mm. Locate traces and find the true inclination of the line with the VP.

6. A line of length 100 mm has one of its ends in the VP at a distance of 40 mm from XY, and the other in the HP at a distance of 60 mm from XY. Draw the projections of the line and locate its traces.

7. A line EF is contained by a plane perpendicular to the HP and inclined at 60° to the VP. The line is inclined to the HP at 45°. The length of the line is 65 mm. The end F is on the HP and 20 mm in front of the VP. Draw the projections of the line and locate its traces. What is the inclination of the line with the VP?

8. One end of a line is 10 mm above the HP and 20 mm in front of the VP, while the other end is 60 mm above the HP and 50 mm in front of the VP. The distance between the projectors through A and B is 100 mm. Using auxiliary plane method, determine the true length of the line and its true inclinations with the HP and VP.