SRM

1. Exercise : 3 WEEK - 3 2. Date: 20/10/2020

3. Title : Fundamentals of projections - Orthographic projection of points and lines.

4. Aim : To draw the orthographic projection of points in various quadrants; straight lines in first quadrant inclined to only one plane, and practice free-hand sketching.

5. Software used: AutoCAD - 2020

6. Introduction:

i. About Orthographic projection : Projection is distance between deviation of point from x, y is equal to distance of point from horizontal plane. Orthographic projection means representing three dimensional objects in two dimensions For example in civil engineering drawings, we can find the two dimensional drawings while in real life we construct three dimensional objects. i.e. the layout of the building is done in two dimensions.

ii. Projection of points and lines: In projections of point and lines orthographically, they are considered as an object. To draw projections of any object, one must have clear idea about the object (the description), the observer (always observing perpendicular w.r.to reference plane) and location of the object (i.e. its position with reference to Horizontal Plane and Vertical Plane). Terms 'Above' and 'Below' w.r.to H.P. and 'Infront' and 'Behind' w.r.to V.P. are used. Object can be placed in any of the four quadrants formed. Notations used;

OBJECT	POINT	LINE AB
Its Top View	a	ab
Its Front View	a'	a'b'
Its Side View	a"	a"b"

7. **Procedure** (for solving question #) Draw the projection of a point B, 40 mm above the H.P. and 25 mm infront of the V.P.

7.1 Question outline :

7.2 Object :

7.3 Conditions (if any) :

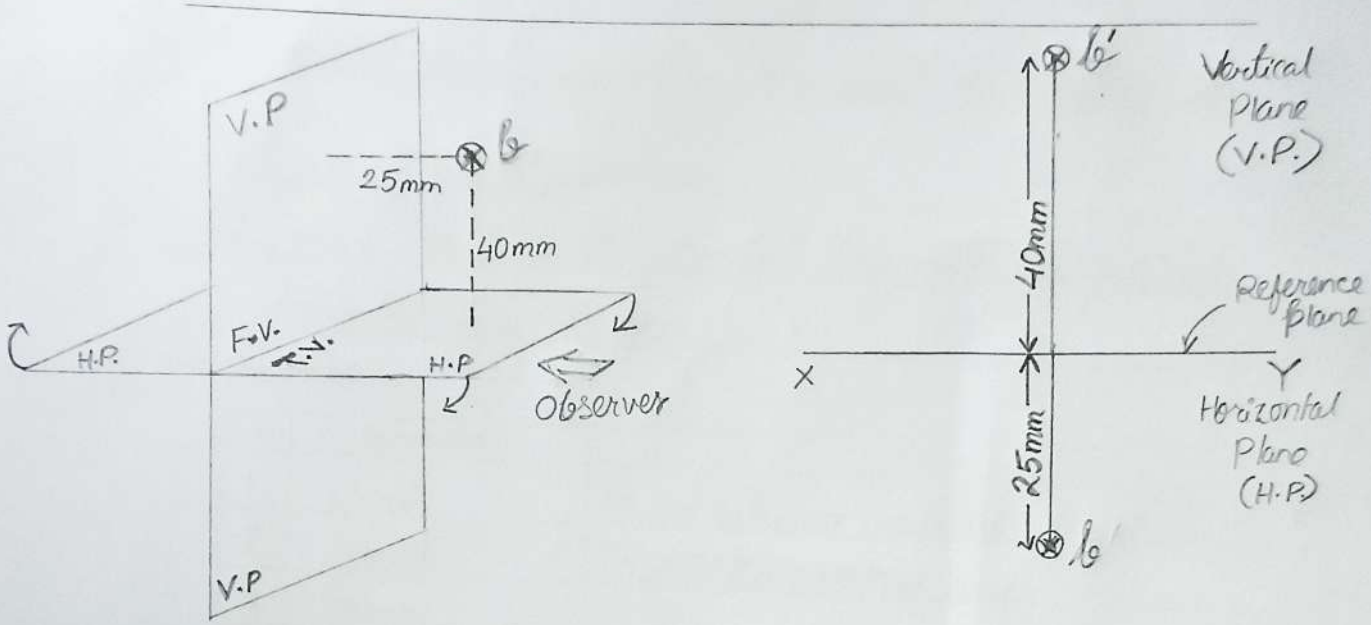

Fig. Free hand sketch of the solution to question #

7.4 **Drawing Procedure:**

Step 1.

Draw a straight line of any length, horizontally and mark it as XY which will be the reference plane.

Step 2: The point 'b' lies 40 mm above Horizontal plane (H.P.) and 25mm infront of Vertical plane (V.P.). So it lies in first quadrant.

Step 3: Observing from the front view, the point lies 40mm above the reference plane. So draw a perpendicular line from reference plane above it measuring 40mm and mark the point as 'b' acc. to notations.

Step 4: Observing from the top view, the point lies 25 mm infront of Vertical plane (V.P.). So draw a

perpendicular line from reference line below it measuring 25 mm in length. Mark the point as 'b' acc. to the notation.

Step 5: Use annotation command to display the length of the line drawn.

Step 6: b'b is the desired line orthographically projected by the point 'b'.

8. Commands used:

S.N.	Command	Use
1.	Units	To set reference units and precision.
2.	Limits	To set the working area.
3.	Zoom	To Zoom into desired space.
4.	Lines	To draw lines in straight.
5.	Ptype	To specify the point type.
6.	point	To mark the points.
7.	Text.	To name the points
8.	Annotation	To measure the length of lines and display it on side.

9. Result:

The desired orthographic projection of point 'b' is completed using the above commands in AutoCAD - 2020

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