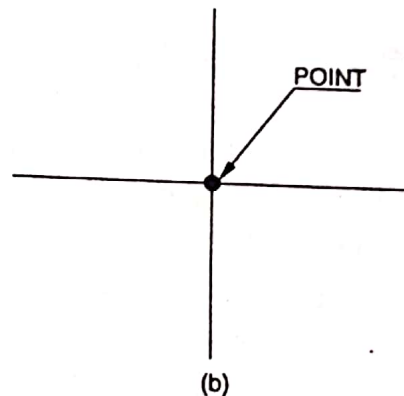# 6

PROJECTIONS OF POINTS

6.1. INTRODUCTION

A point is a dot which does not have any dimensions. In other words, we can say that when two lines cross each other, the point will be formed at the crossing of the lines as shown in Fig. 6.1 (b).

Fig. 6.1. Point.

6.2. PROJECTION OF POINTS

A point can be situated in any of the four quadrants :

1. First quadrant – above H.P. and in front of V.P.
2. Second quadrant – above H.P. and behind V.P.
3. Third quadrant – below H.P. and behind V.P.
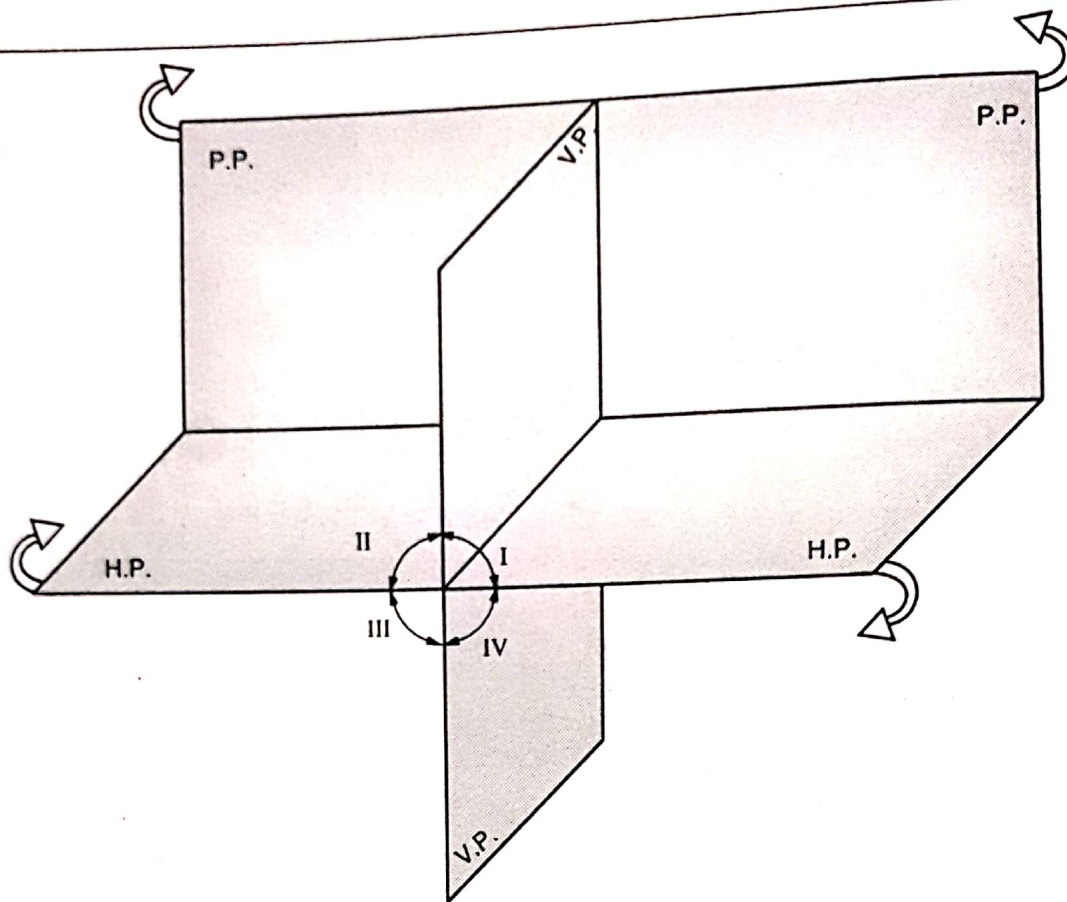4. Fourth quadrant – below H.P. and in front of V.P.

Fig. 6.2. Quadrants.

6.3. CONVENTIONAL REPRESENTATION

The actual position of a point is designated by capital letters such as A, B, C, D, E, P etc. Its front view is drawn on the V.P., the top view is drawn on the H.P. and the side view is drawn on the P.P. (profile plane). The line of intersection of the V.P. and H.P. is called **reference line.** The reference line is represented by xy line and drawn as continuous thin line.

It is customary to rotate the H.P. in a clockwise direction about the reference xy line through 90°, such that it becomes co-plane with the V.P. Similarly, the profile plane is rotated about the reference line $x_1 y_1$ through 90°, such that it also becomes co-planer with the V.P. This makes the front, the top and the side views co-planer when drawn on the sheet. The convections used to represent the projections of a point are as follows.

1. The front view is represented by lower case letters with dashes such as a', b', c', d', e', p' etc.

2. The top view is represented by lower case letters without dashes such as a, b, c, d, e, p etc.

3. The side view is represented by lower case letters with double dashes such as a'', b'', c'', e'', p'' etc.

Problem 6.1. Point A is 20 mm above H.P. and 30 mm in front of V.P. Draw its front view and top view.
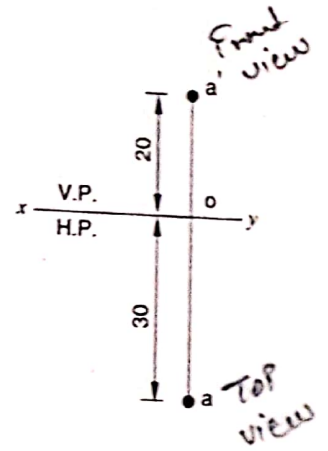
Solution. The point A is situated in first quadrant – above H.P. and in front of V.P.
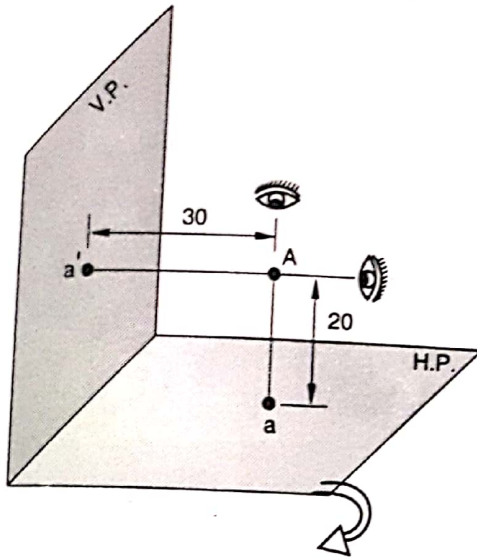
(a) Point A in Ist quadant
(Analyse the problem)
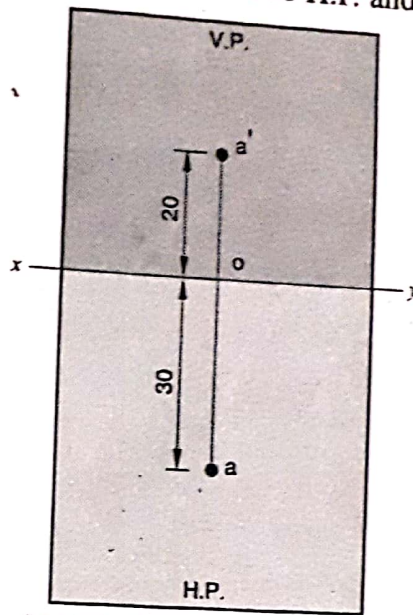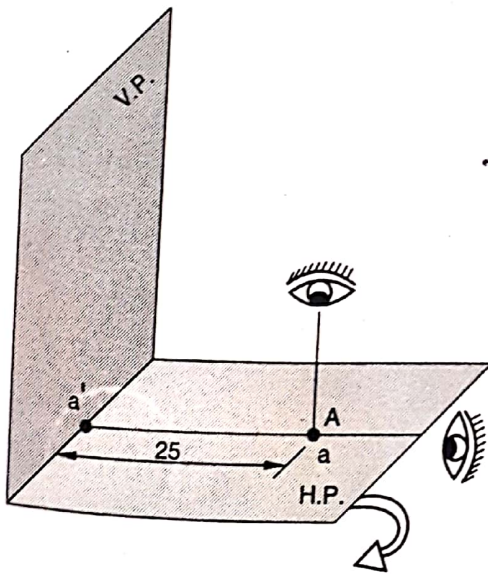
(b) Projections after H.P. rotation
(Analyse the problem)

(c) Projections of a point A
(Final drawing)

Fig. 6.3. Projection of a point A first quadrant.

Problem 6.2. Draw the projections of a point A lying on H.P. and 25 mm in front of V.P.

Solution. Point A is situated in first quadrant – on H.P. and in front of V.P.

(a) Point A in Ist quadant
(Analyse the problem)

(b) Projections after H.P. rotation
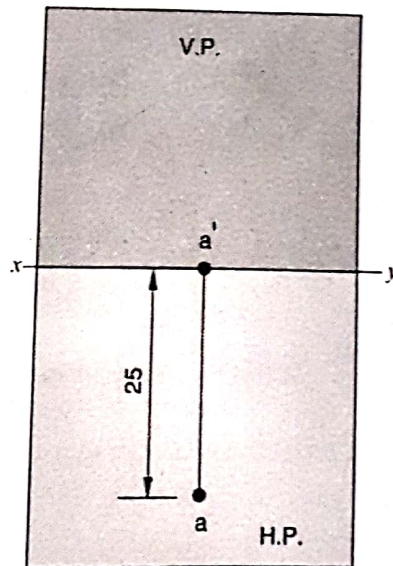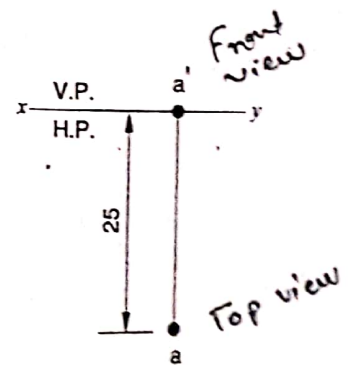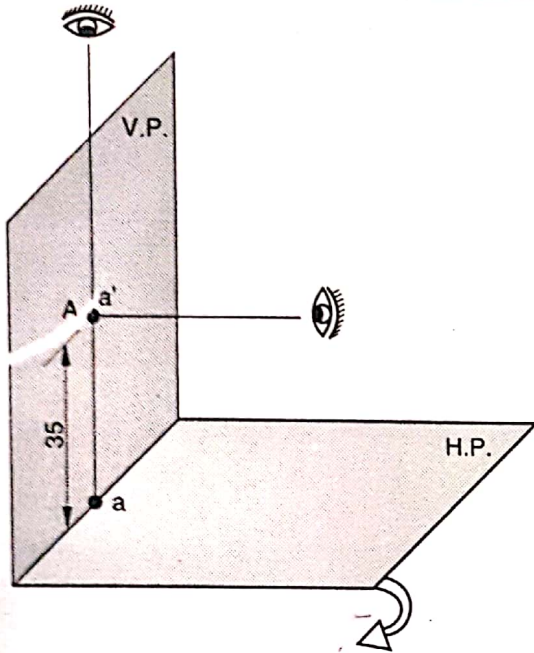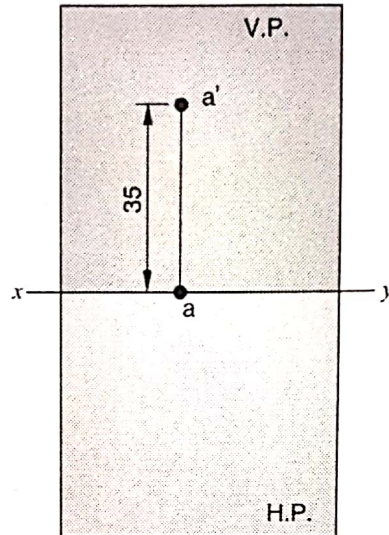(Analyse the problem)

(c) Projections of a point A
(Final drawing)

Fig. 6.4. Projection of a point A in first quadrant.

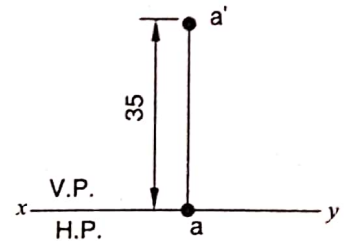**Problem 6.3.** Draw the projections of a point A lying on V.P. and 35 mm above H.P.

Solution. Point A is situated in first quadrant – on V.P. and above H.P.

(a) Point A in Ist quadant	(b) Projections after H.P. rotation	(c) Projections of a point A
(Analyse the problem)	(Analyse the problem)	(Final drawing)

Fig. 6.5. Projections of a point A in first quadrant.

Problem 6.4. A point C is 25 mm above H.P. and 30 mm behind V.P. Draw its projection.

Solution. Point C is situated in second quadrant – above H.P. and behind V.P.

(a) Point C in Ist quadant	(b) Projections after H:P. rotation	(c) Projections of a point C
(Analyse the problem)	(Analyse the problem)	(Final drawing)

Fig. 6.6. Projection of a point C in second quadrant.

Problem 6.5. A point B is 40 mm below H.P. and 30 mm behind V.P. Draw its projections.

Solution. Point B is situated in third quadrant – below H.P. and behind V.P.

(a) Point B in Ist quadant
(Analyse the problem)
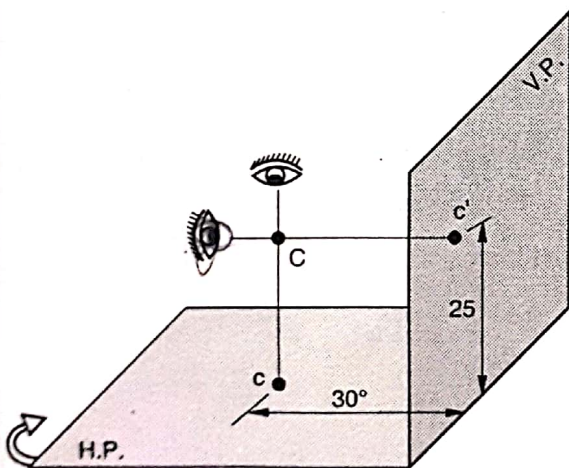
(b) Projections after H.P. rotation
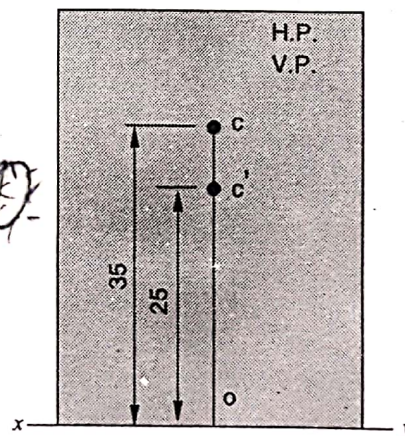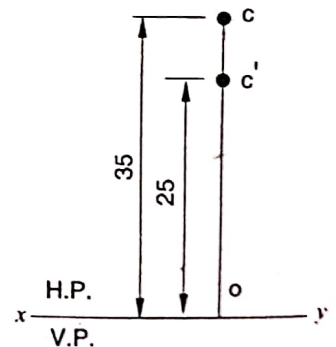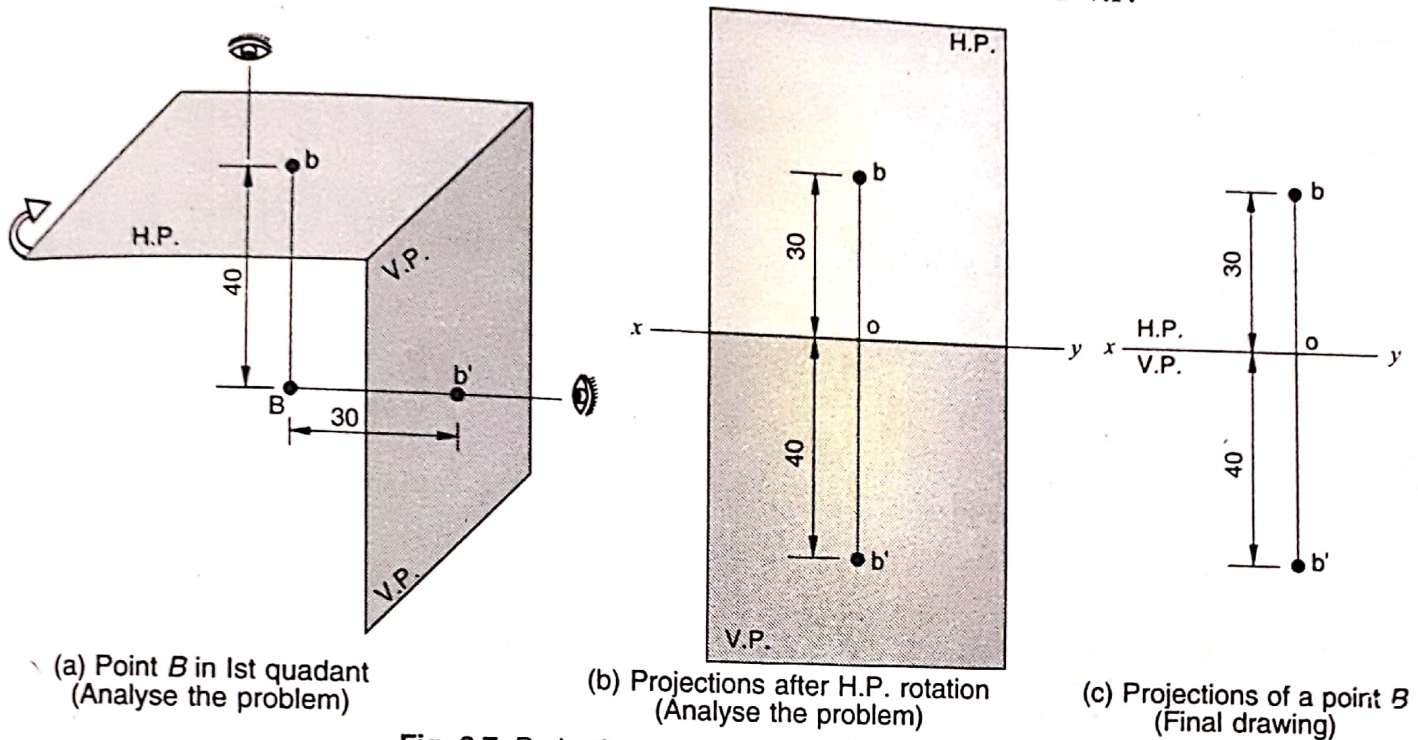(Analyse the problem)

(c) Projections of a point B
(Final drawing)

Fig. 6.7. Projections of a point B in third quadrant.

Problem 6.6. A point D is 25 mm below H.P. and 35 mm in front of V.P., draw its projection.

Solution. Point D is situated in fourth quadrant – below H.P. and in front of V.P.
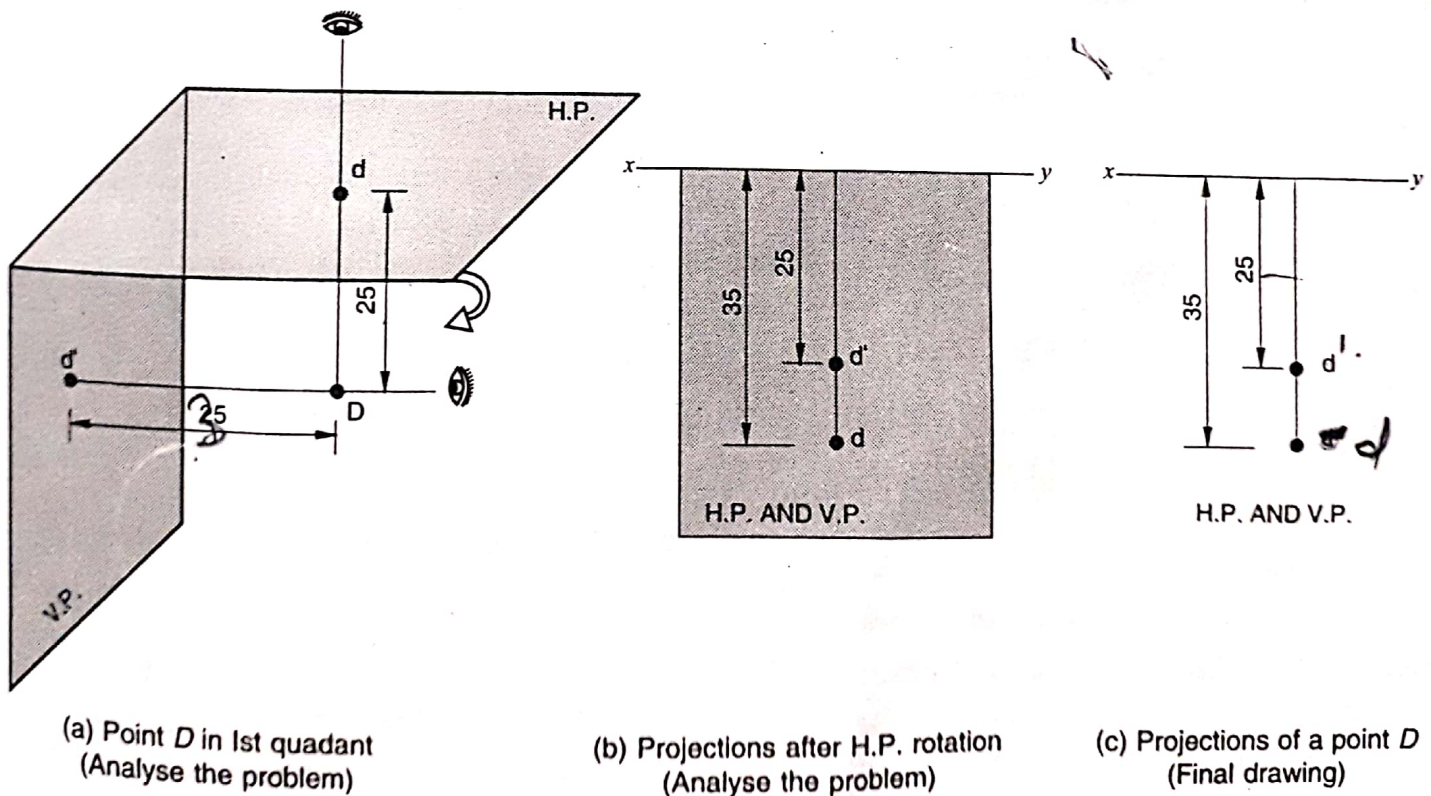

(a) Point D in Ist quadant
(Analyse the problem)

(b) Projections after H.P. rotation
(Analyse the problem)

(c) Projections of a point D
(Final drawing)

Fig. 6.8. Projection of a point D in fourth quadrant.

Problem 6.7. Draw the front, top and side views of a point D, lying 60 mm above H.P. and 40 mm in front of V.P.

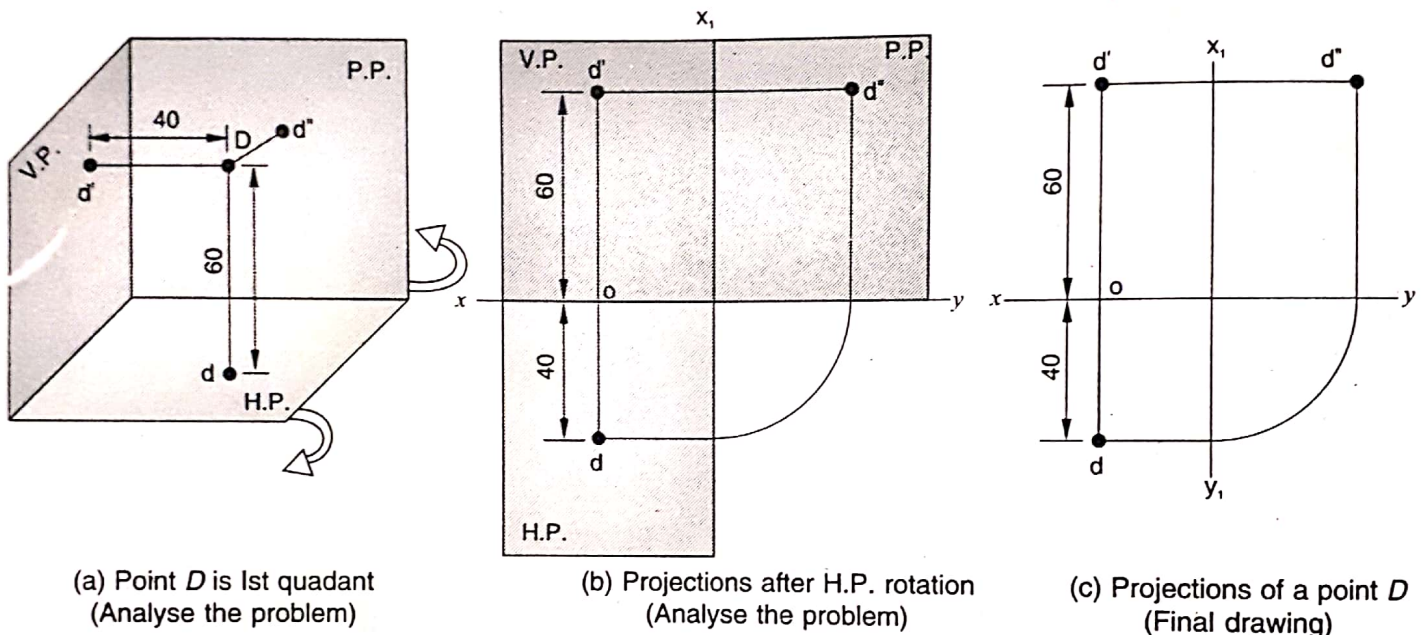**Solution.** Point D is situated in first quadrant – above H.P. and in front of V.P.

(a) Point D is Ist quadant
(Analyse the problem)

(b) Projections after H.P. rotation
(Analyse the problem)

(c) Projections of a point D
(Final drawing)

Fig. 6.9. Projections of a point D in first quadrant.

Problem 6.8. A point P is 20 mm above the H.P. and its shortest distance from xy line is 55 mm. The point lies in the first quadrant. Show its plan, elevation and side view.
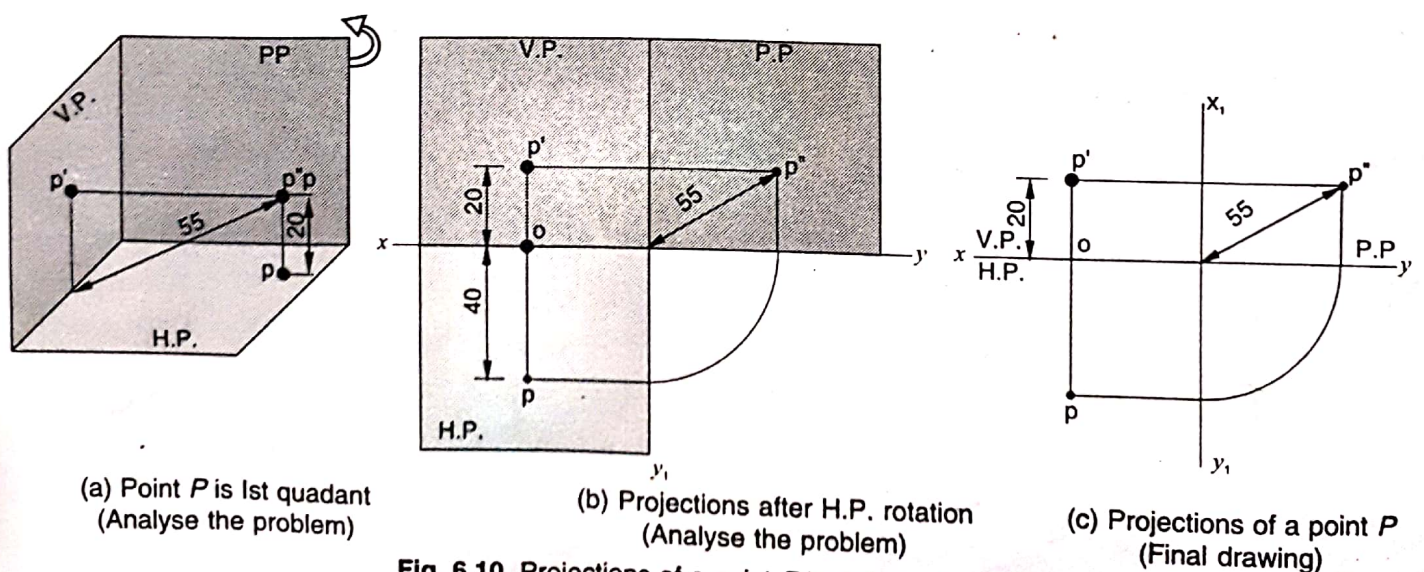
Solution. Point P is situated in first quadrant.

(a) Point P is Ist quadant
(Analyse the problem)

(b) Projections after H.P. rotation
(Analyse the problem)

(c) Projections of a point P
(Final drawing)

Fig. 6.10. Projections of a point P in first quadrant.