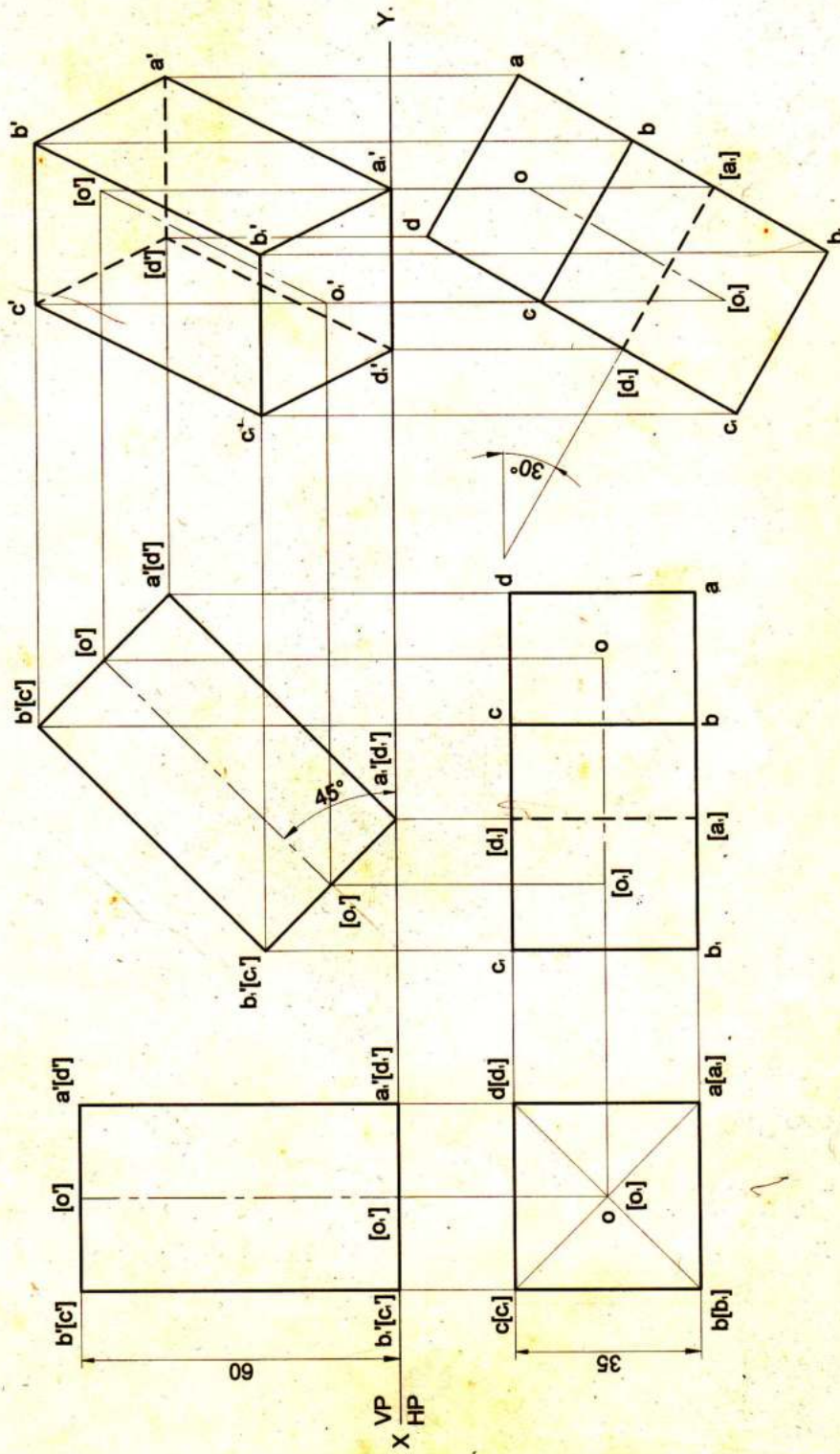


# CHAPTER 4

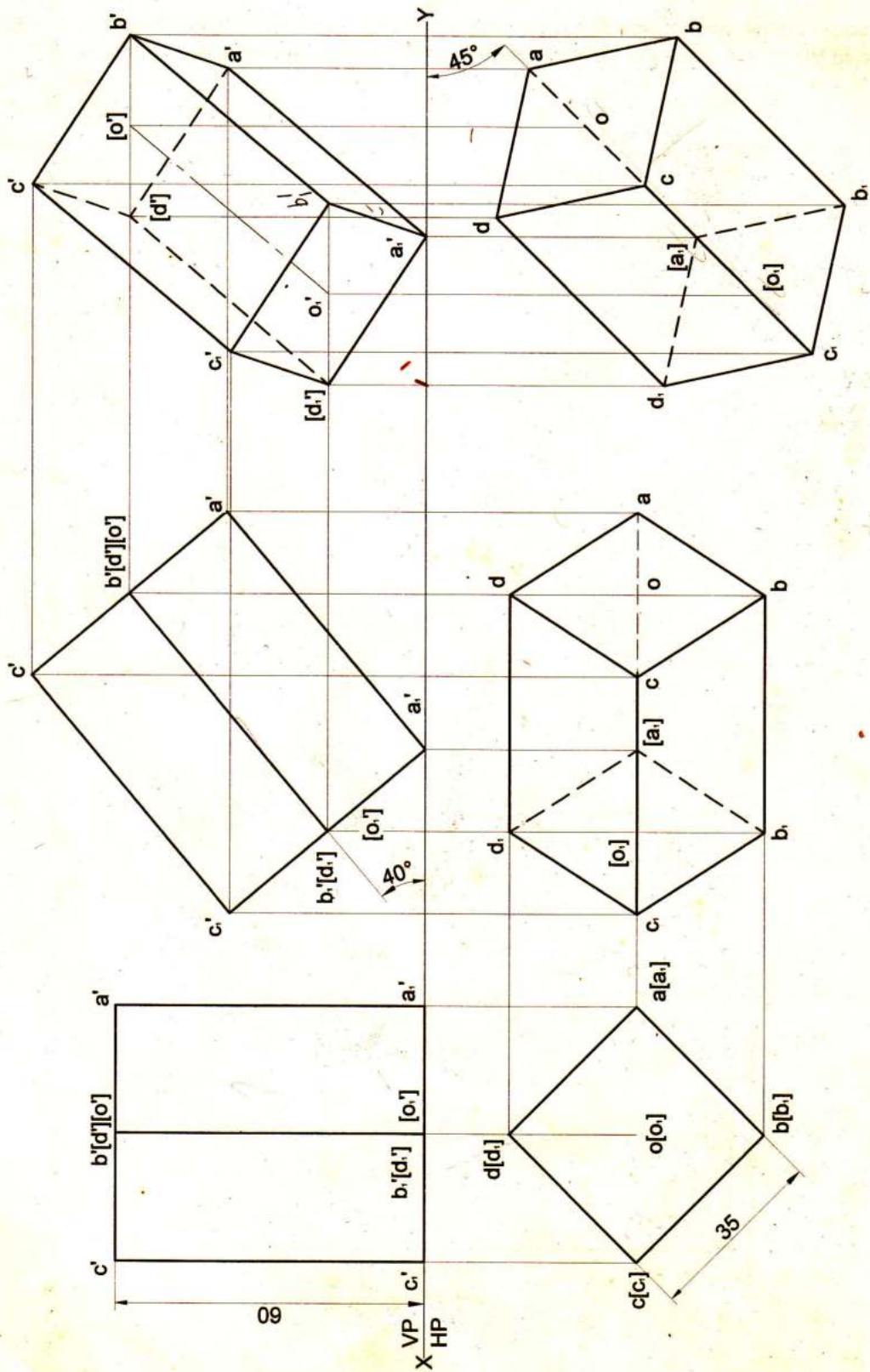
## PROJECTIONS OF SOLIDS

**Problem 1** A square prism 35 mm sides of base and 65 mm axis length rests on HP on one of its edges of the base which is inclined to VP at  $30^\circ$ . Draw the projections of the prism when the axis is inclined to HP at  $45^\circ$ .

**Solution**

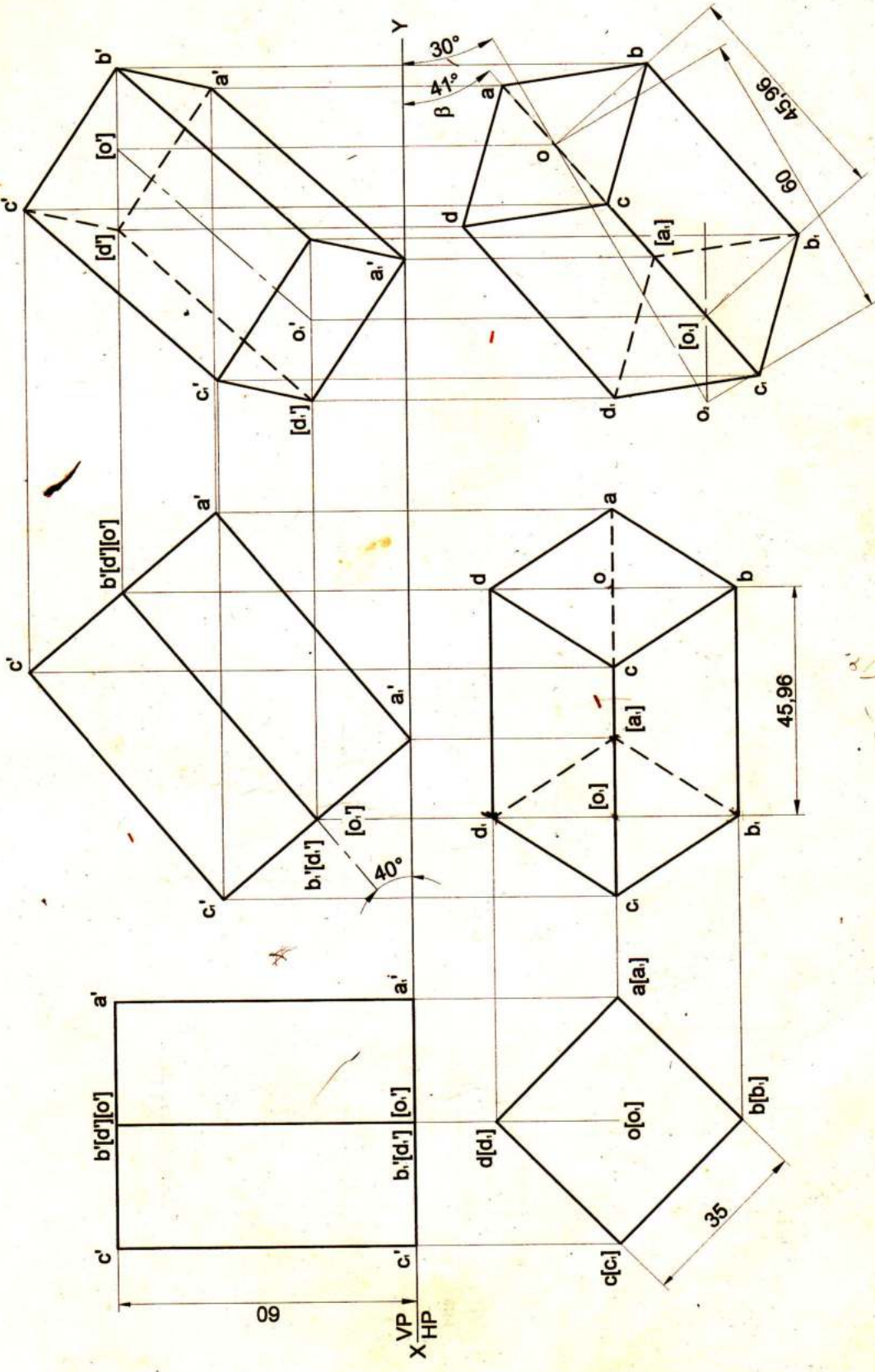


**Problem 2** A square prism 35 mm sides of base and 60 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at  $40^\circ$  and appears to be inclined to VP at  $45^\circ$ .  
**Solution**



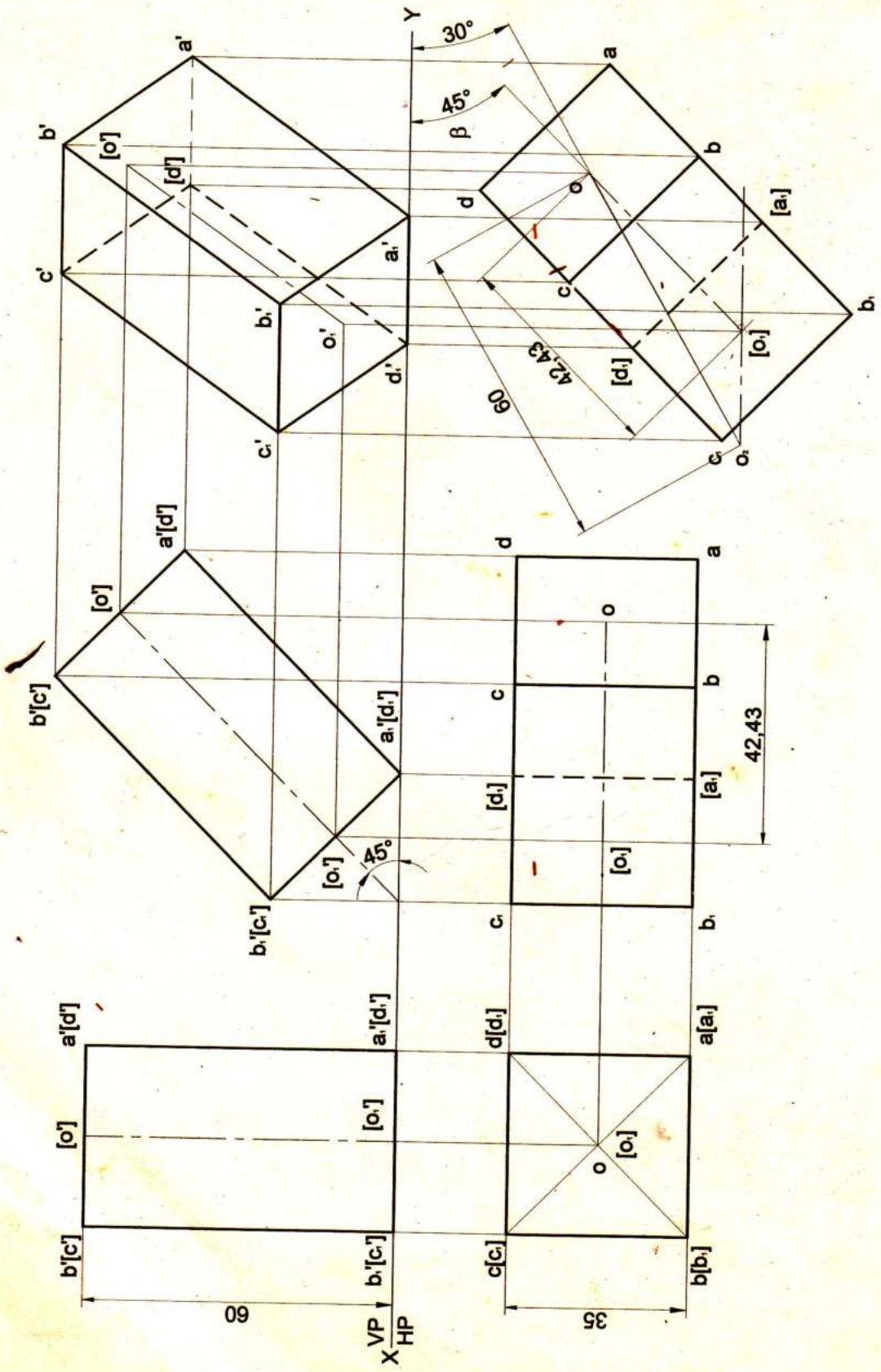
**Problem 3** A square prism 35 mm sides of base and 60 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at  $40^\circ$  and to VP at  $30^\circ$ .

**Solution**



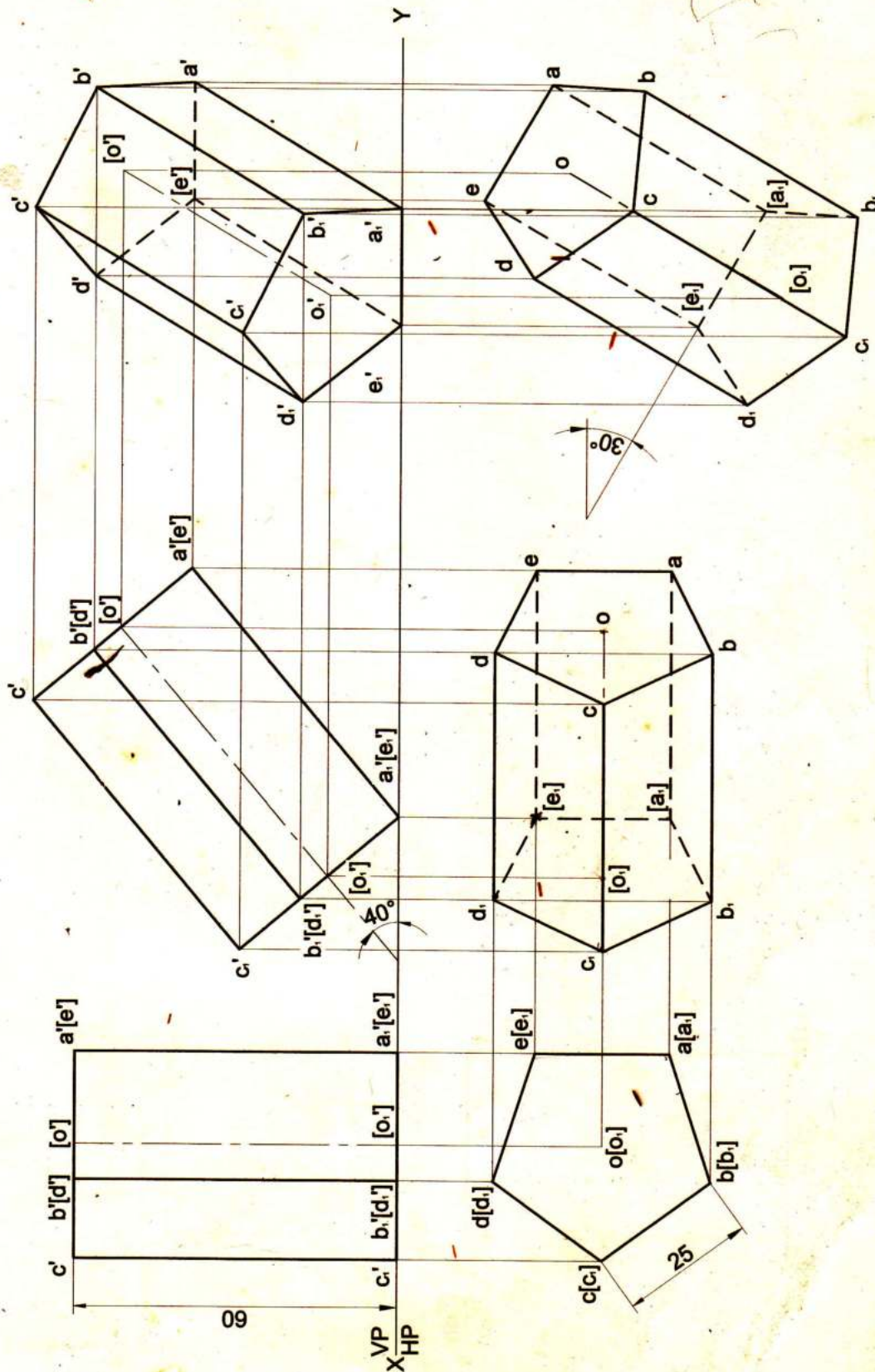
**Problem 4** A square prism 35 mm sides of base and 60 mm axis length rests on HP on one of its edges of the base. Draw the projections of the prism when the axis is inclined to HP at  $45^\circ$  and VP at  $30^\circ$ .

**Solution**



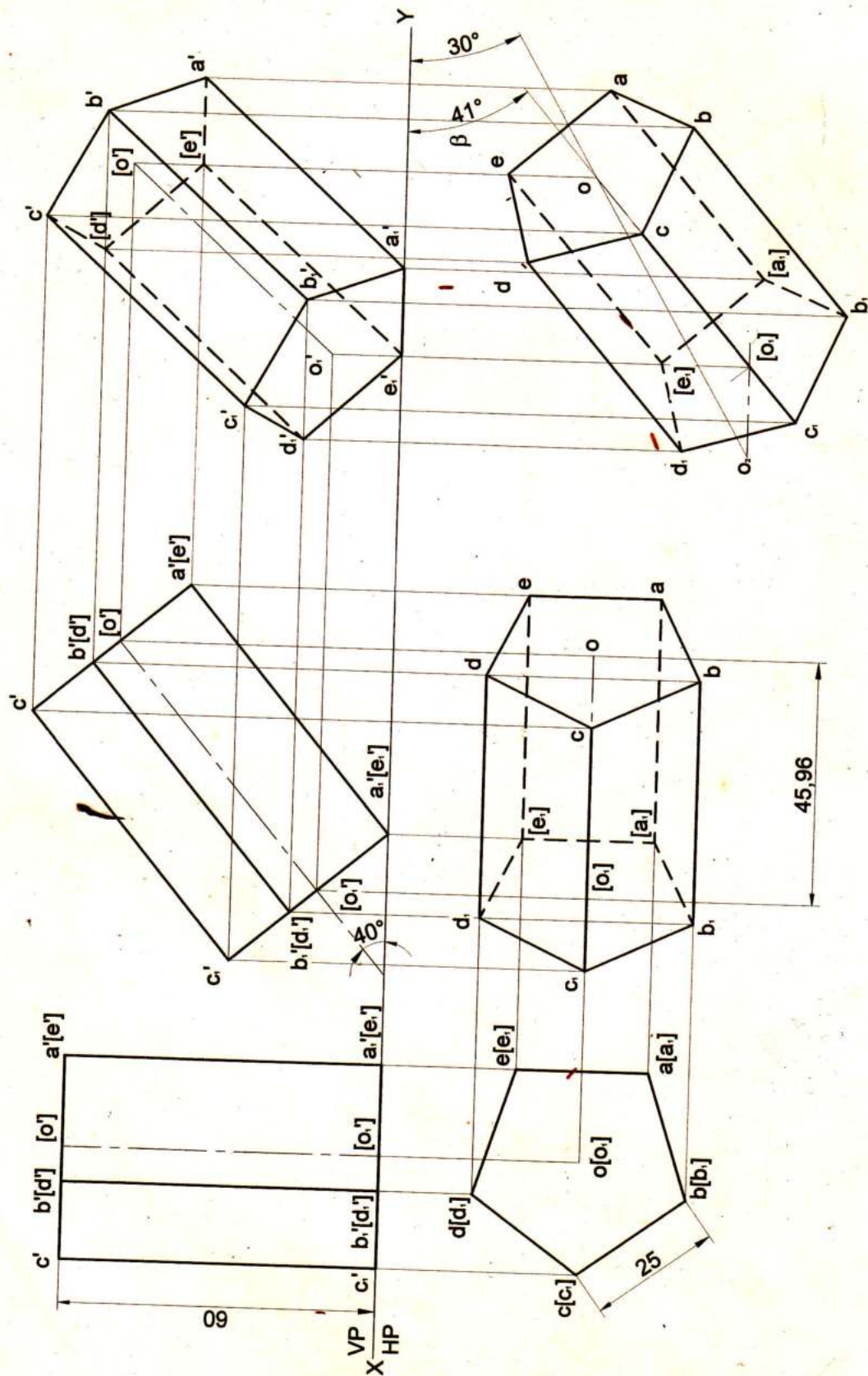
**Problem 5** A pentagonal prism 25 mm sides of base and 60 mm axis length rests on HP on one of its edges of the base which is inclined to VP at  $30^\circ$ . Draw the projections of the prism when the axis is inclined to HP at  $40^\circ$ .

**Solution**

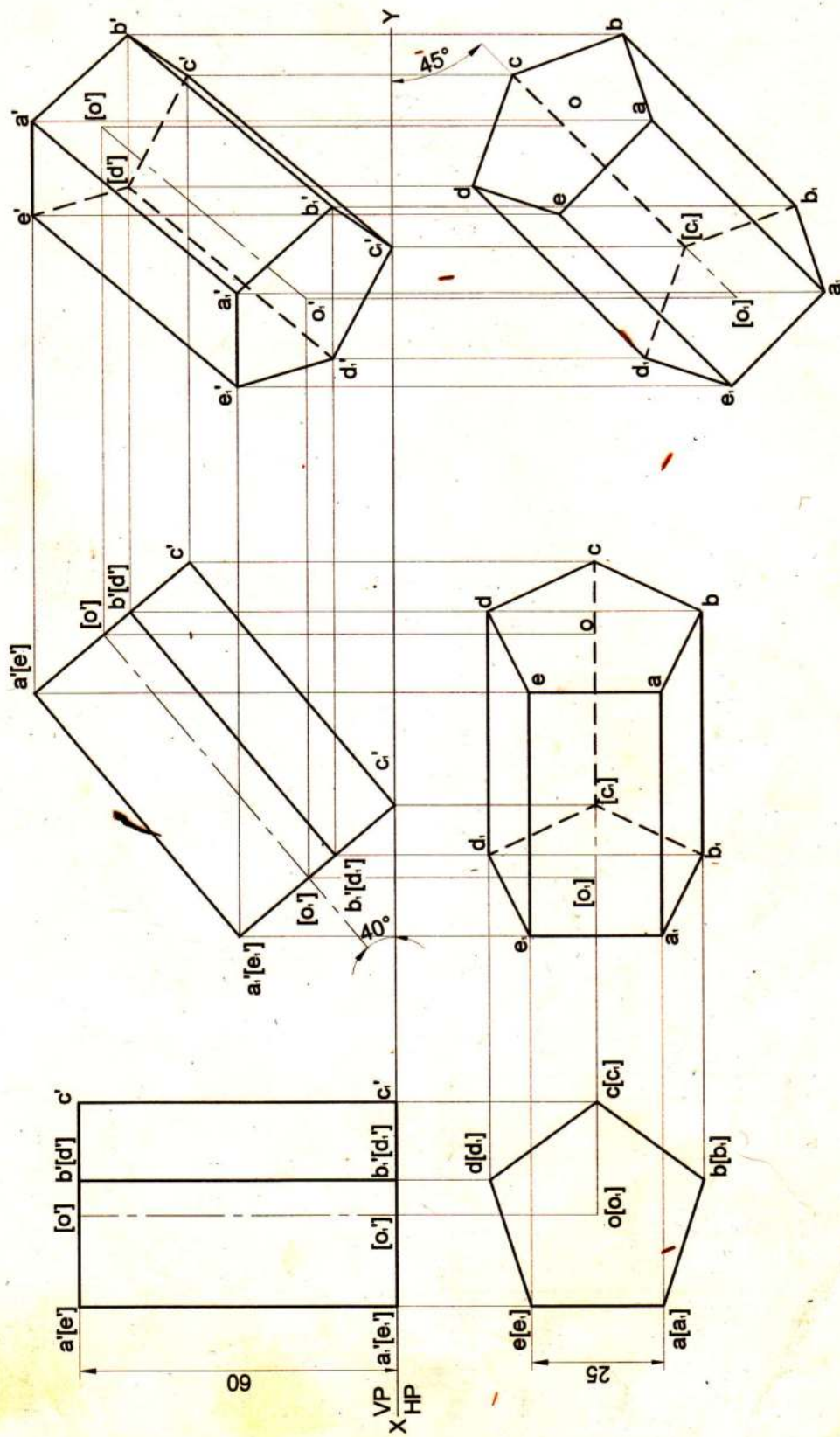


**Problem 6** A pentagonal prism 25 mm sides of base and 60 mm axis length rests on HP on one of its edges of the base. Draw the projections of the prism when the axis is inclined to HP at  $40^\circ$  and VP at  $30^\circ$ .

**Solution**

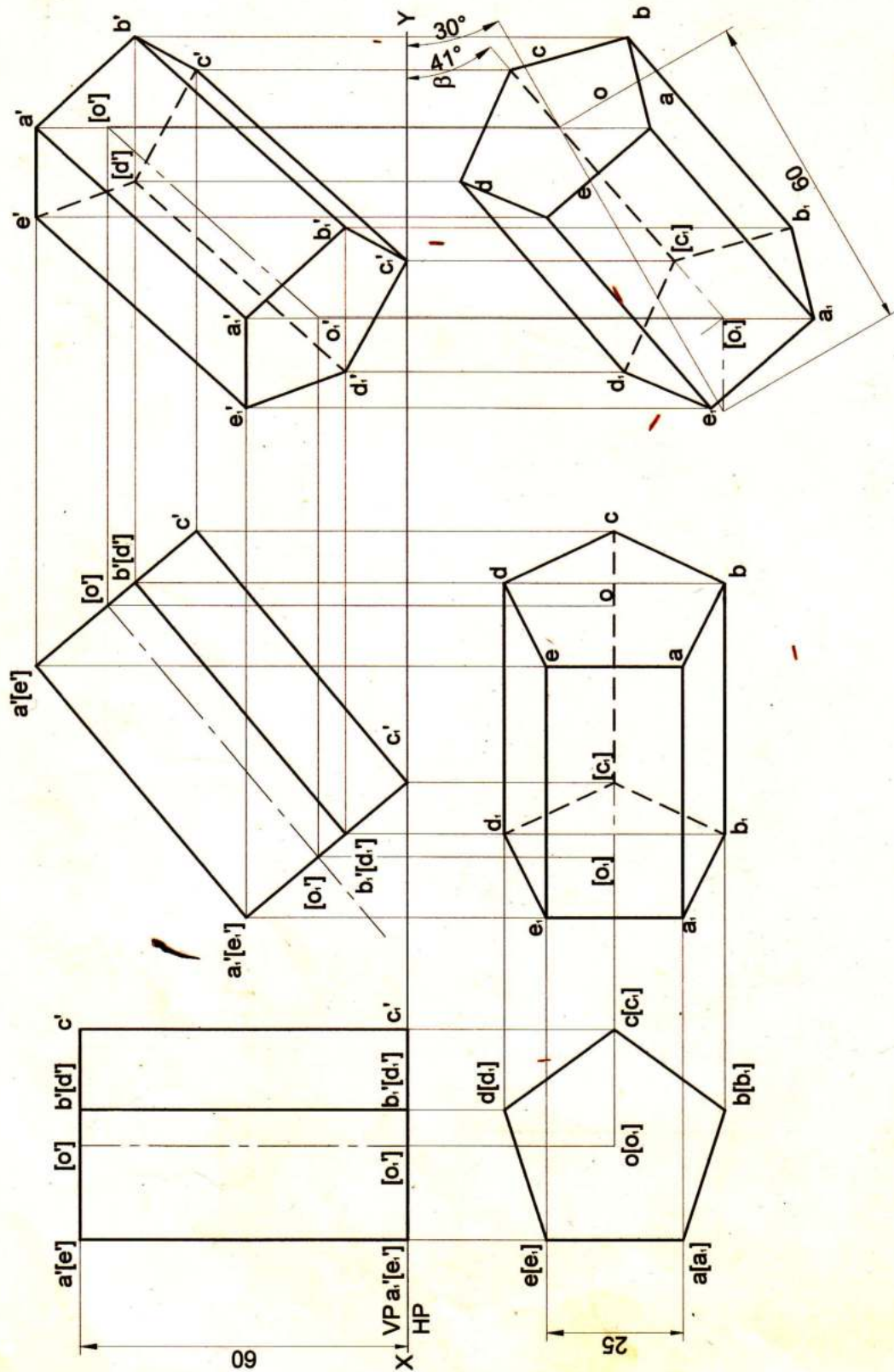


**Problem 7** A pentagonal prism 25 mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at  $40^\circ$  and appears to be inclined to VP at  $45^\circ$ .  
**Solution**



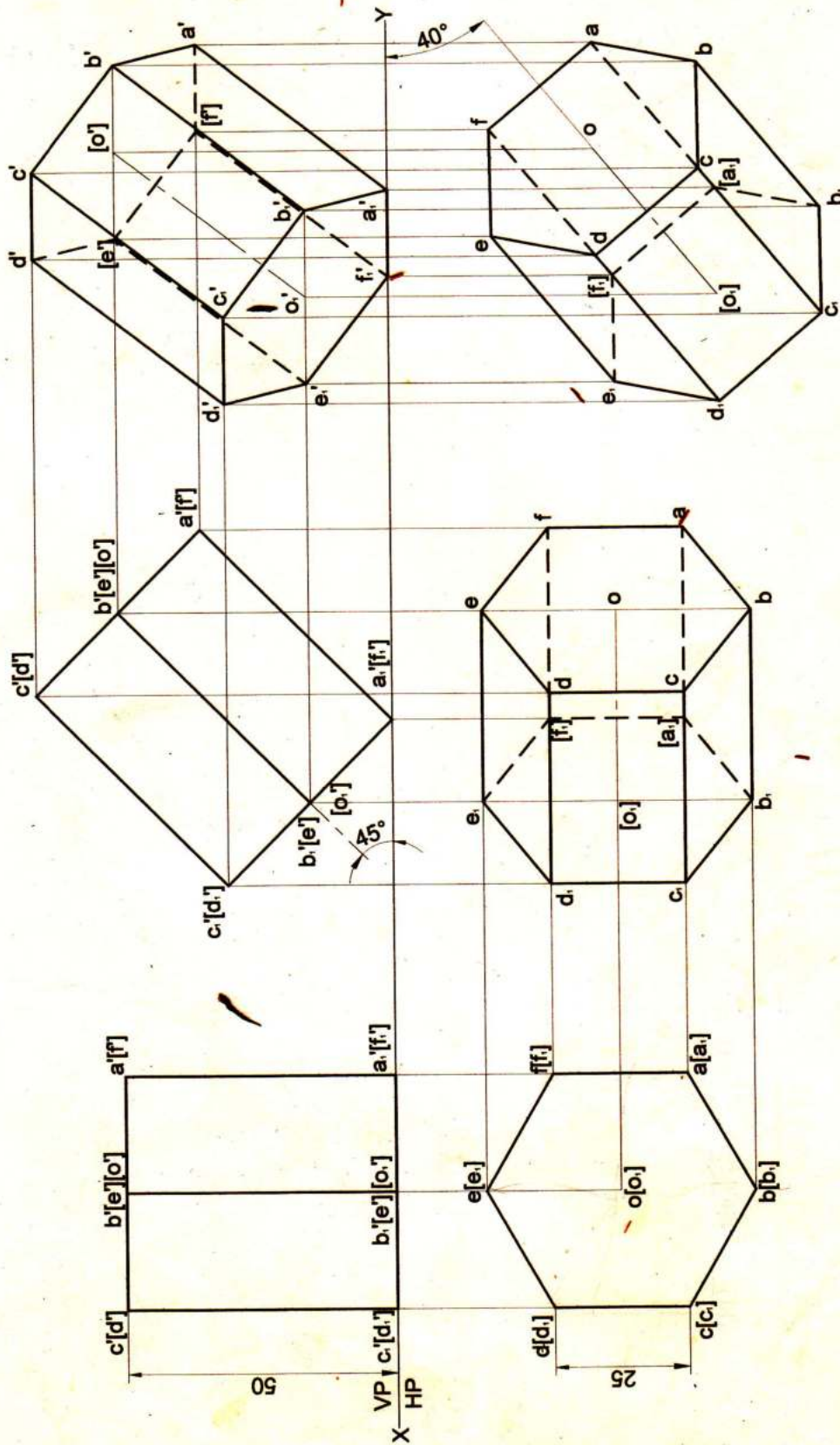
**Problem 8** A pentagonal prism 25 mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at  $40^\circ$  and to VP at  $30^\circ$ .

**Solution**



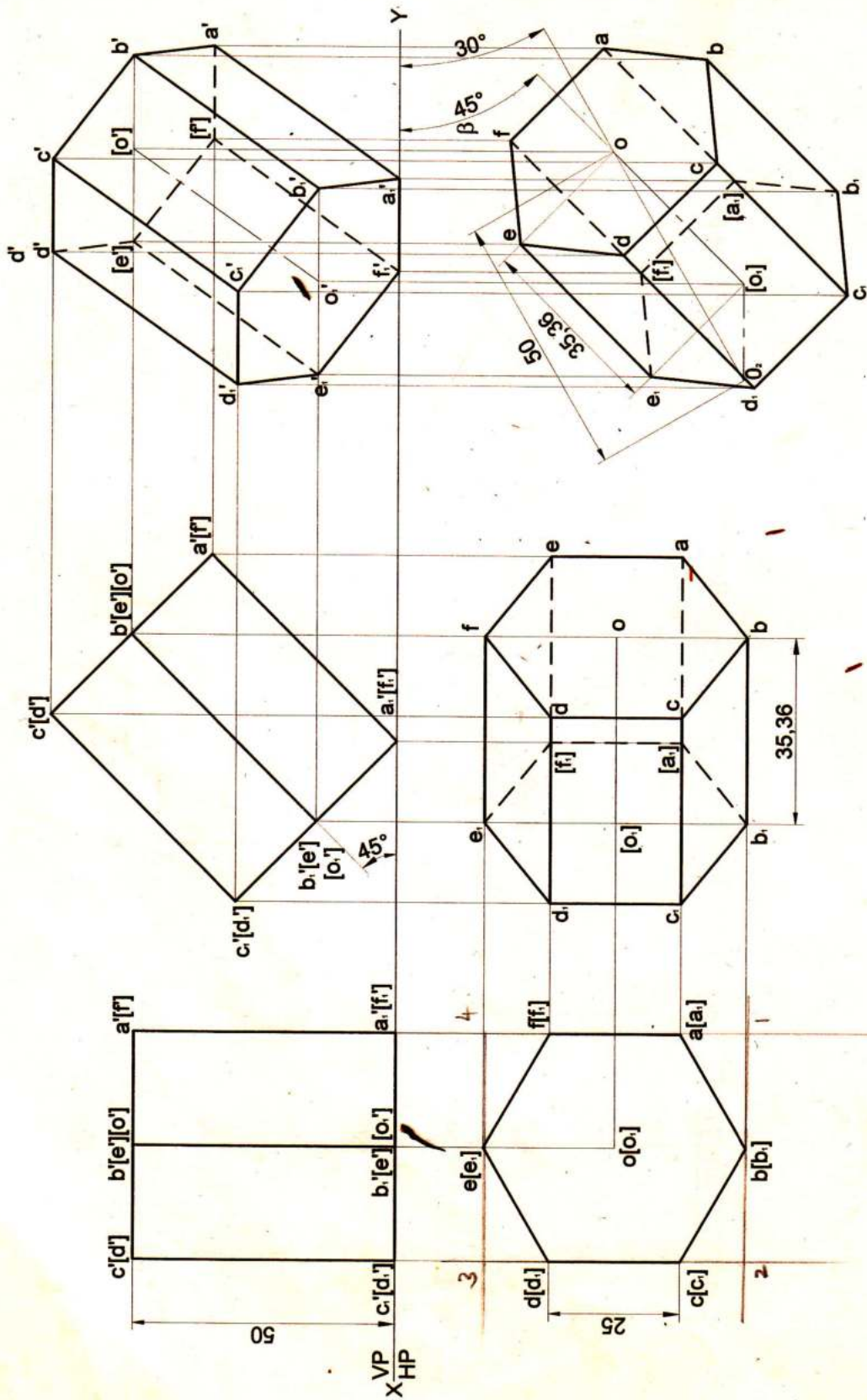


**Problem 9** A hexagonal prism 25 mm sides of base and 50 mm axis length rests on HP on one of its edges. Draw the projections of the prism when the axis is inclined to HP at  $45^\circ$  and appears to be inclined to VP  $40^\circ$ .  
**Solution**

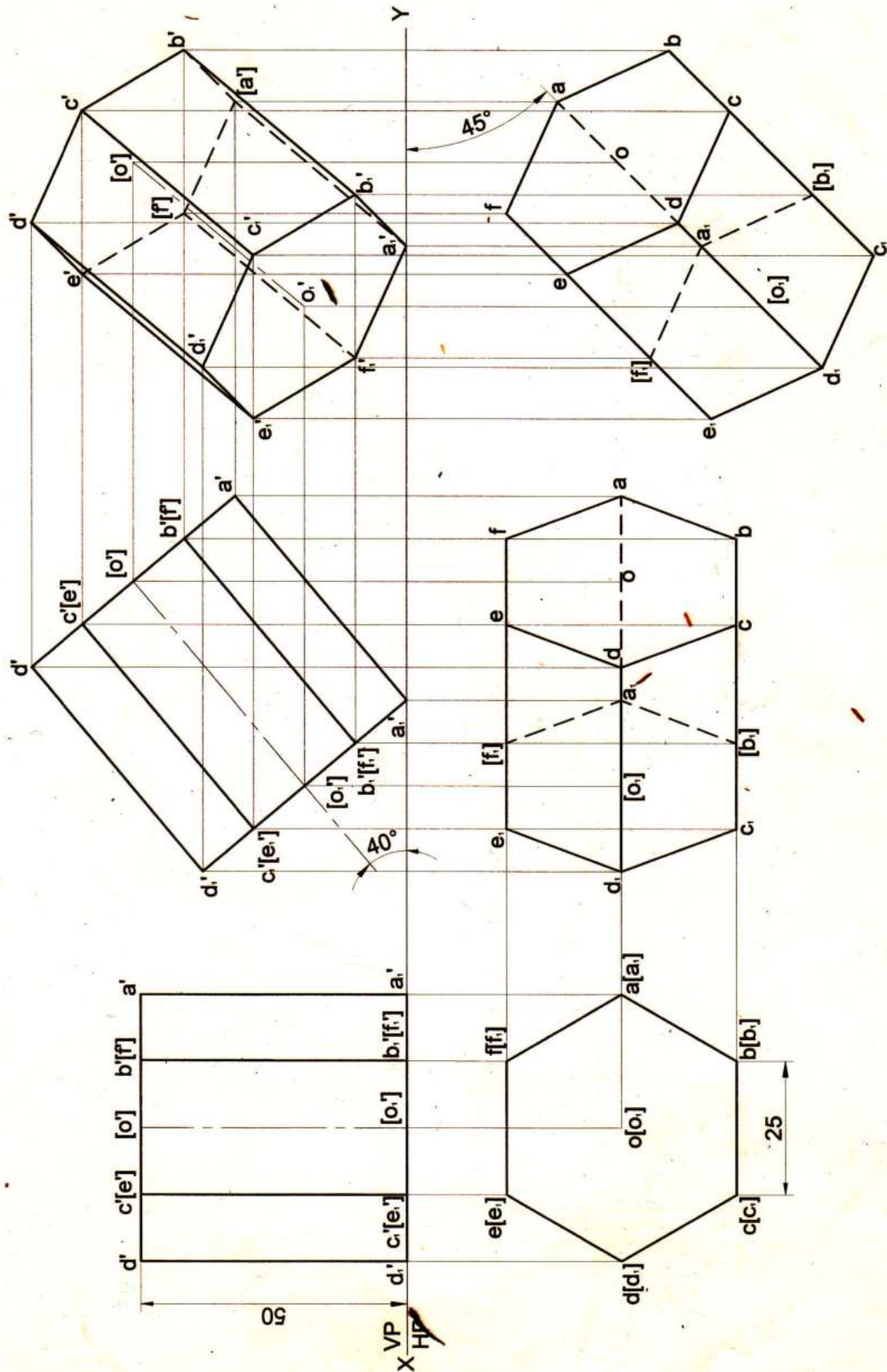


**Problem 10** A hexagonal prism 25 mm sides of base and 50 mm axis length rests on HP on one of its edges of the base. Draw the projections of the prism when the axis is inclined to HP at  $45^\circ$  and VP at  $30^\circ$ .

**Solution**

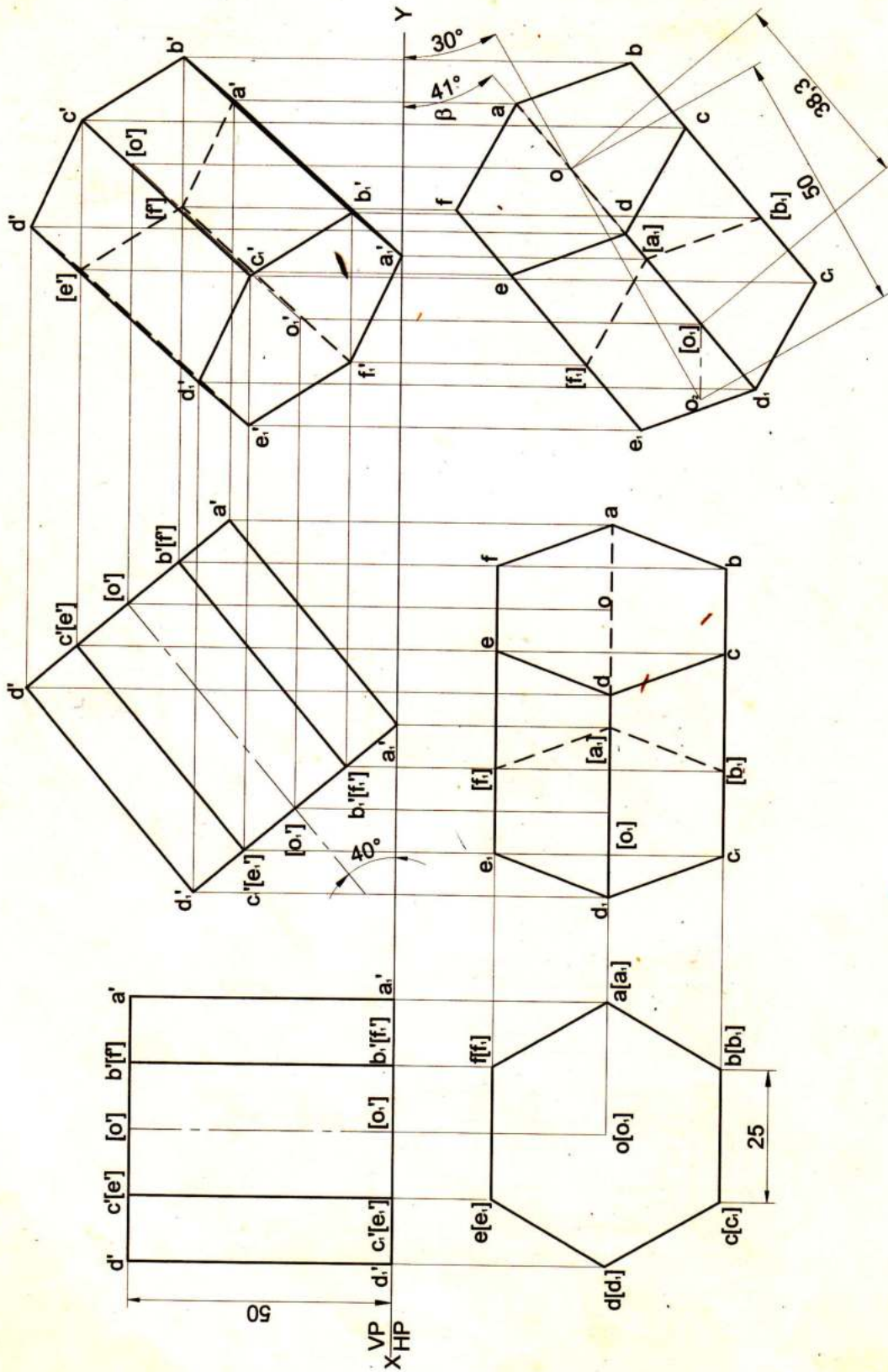


**Problem 11** A hexagonal prism 25 mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at  $40^\circ$  and appears to be inclined to VP at  $45^\circ$ .  
**Solution**



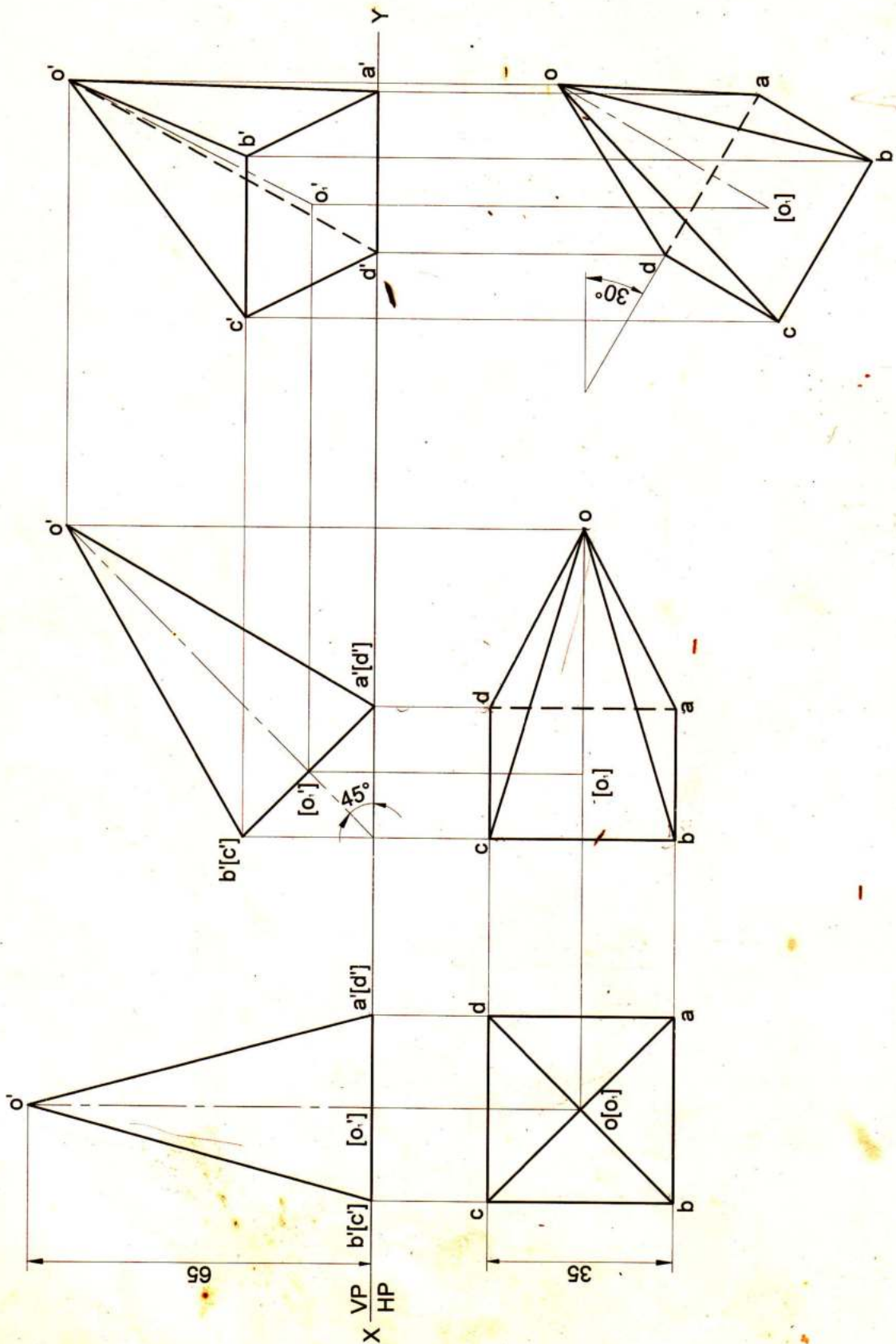
**Problem 12** A hexagonal prism 25 mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the prism when the axis of the prism is inclined to HP at  $40^\circ$  and to VP at  $30^\circ$ .

**Solution**



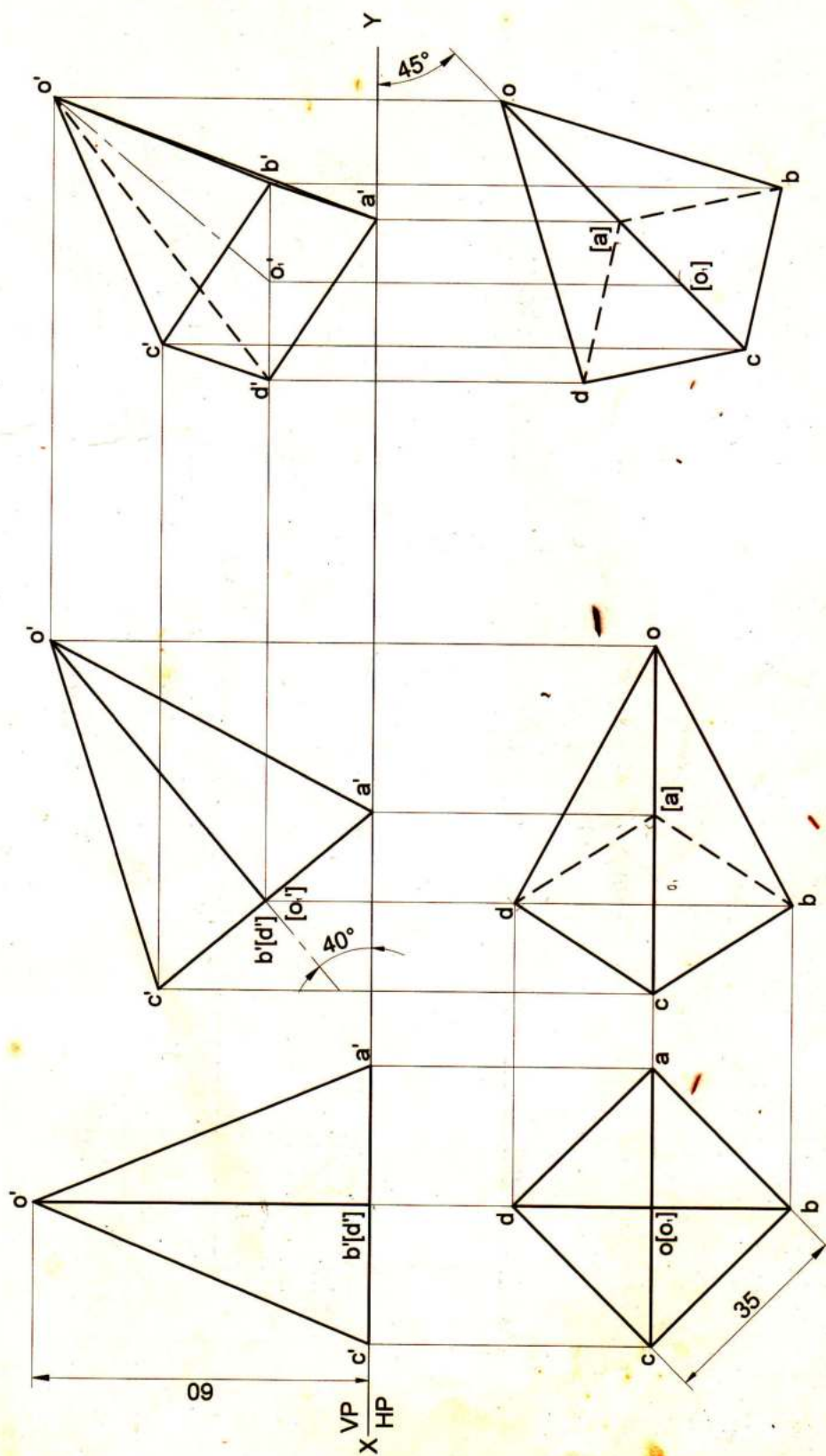
**Problem 16A** A square pyramid 35 mm sides of base and 65 mm axis length rests on HP on one of its edges of the base which is inclined to VP at  $30^\circ$ . Draw the projections of the pyramid when the axis is inclined to HP at  $45^\circ$ .

**Solution**



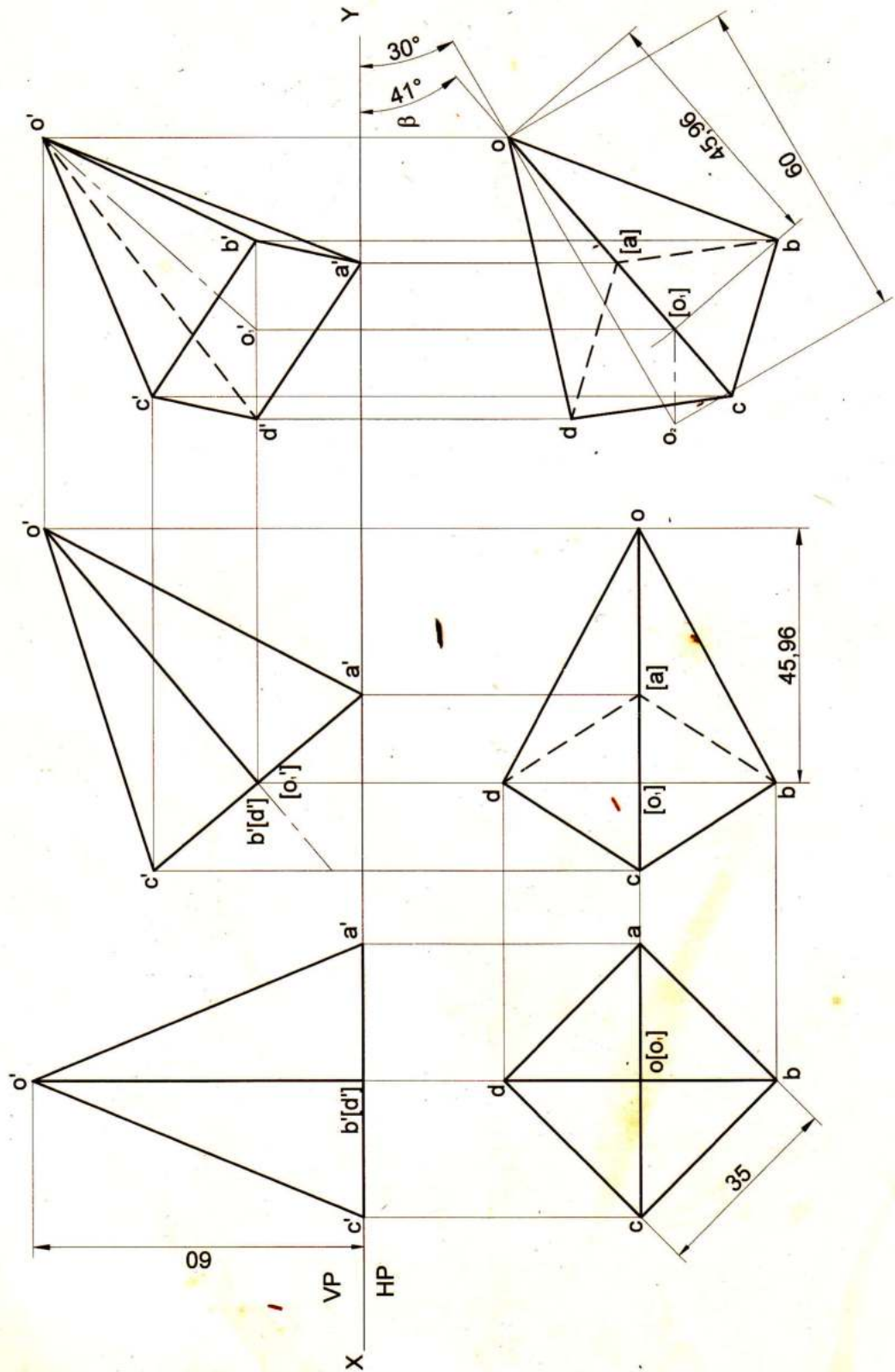
**Problem 17** A square pyramid 35 mm sides of base and 60 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at  $40^\circ$  and appears to be inclined to VP at  $45^\circ$ .

**Solution**



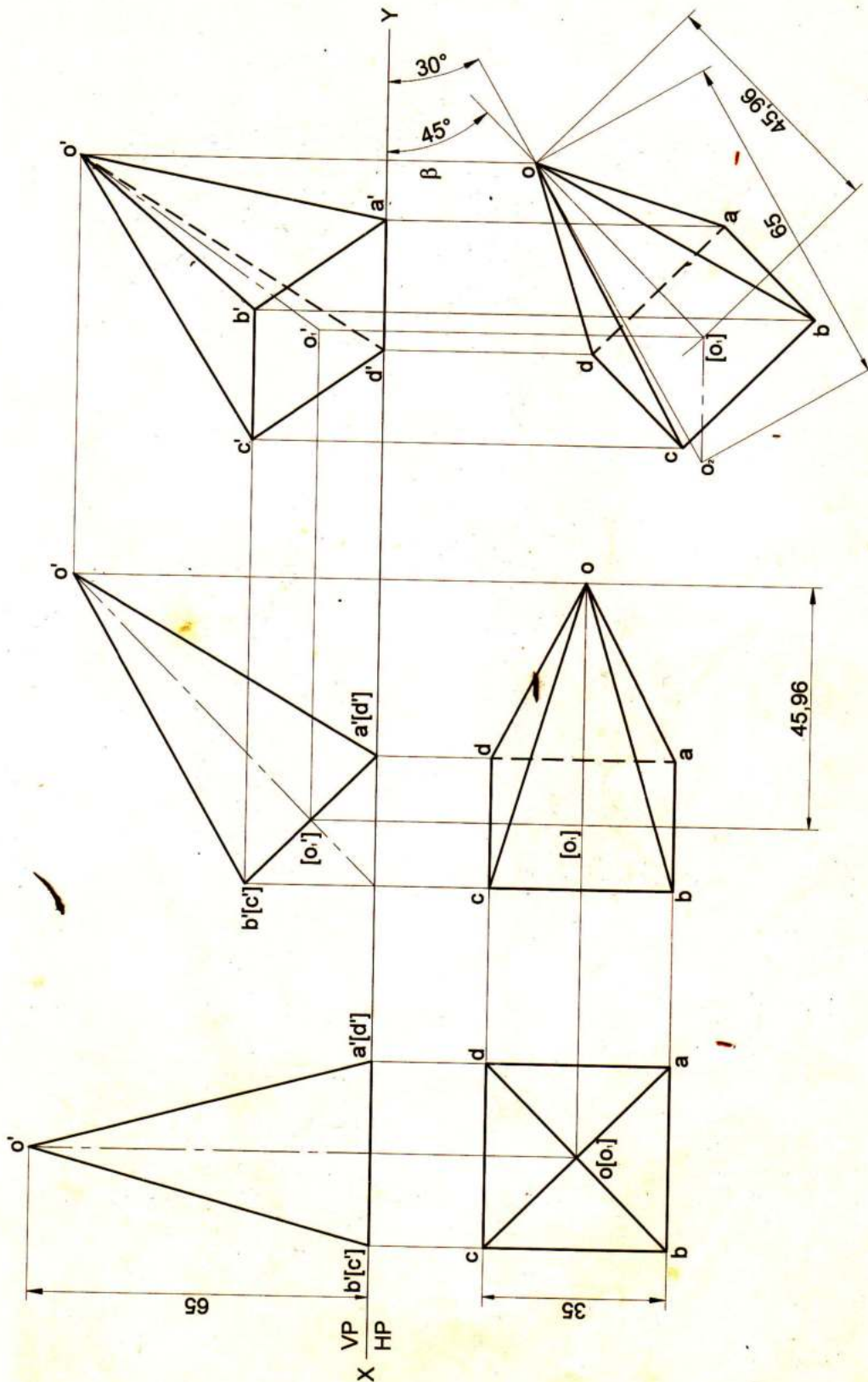
**Problem 18** A square pyramid 35 mm sides of base and 60 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at  $40^\circ$  and to VP at  $30^\circ$ .

**Solution**



**Problem 19** A square pyramid 35 mm sides of base and 60 mm axis length rests on HP on one of its edges of the base. Draw the projections of the pyramid when the axis is inclined to HP at  $45^\circ$  and VP at  $30^\circ$ .

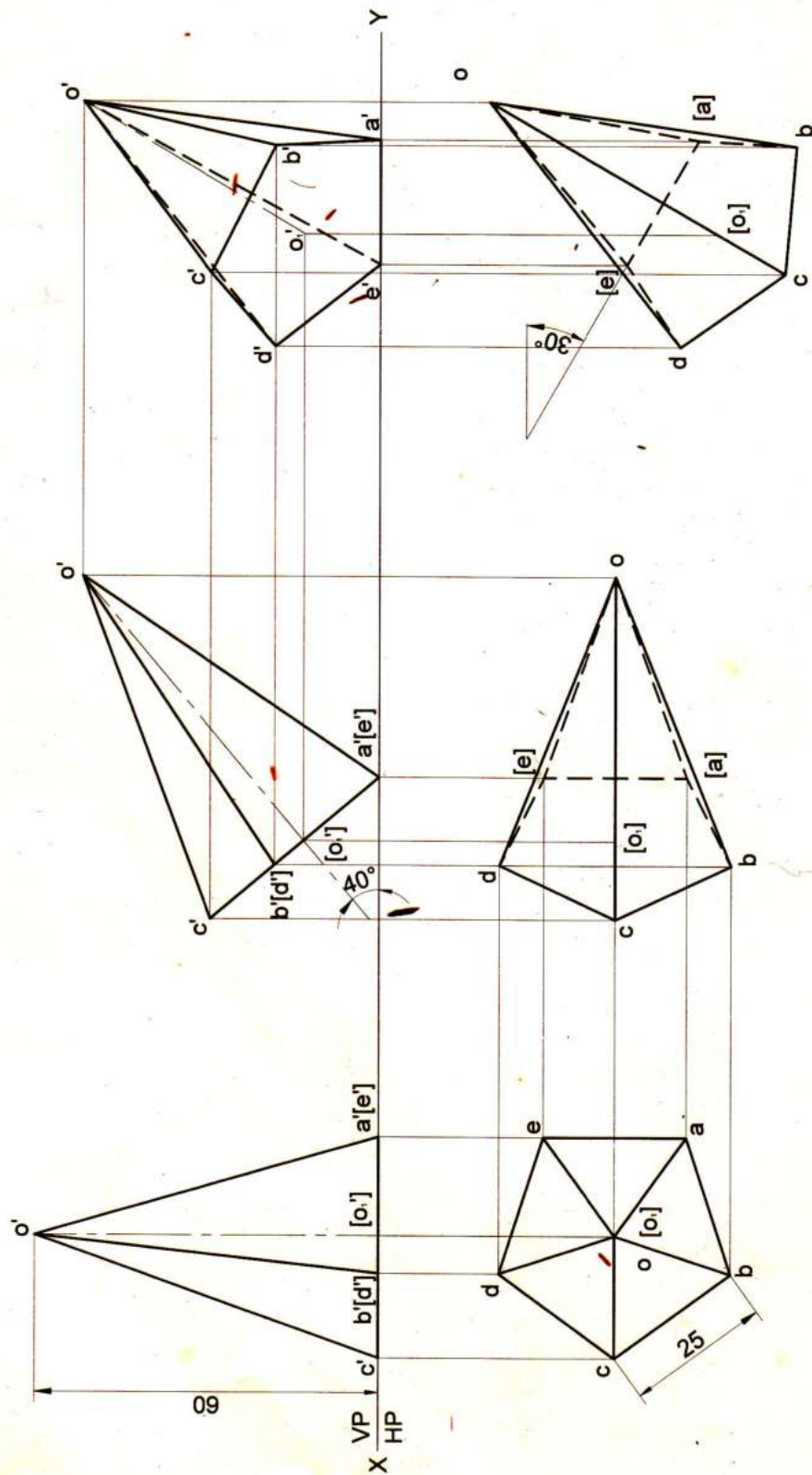
**Solution**





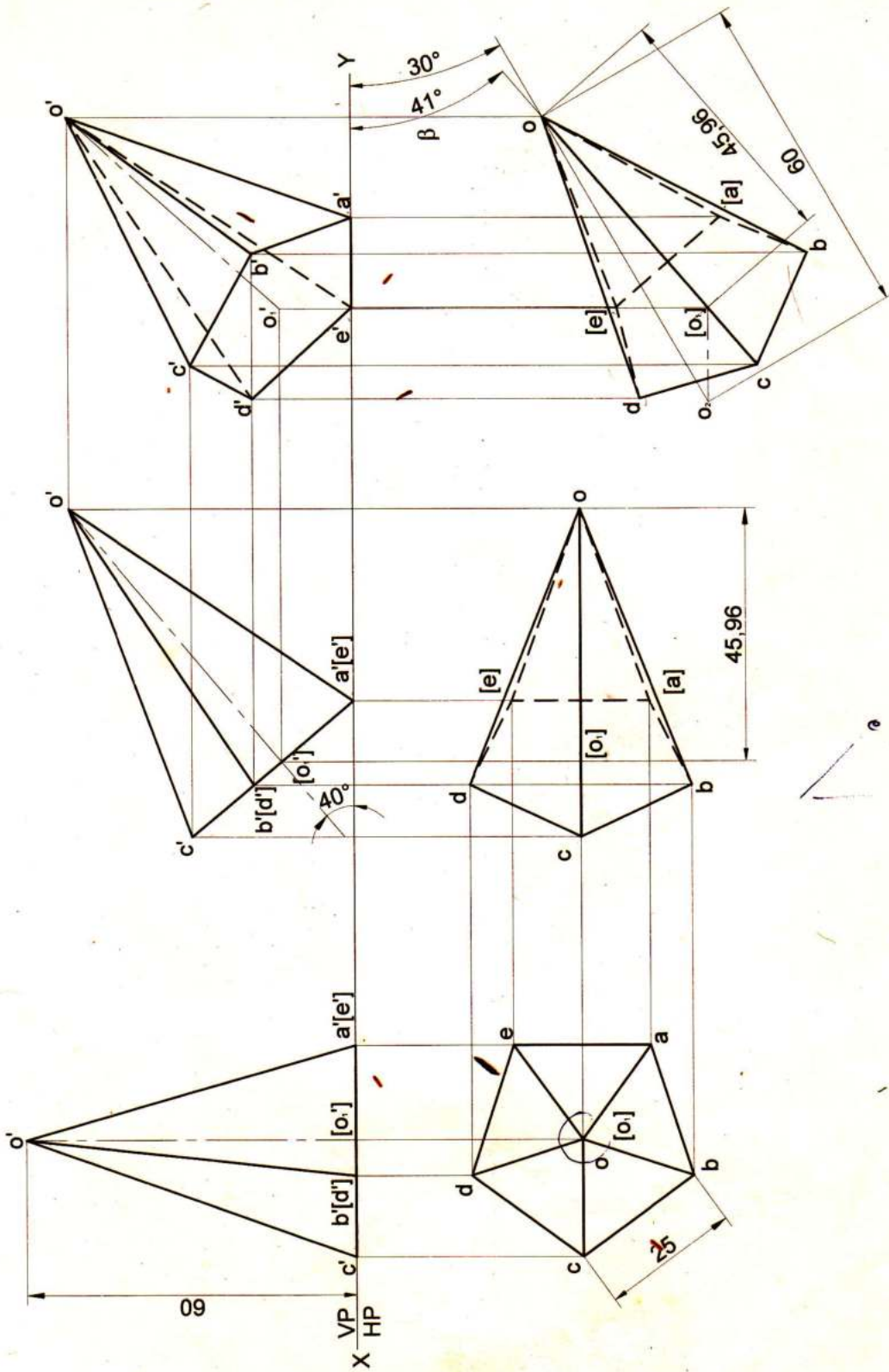
**Problem 20** A pentagonal pyramid 25 mm sides of base and 60 mm axis length rests on HP on one of its edges of the base which is inclined to VP at  $30^\circ$ . Draw the projections of the pyramid when the axis is inclined to HP at  $40^\circ$ .

**Solution**



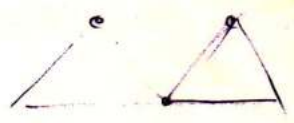
**Problem 21** A pentagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its edges of the base. Draw the projections of the pyramid when the axis is inclined to HP at  $45^\circ$  and VP at  $30^\circ$ .

**Solution**



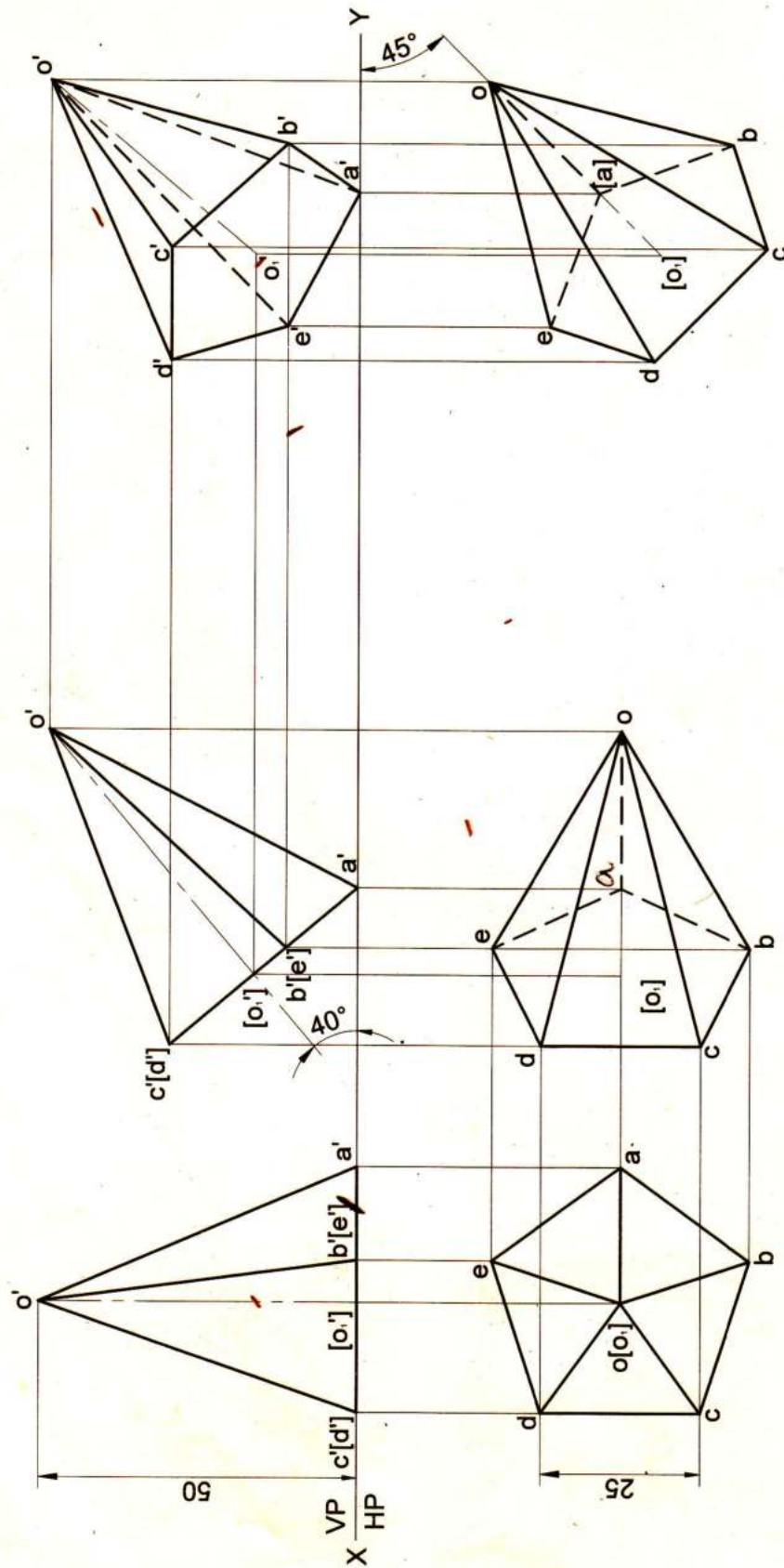
36

$\frac{50}{3} = 16.66$



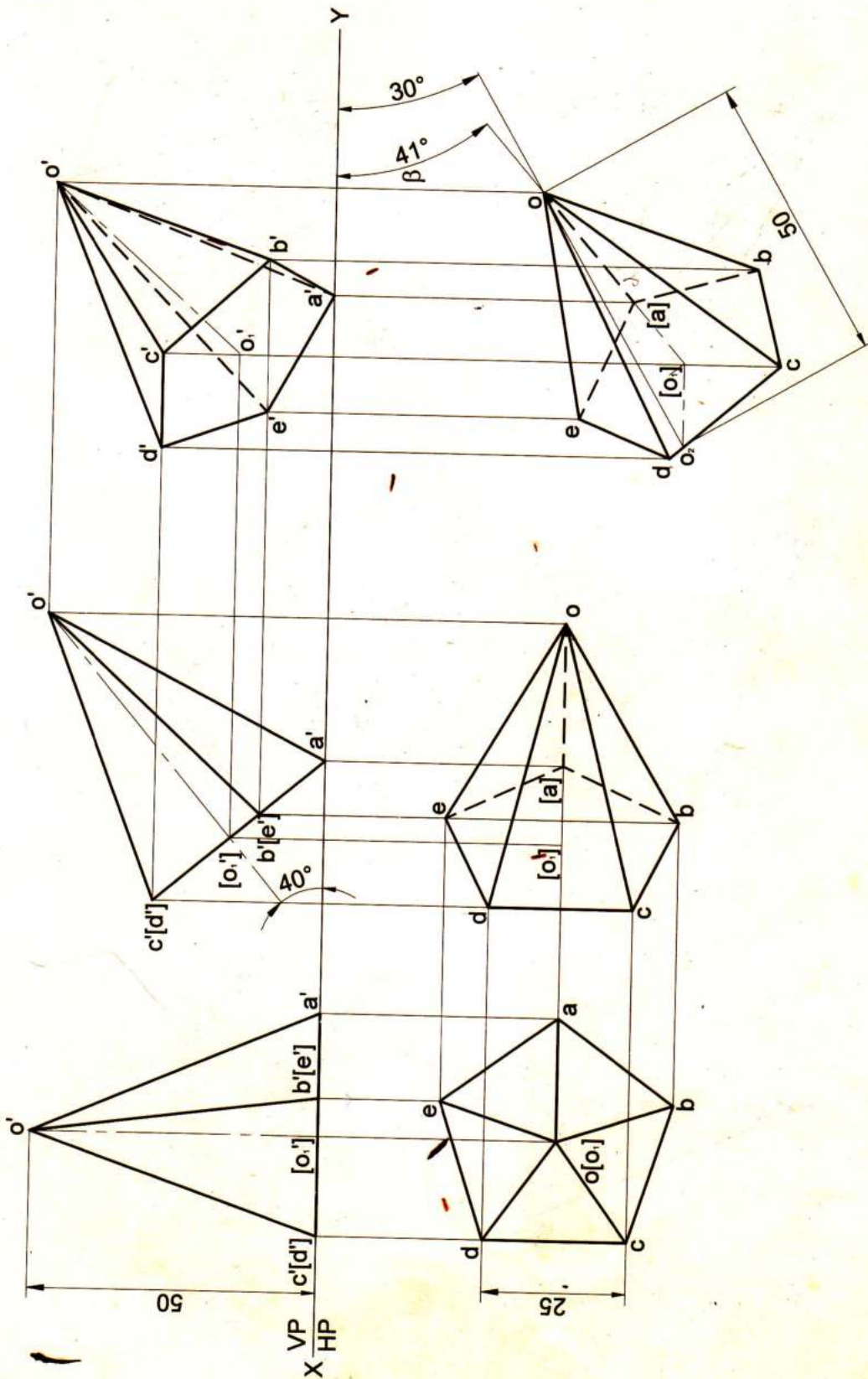
**Problem 22** A pentagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at  $40^\circ$  and appears to be inclined to VP at  $45^\circ$ .

**Solution**

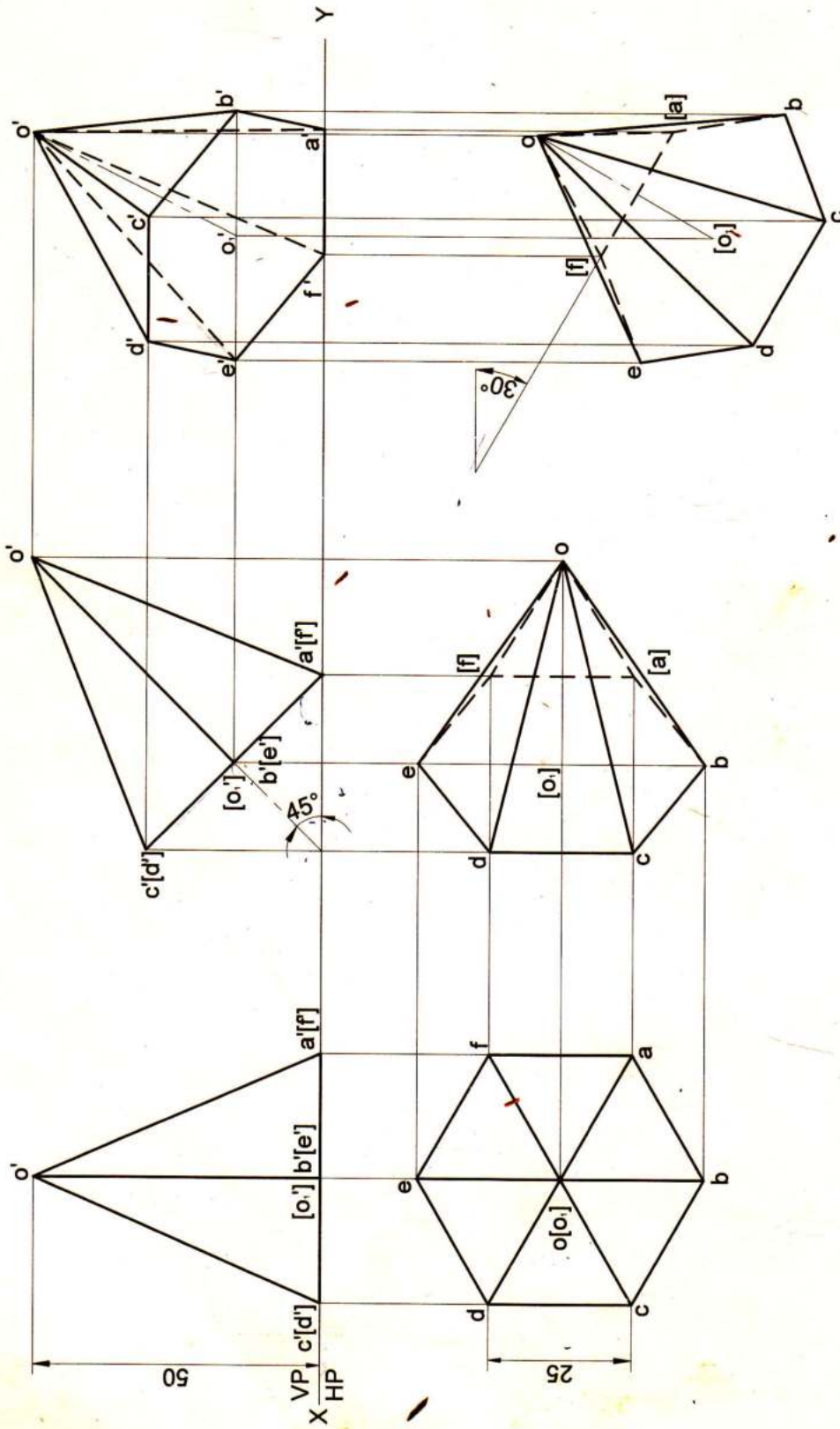


**Problem 23** A pentagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at  $40^\circ$  and to VP at  $30^\circ$ .

**Solution**

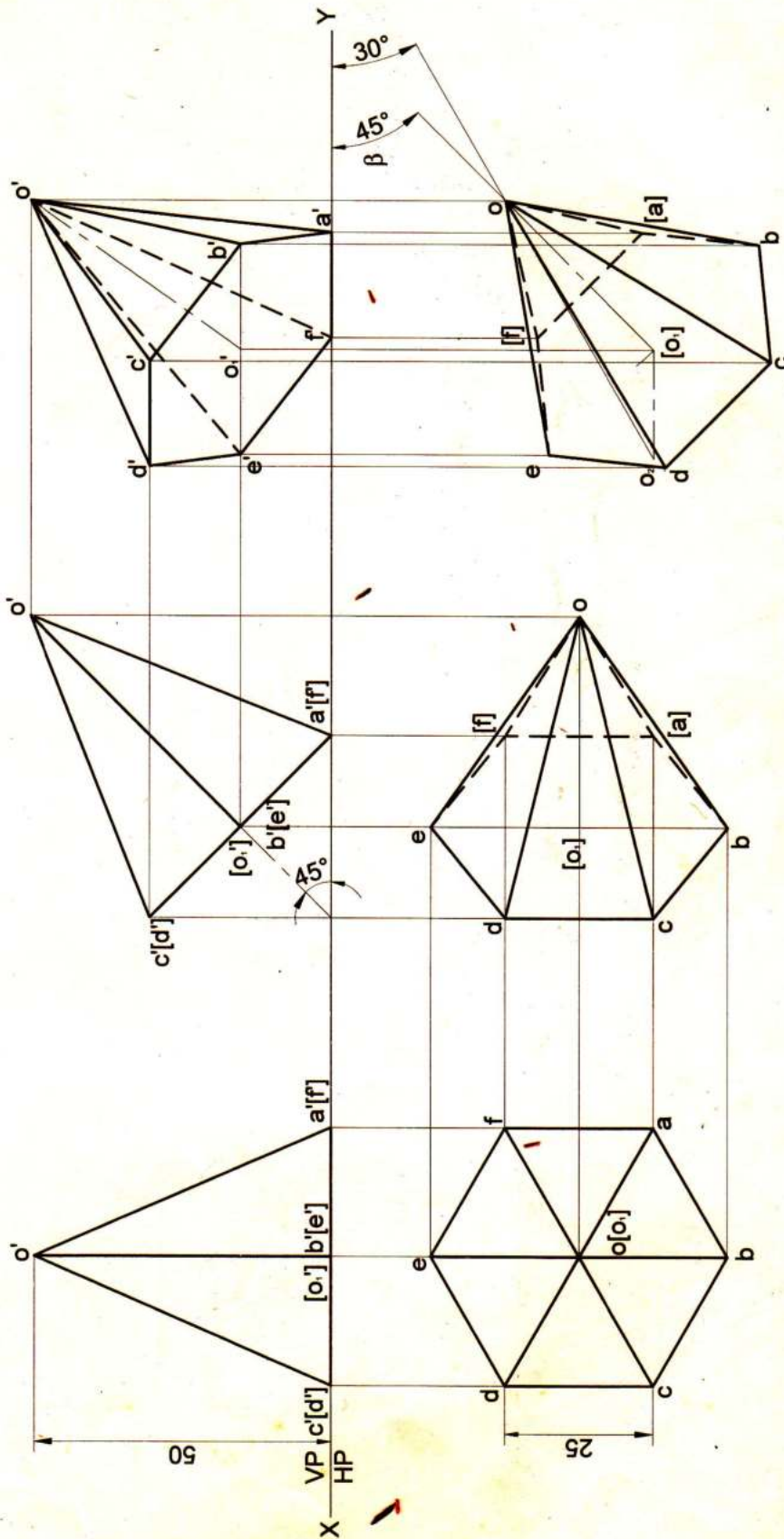


**Problem 24** A hexagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its edges of the base which is inclined to VP at  $30^\circ$ . Draw the projections of the pyramid when the axis is inclined to HP at  $45^\circ$ .  
**Solution**



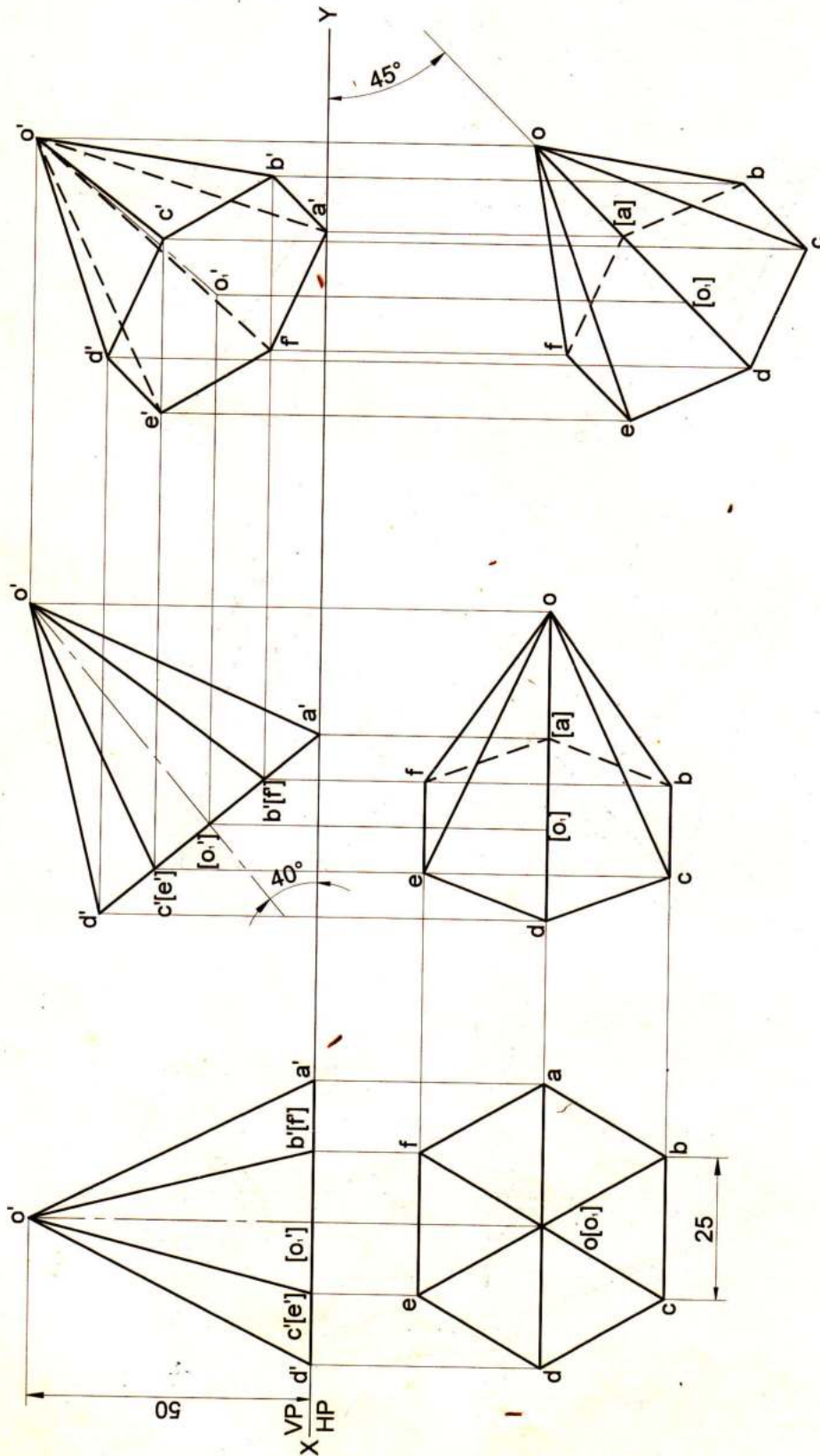
**Problem 25** A hexagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its edges of the base. Draw the projections of the pyramid when the axis is inclined to HP at  $45^\circ$  and VP at  $30^\circ$ .

**Solution**



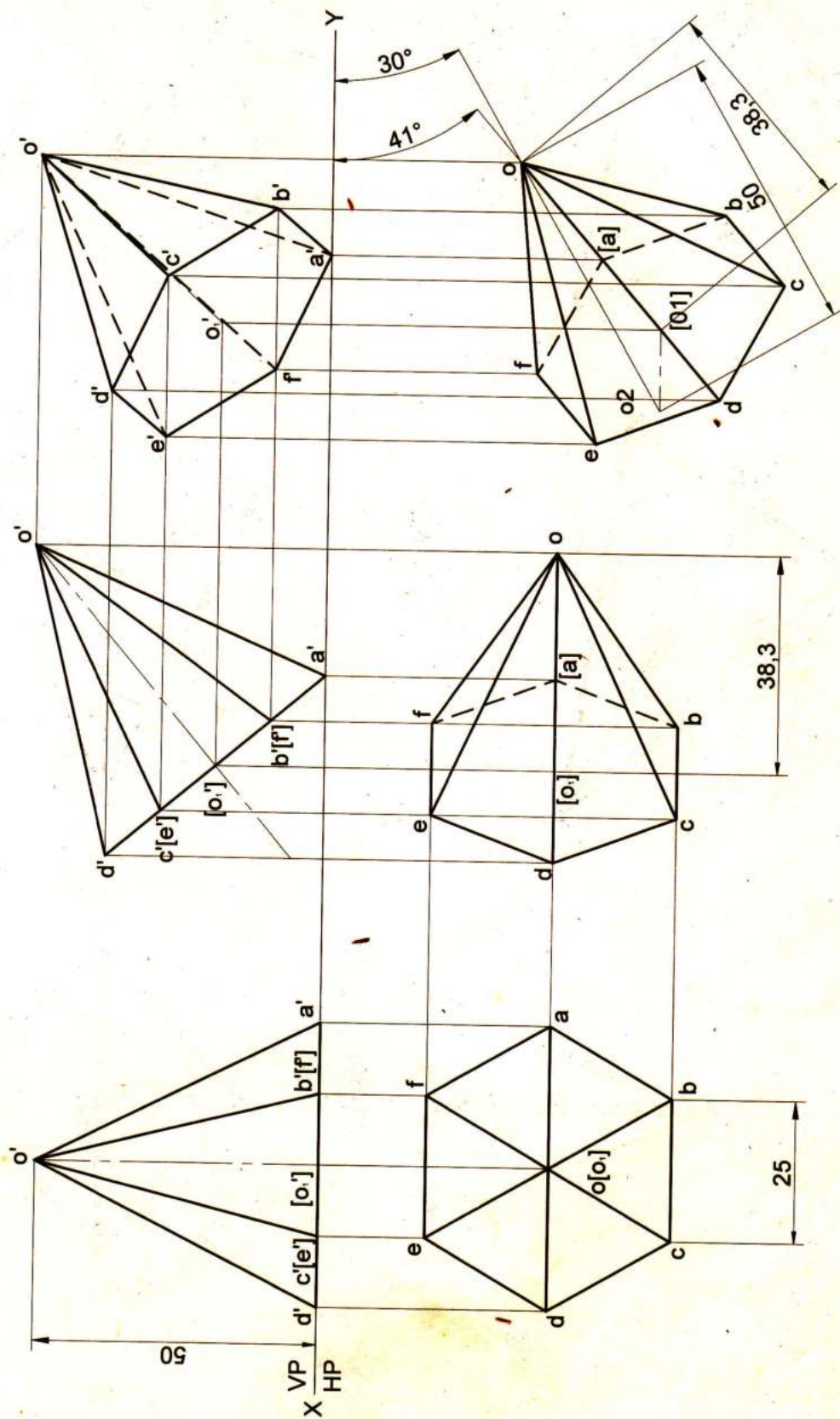
**Problem 26** A hexagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at  $40^\circ$  and appears to be inclined to VP at  $45^\circ$ .

**Solution**



**Problem 27** A hexagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its corners of the base such that the two base edges containing the corner on which it rests make equal inclinations with HP. Draw the projections of the pyramid when the axis of the pyramid is inclined to HP at  $40^\circ$  and to VP at  $30^\circ$ .

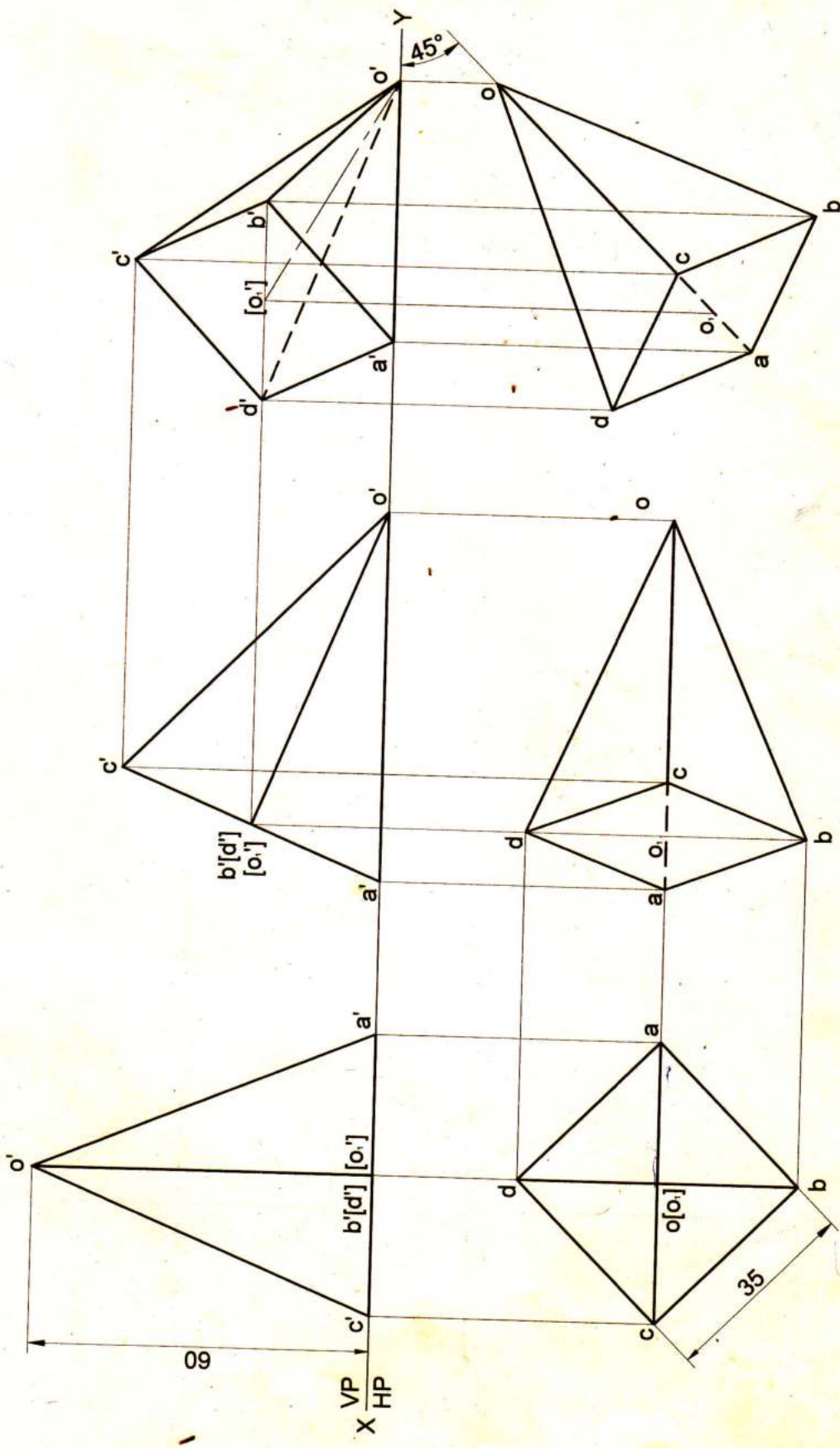
**Solution**





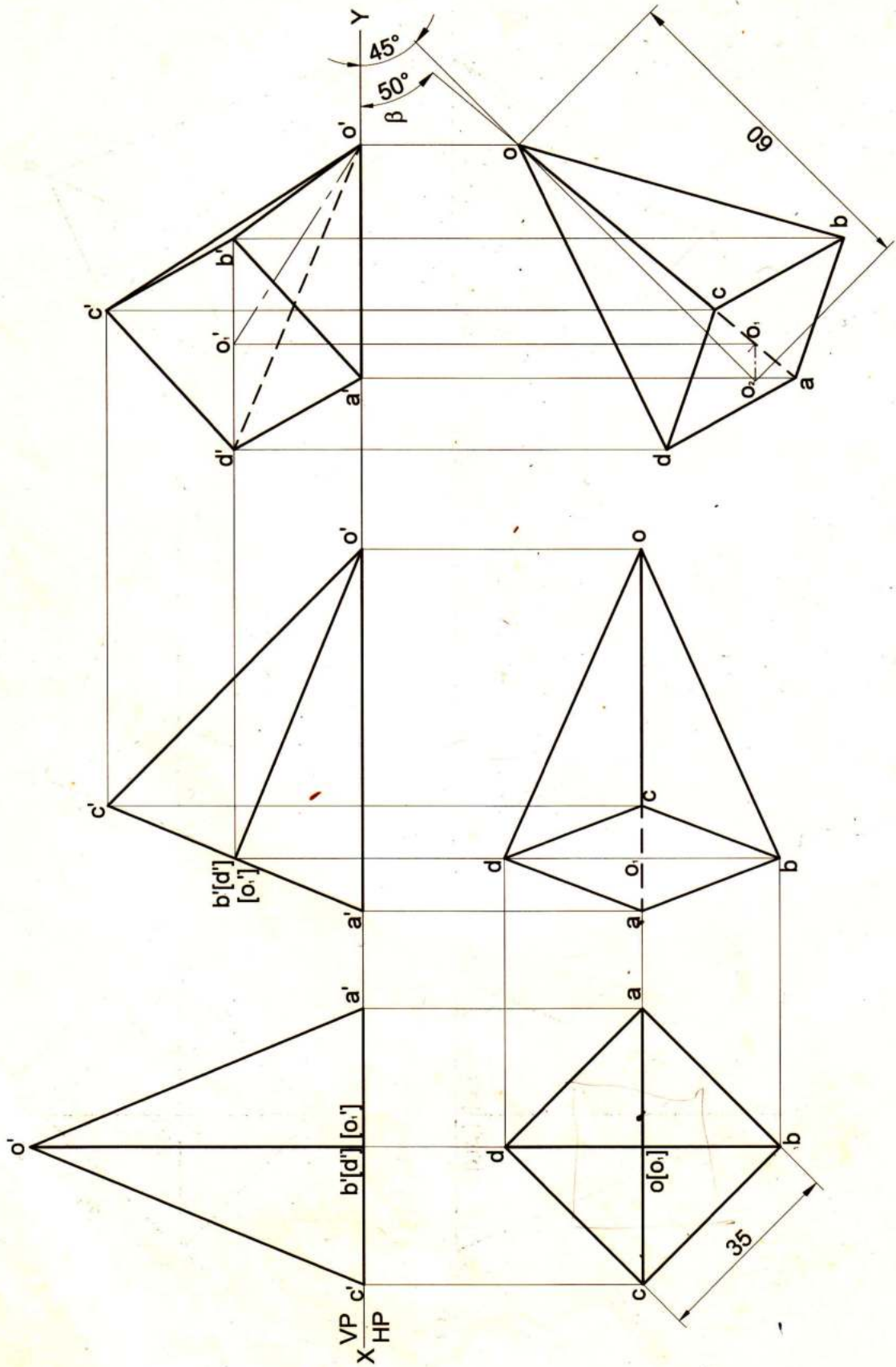
**Problem 31** A square pyramid 35 mm sides of base and 60 mm axis length rests on HP on one of its slant edges. Draw the projections of the pyramid when the axis appears to be inclined to VP at  $45^\circ$ .

**Solution**



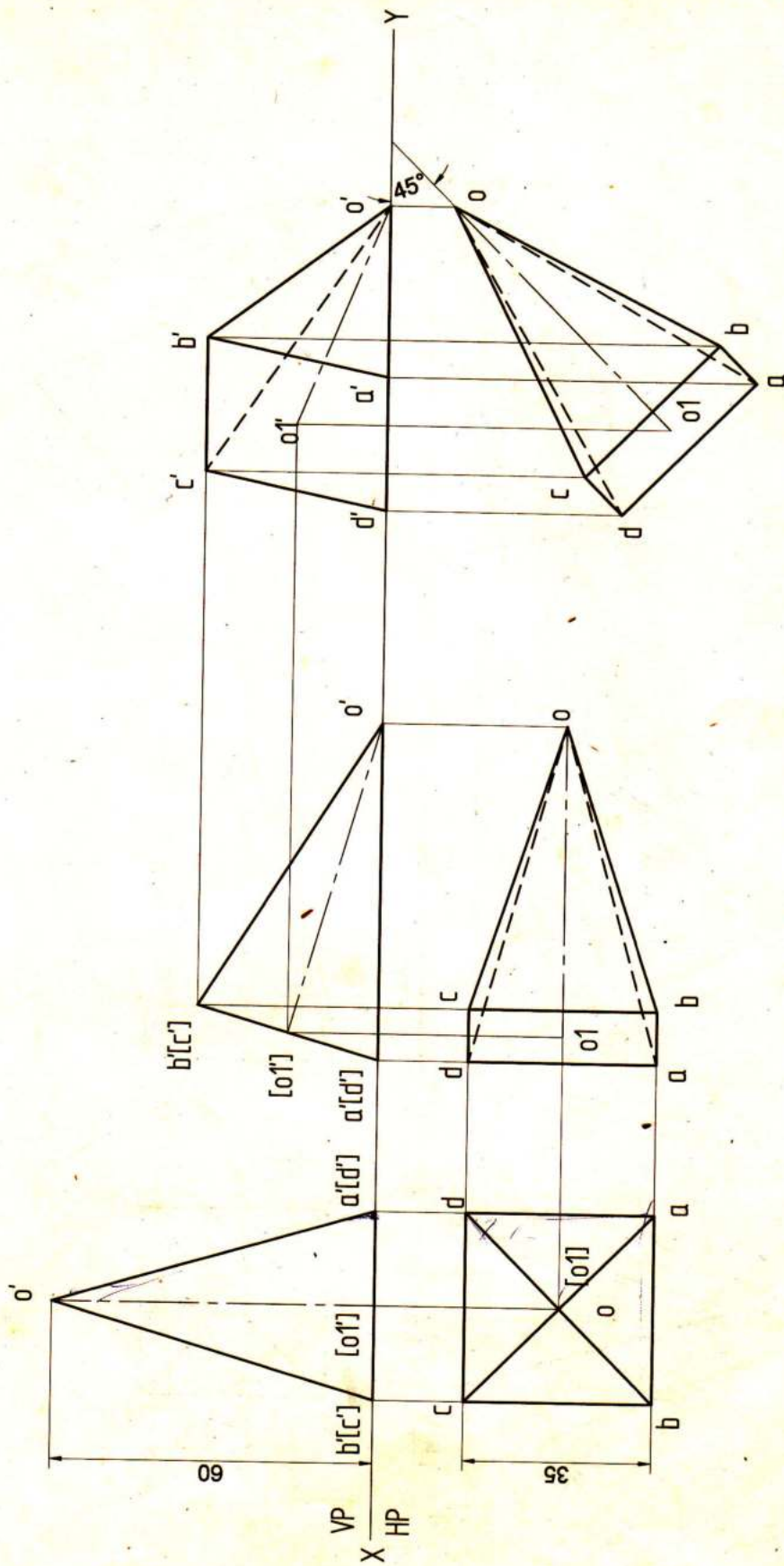
**Problem 32** A square pyramid 35 mm sides of base and 60 mm axis length rests on HP on one of its slant edges. Draw the projections of the pyramid when the axis is inclined to VP at  $45^\circ$ .

**Solution**



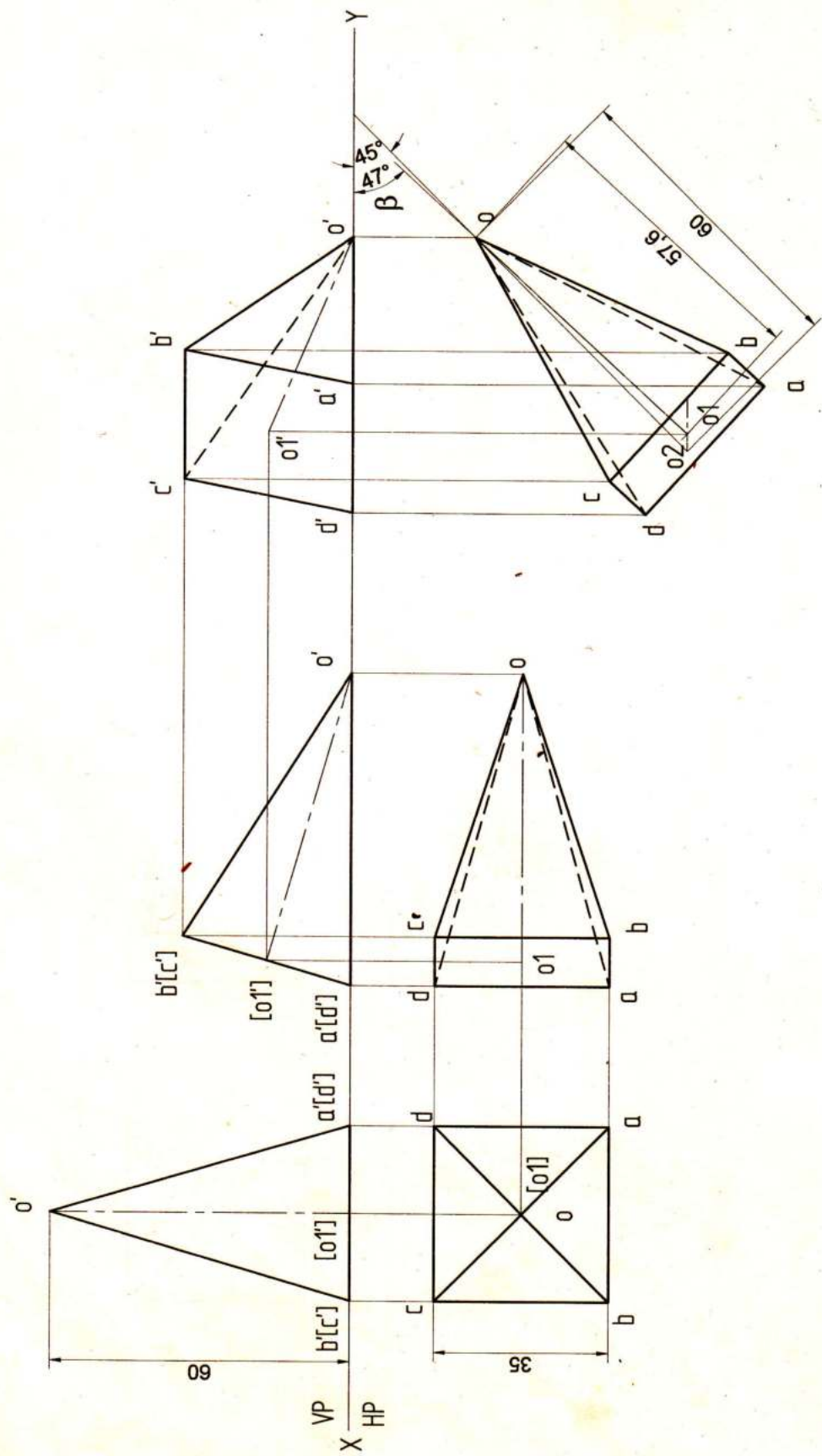
**Problem 33** A square pyramid 35 mm sides of base and 60 mm axis length rests on HP on one of its slant triangular faces. Draw the projections of the pyramid when the axis appears to be inclined to VP at  $45^\circ$ .

**Solution**



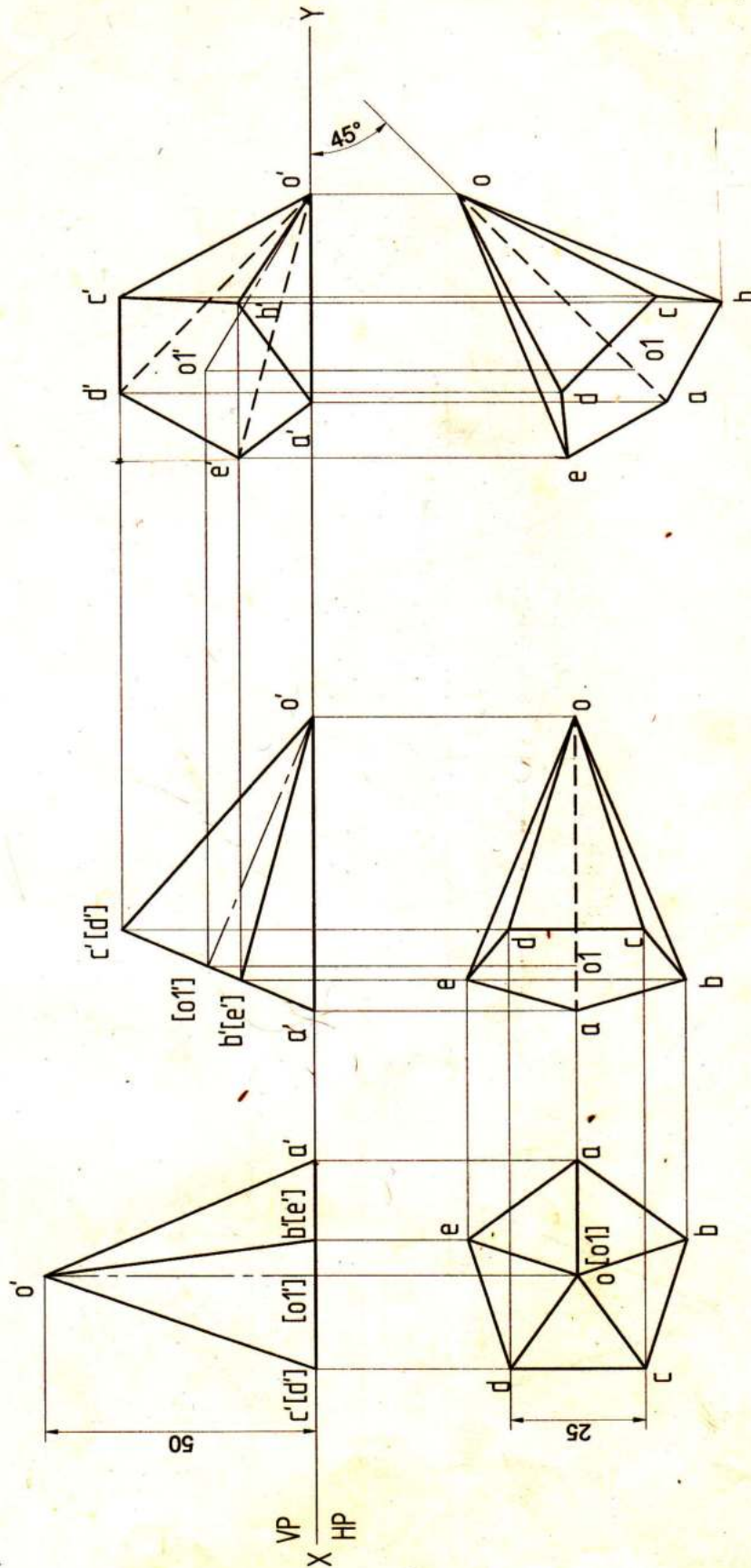
**Problem 34** A square pyramid 35 mm sides of base and 60 mm axis length rests on HP on one of its slant triangular faces. Draw the projections of the pyramid when the axis is inclined to VP at  $45^\circ$ .

**Solution**



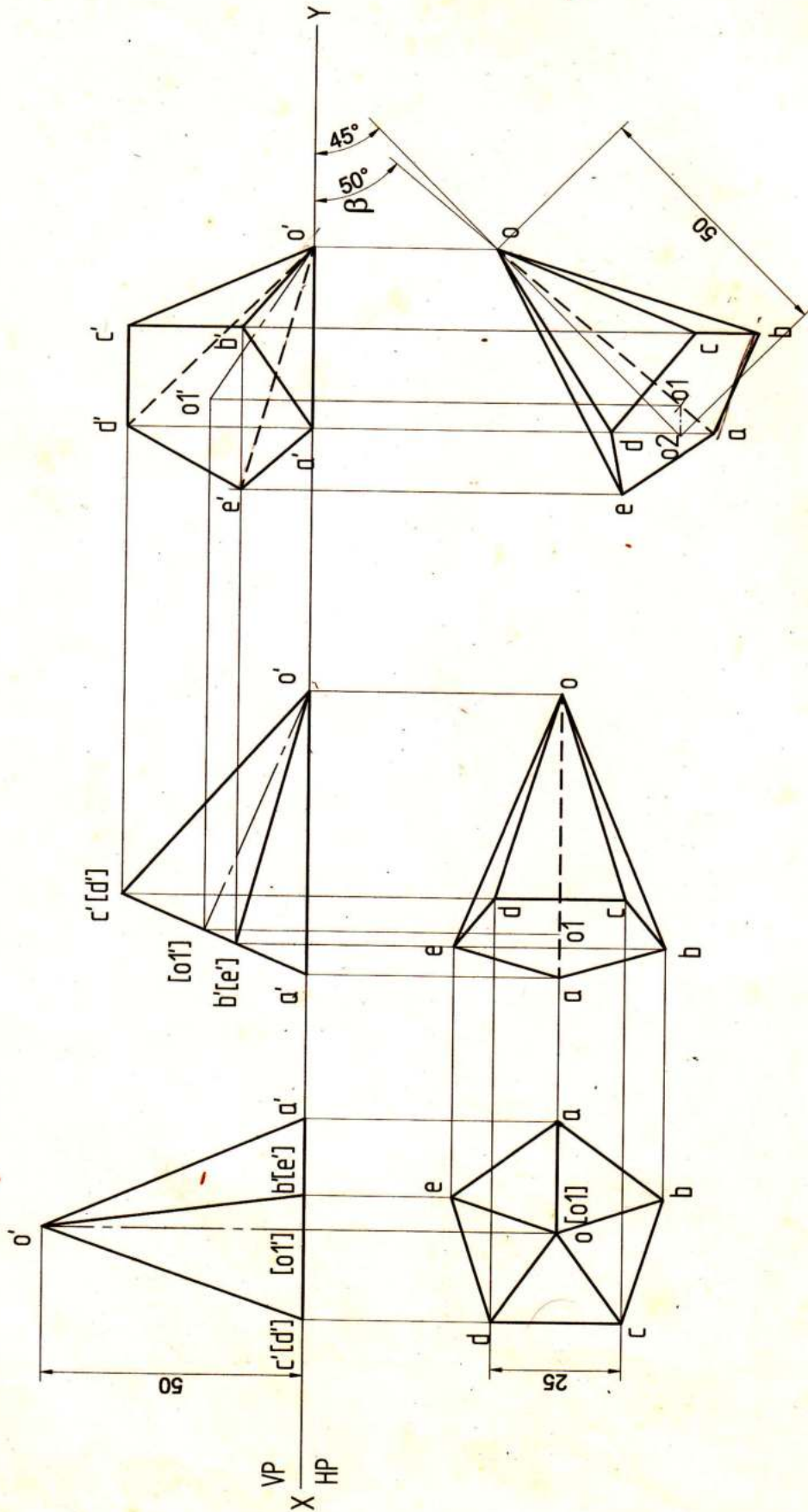
**Problem 35** A pentagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its slant edges. Draw the projections of the pyramid when the axis appears to be inclined to VP at  $45^\circ$ .

**Solution**



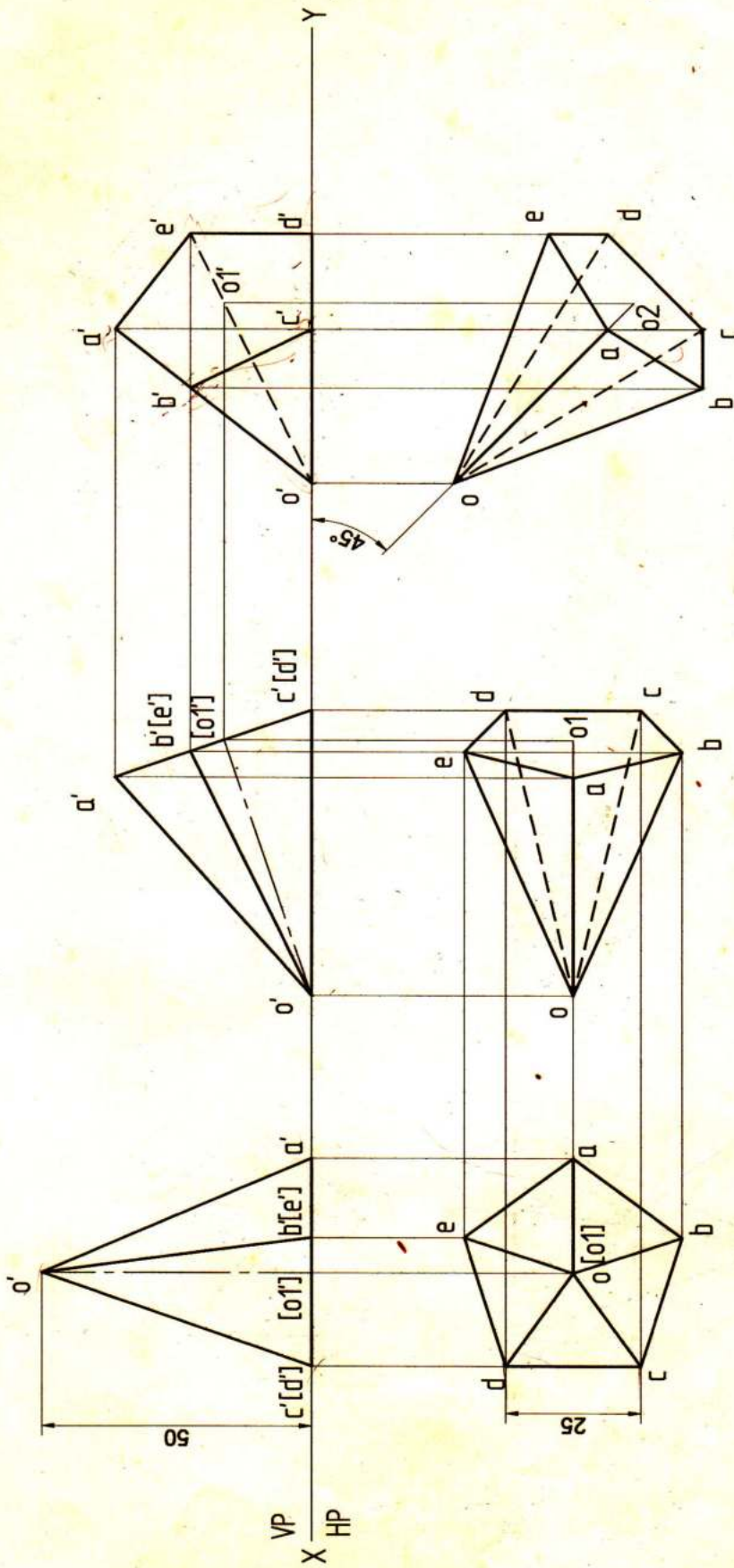
**Problem 36** A pentagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its slant edges. Draw the projections of the pyramid when the axis is inclined to VP at  $45^\circ$ .

**Solution**



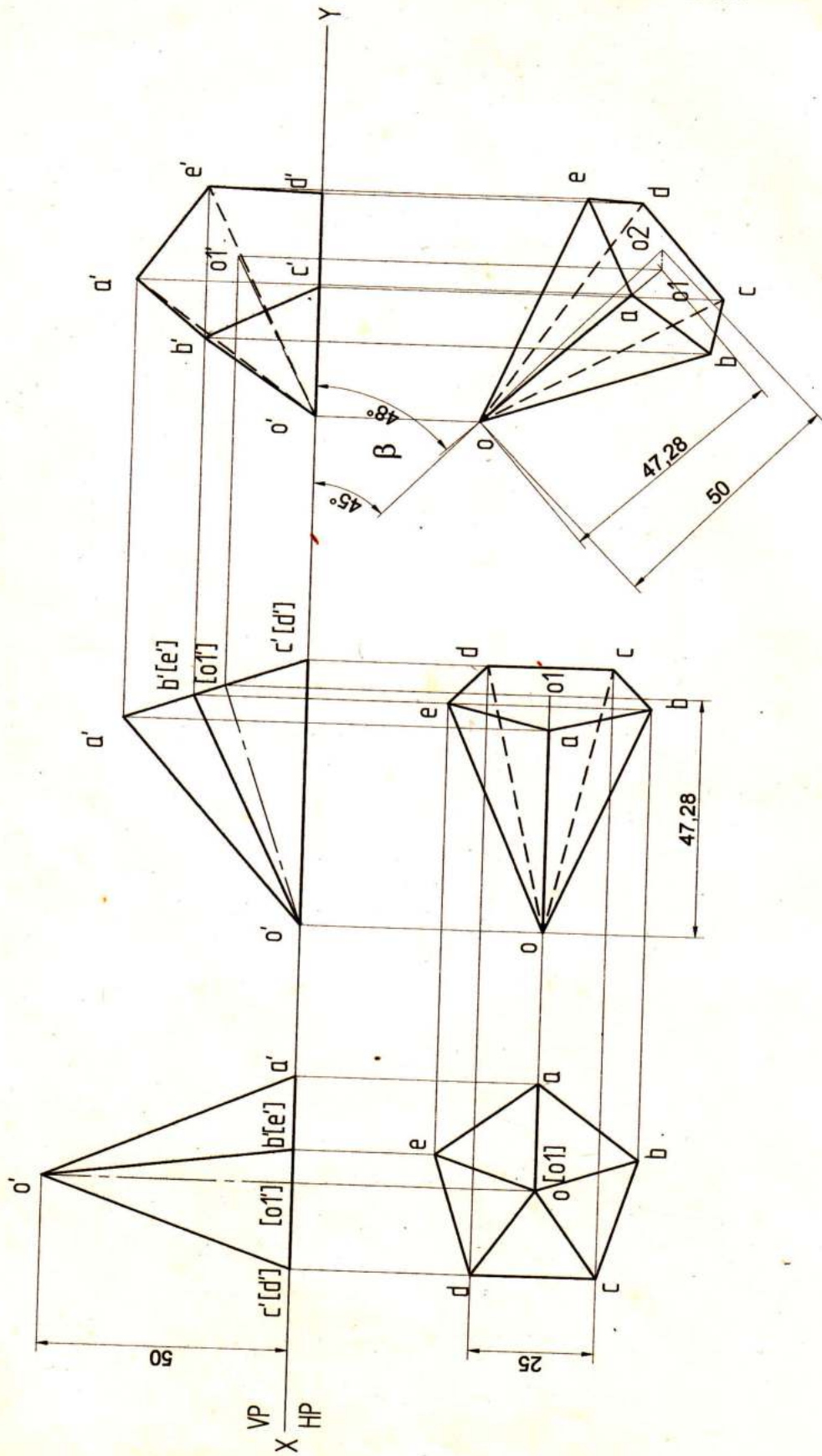
**Problem 37** A pentagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its slant triangular faces. Draw the projections of the pyramid when the axis appears to be inclined to VP at  $45^\circ$ .

**Solution**



**Problem 38** A pentagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its slant triangular faces. Draw the projections of the pyramid when the axis is inclined to VP at  $45^\circ$ .

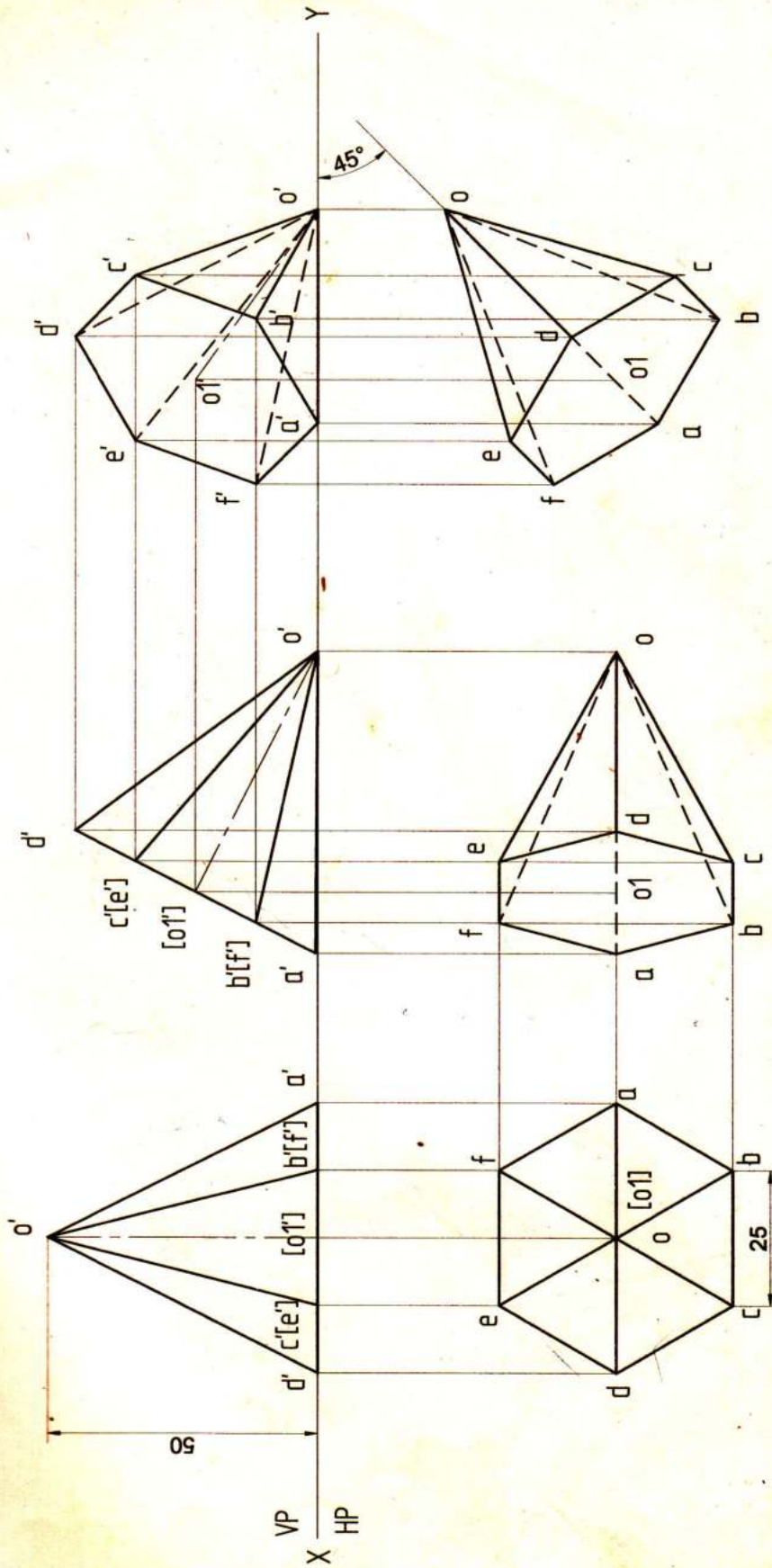
**Solution**





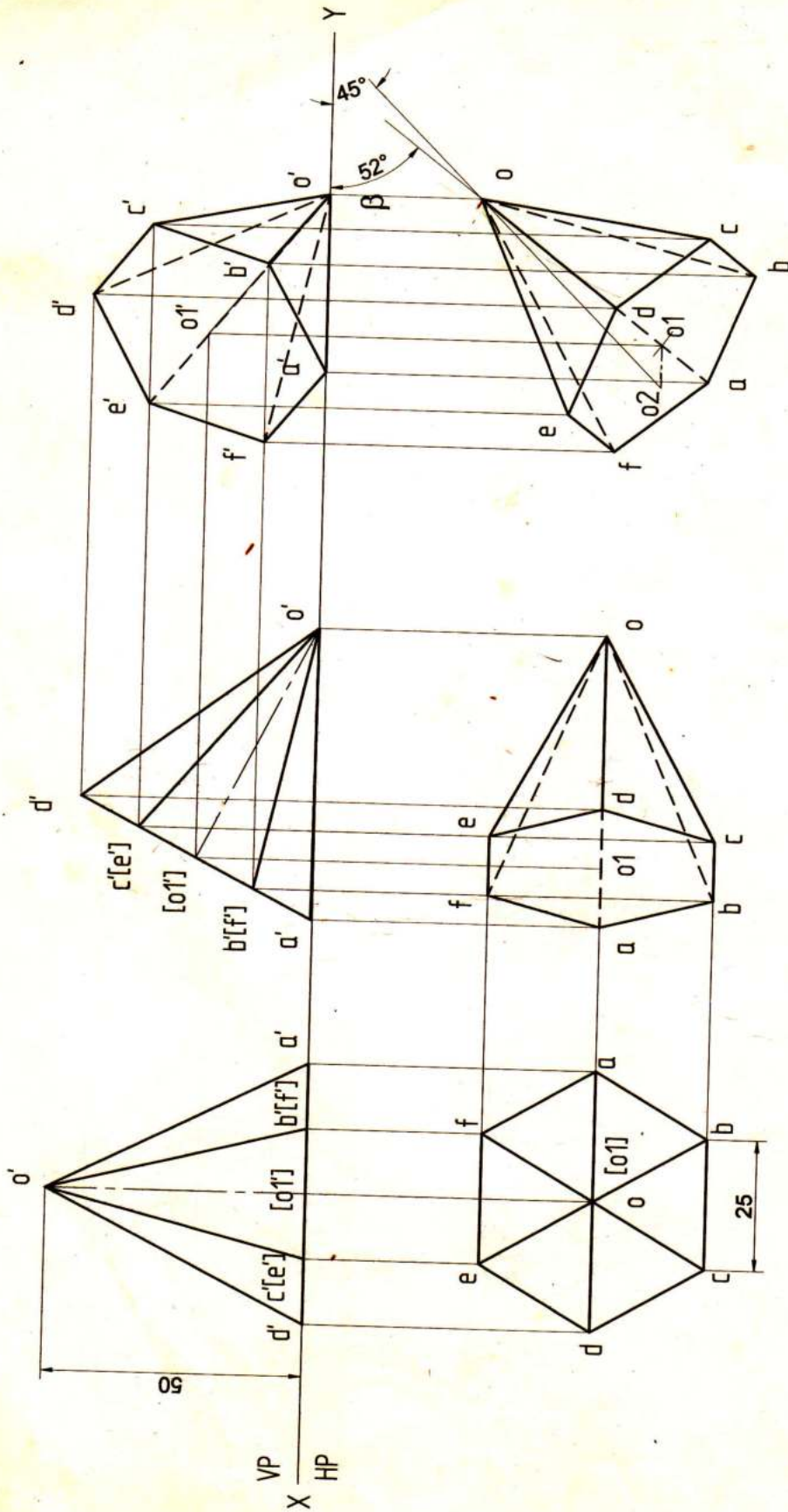
**Problem 39** A hexagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its slant edges. Draw the projections of the pyramid when the axis appears to be inclined to VP at  $45^\circ$ .

**Solution**

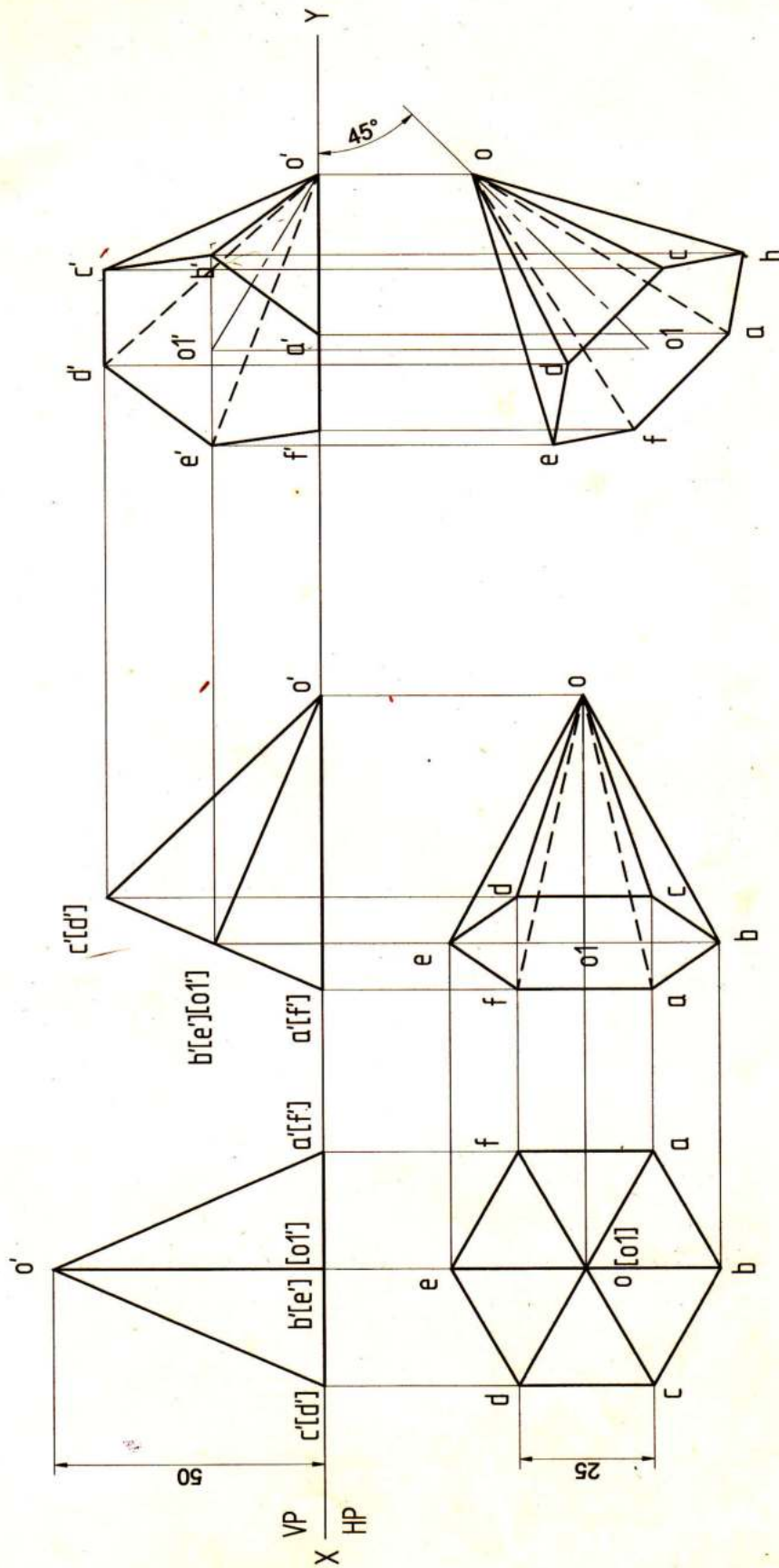


**Problem 40** A hexagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its slant edges. Draw the projections of the pyramid when the axis is inclined to VP at  $45^\circ$ .

**Solution**

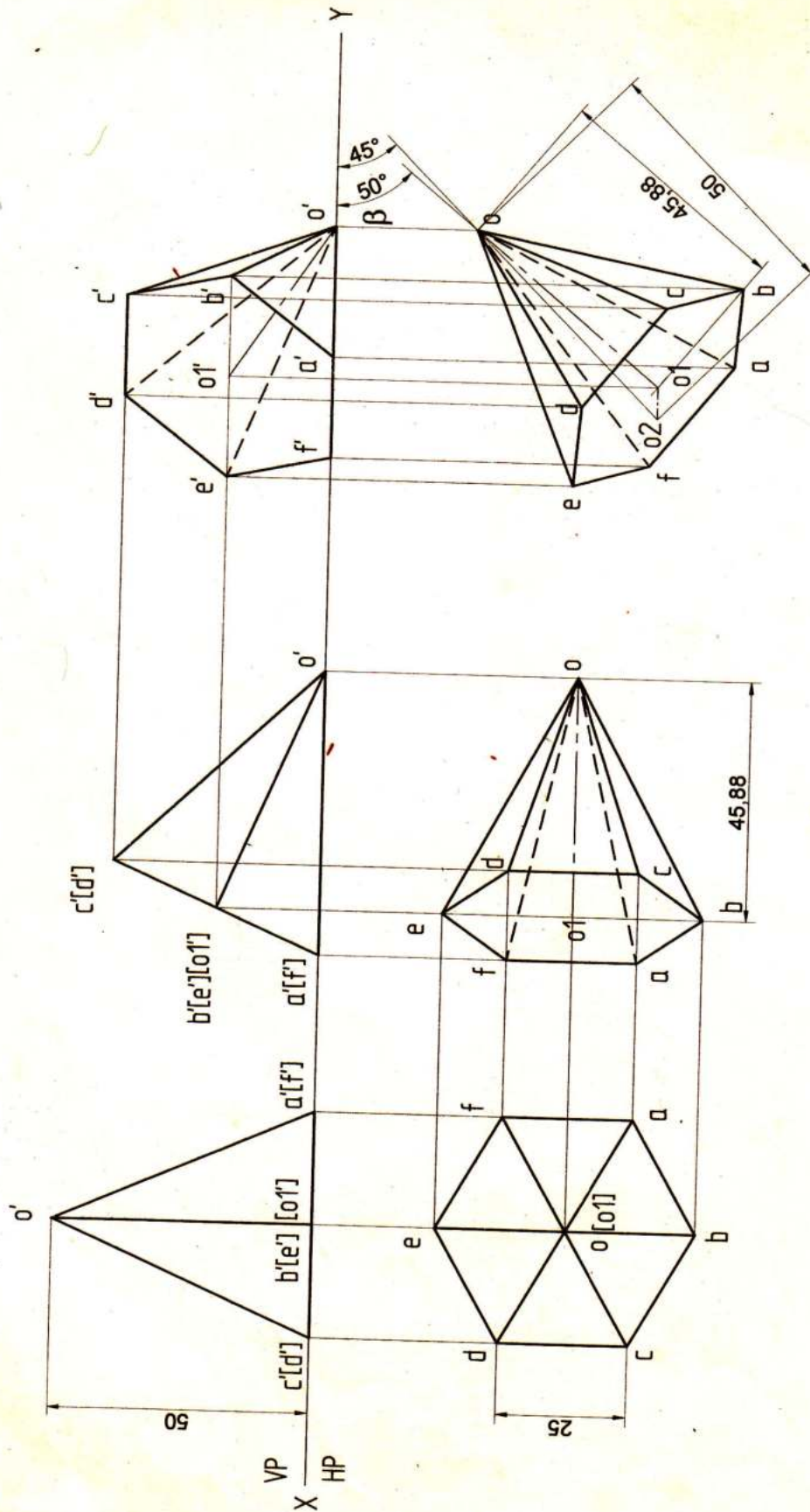


**Problem 41** A hexagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its slant triangular faces. Draw the projections of the pyramid when the axis appears to be inclined to VP at  $45^\circ$ .  
**Solution**



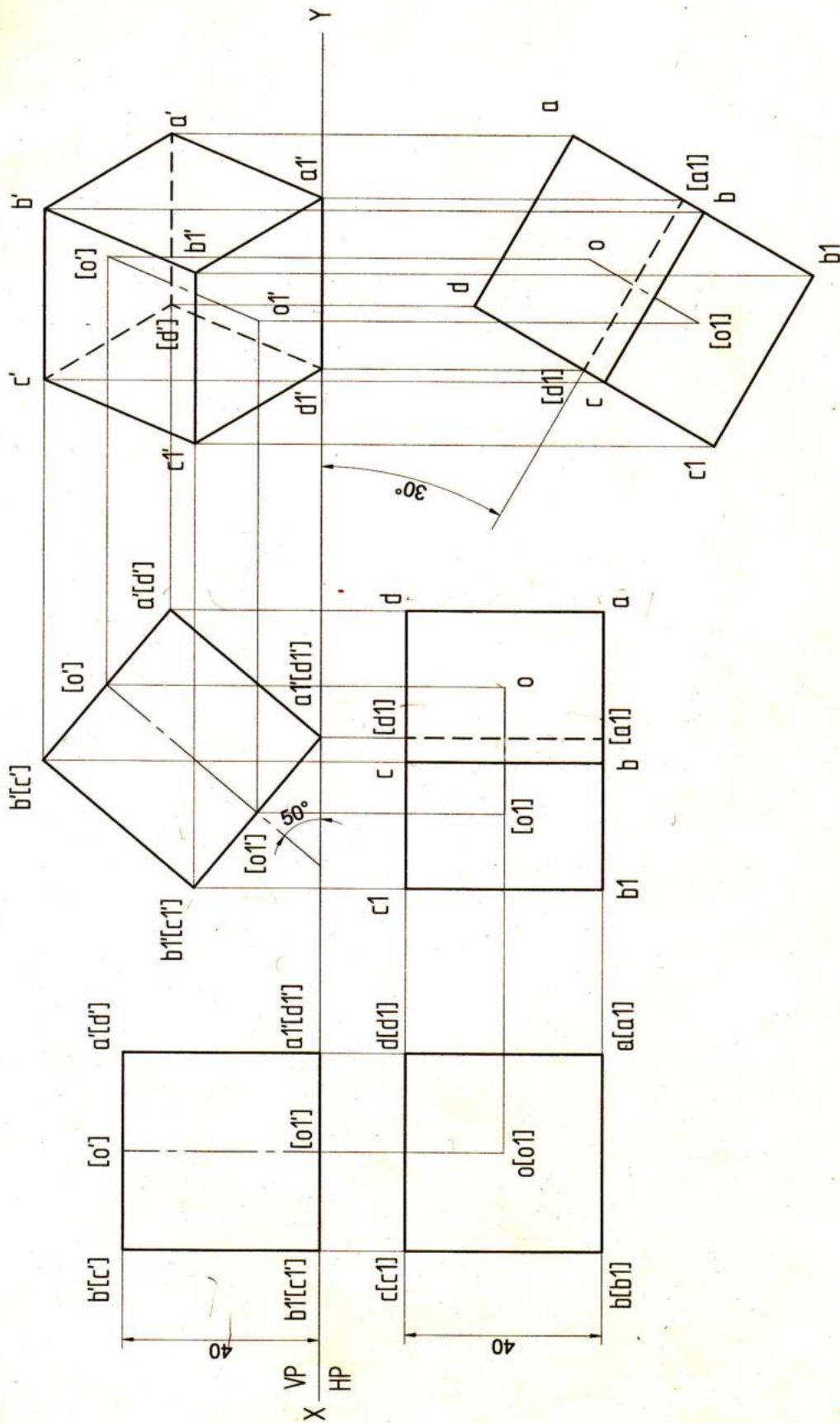
**Problem 42** A hexagonal pyramid 25 mm sides of base and 50 mm axis length rests on HP on one of its slant triangular faces. Draw the projections of the pyramid when the axis is inclined to VP at  $45^\circ$ .

**Solution**



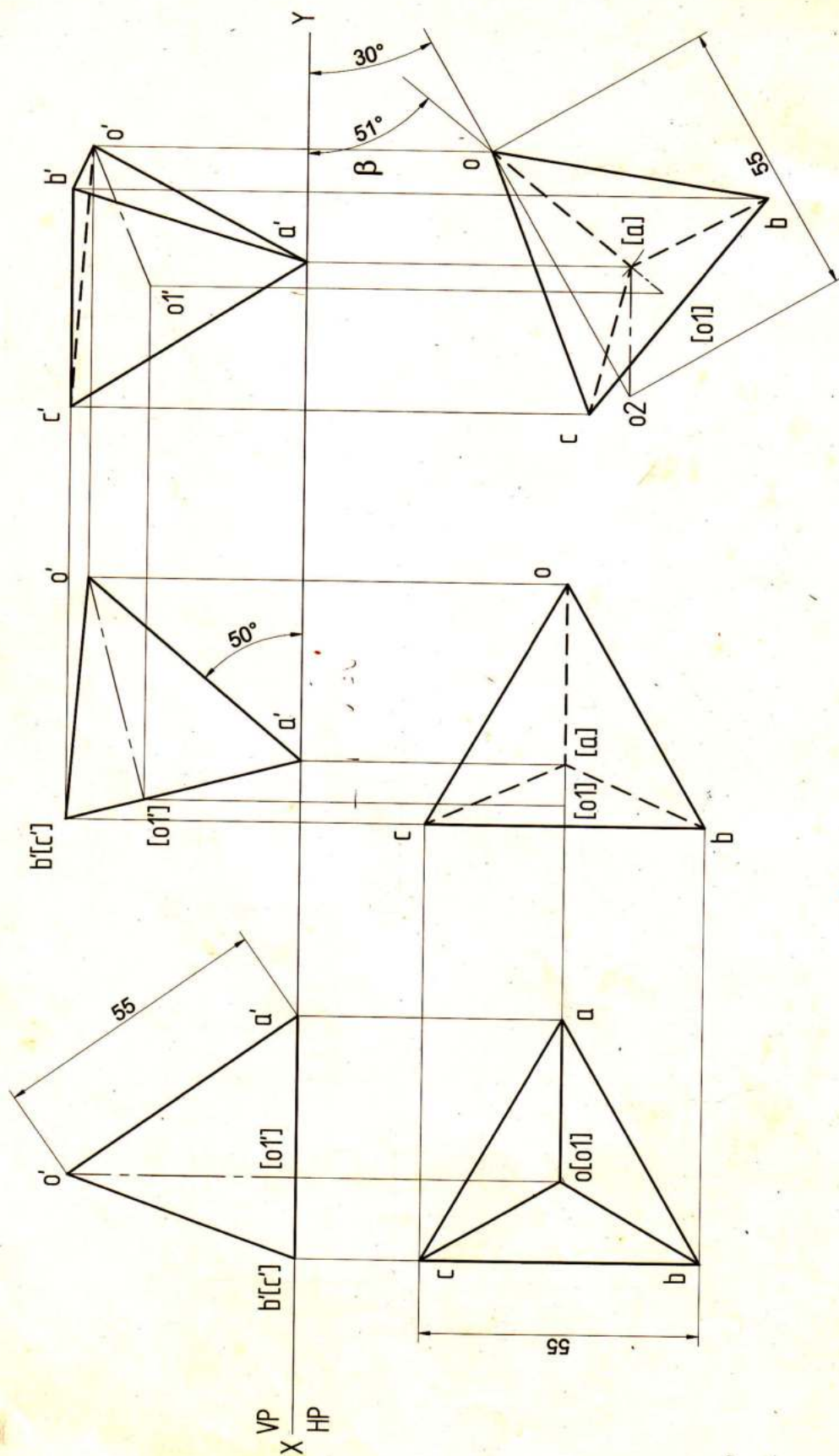
**Problem 43** A cube of 40 mm sides rests on HP on an edge which is inclined to VP at  $30^\circ$ . Draw the projections when the lateral square face containing the edge on which it rests makes an angle of  $50^\circ$  to HP.

**Solution**

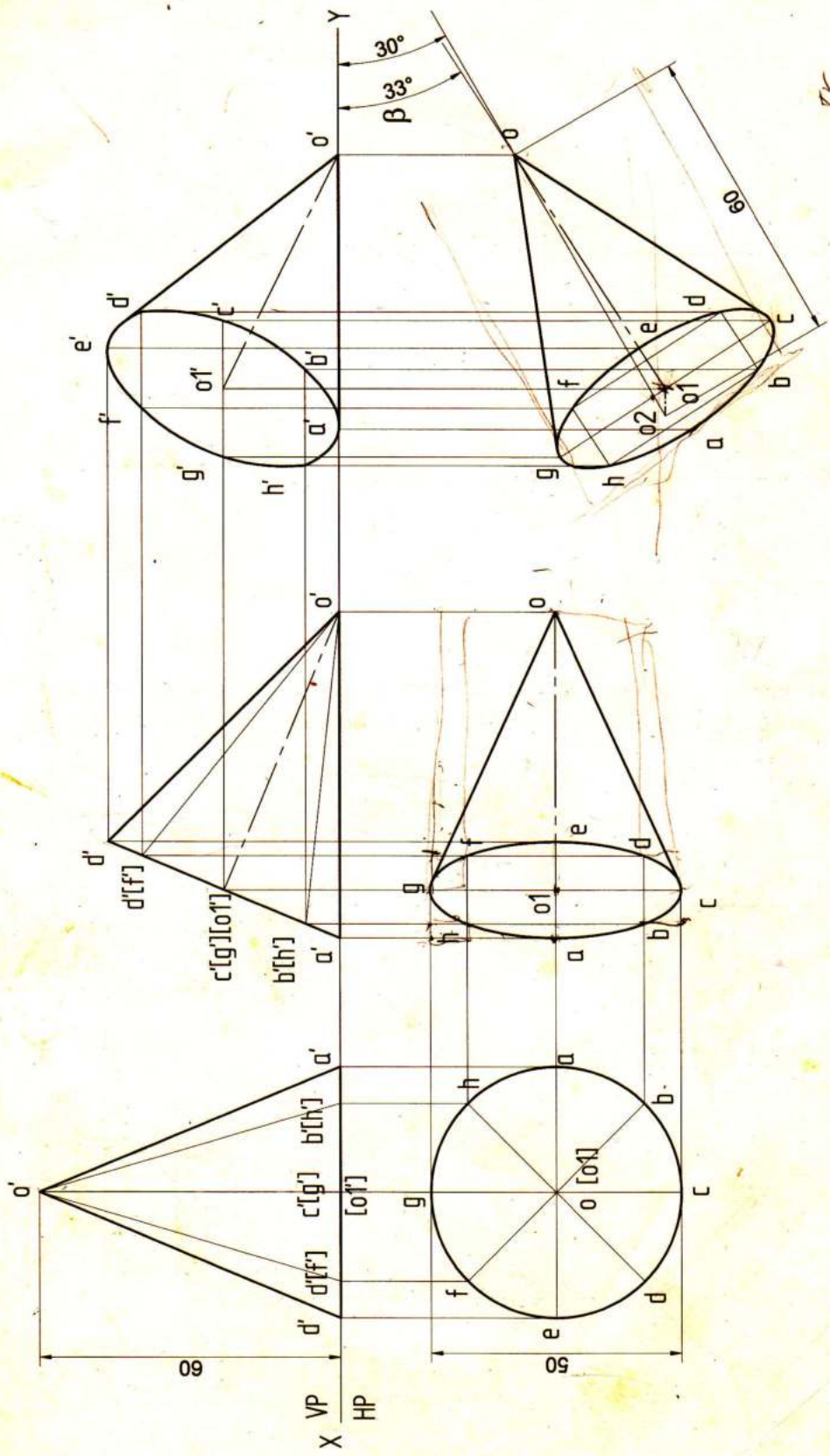


**Problem 44** A tetrahedron of 55 mm sides rests on one of its corners such that an edge containing that corner is inclined to HP at  $50^\circ$  and VP at  $30^\circ$ . Draw its projections.

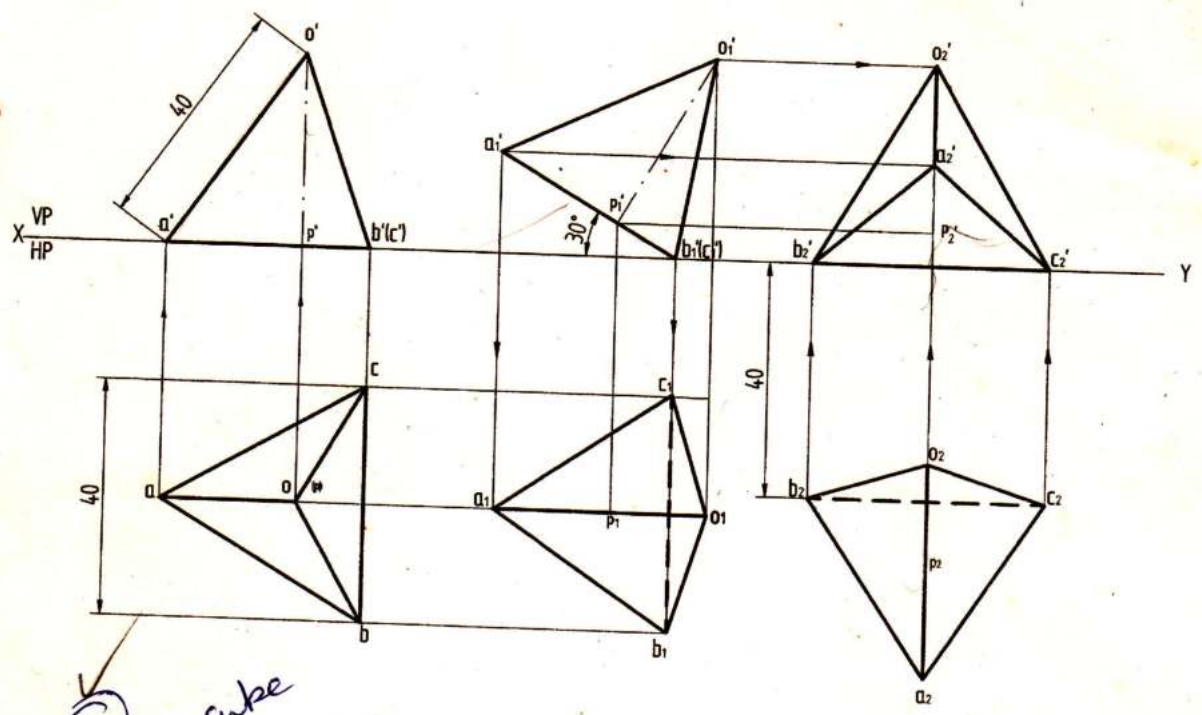
**Solution**



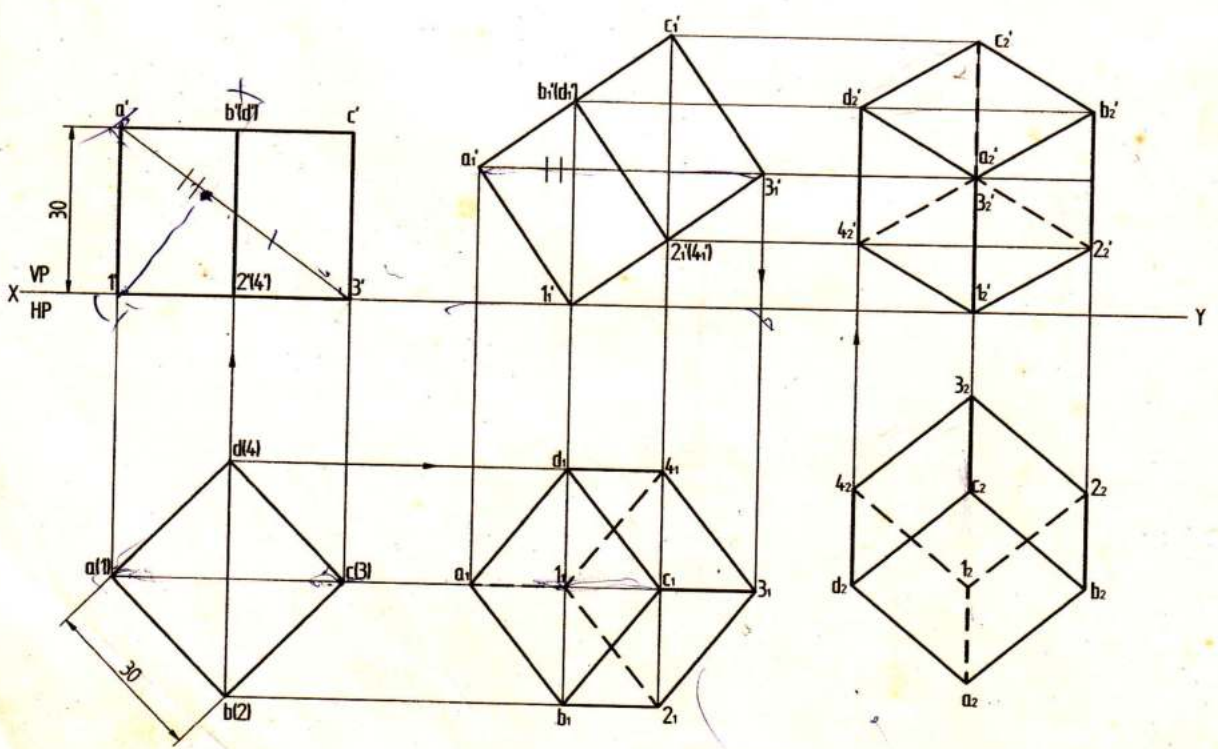
**Problem 45** A cone of 50 mm base diameter and 60 mm axis length rests on HP on one of its generators. Draw its projections when the axis is inclined to VP at  $30^\circ$ .  
**Solution.**



✓  
**Problem 46** A tetrahedron of sides 40 mm is resting on one of its sides on HP. This side is parallel to VP and 40 mm away from it. It is tilted about resting side such that the base containing this edge is inclined at  $30^\circ$  to HP. Draw the projections of the solid.  
**Solution**



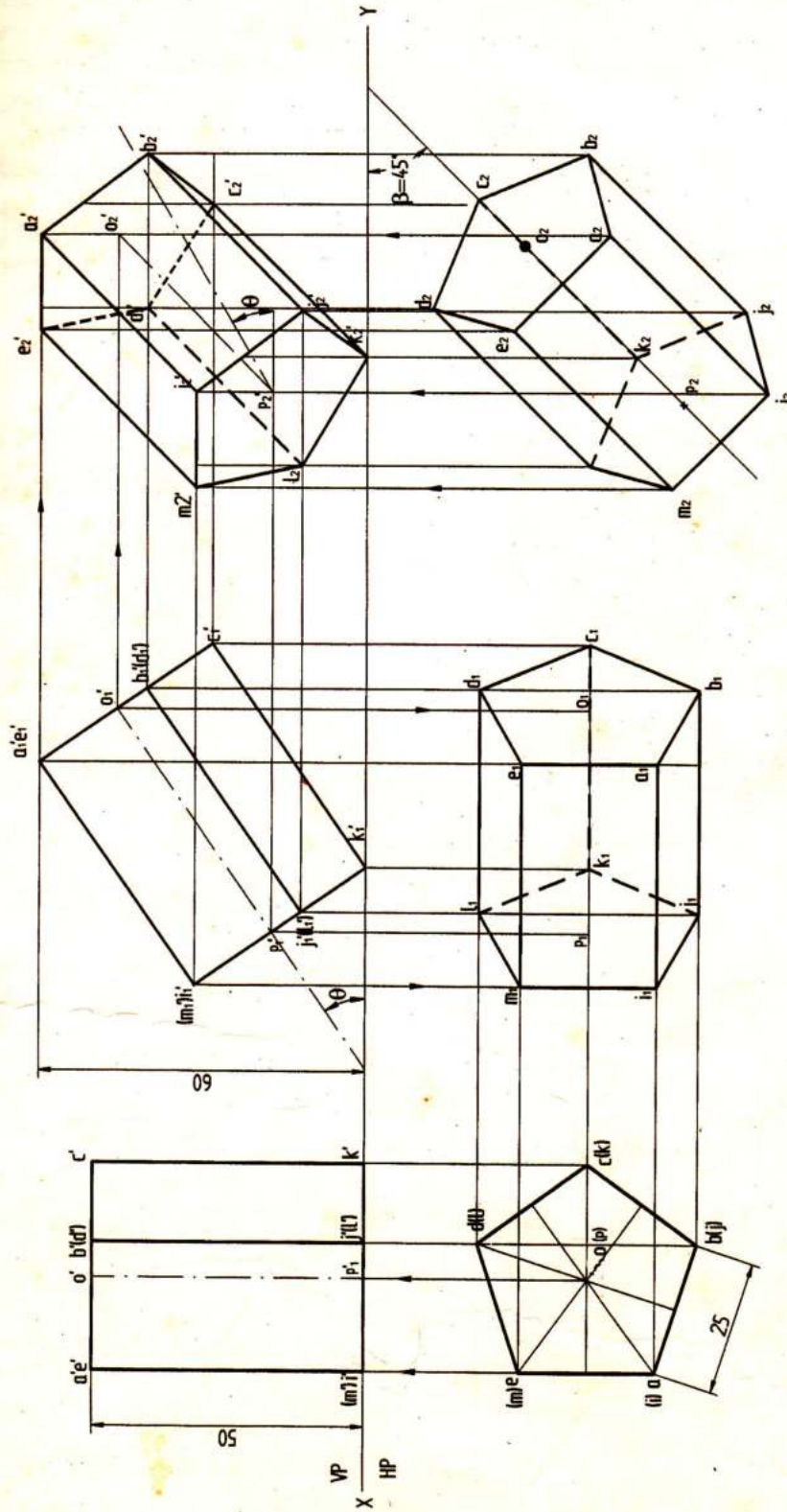
*cube*  
**Problem 47** A Hexahedron of 30 mm sides is resting on one of its corners on HP such that one of its solid diagonals is perpendicular to VP. Draw the projections of the solid.  
**Solution**





**Problem 48** A pentagonal prism of base side 25 mm and height 50 mm is resting on HP on one of its base corners such that the top most edge is at a distance of 60 mm above HP. Draw its projections, when its top view of the axis is inclined at  $45^\circ$  to VP. Also, determine the inclination of the longer edge of the prism to HP which contains the resting corner.

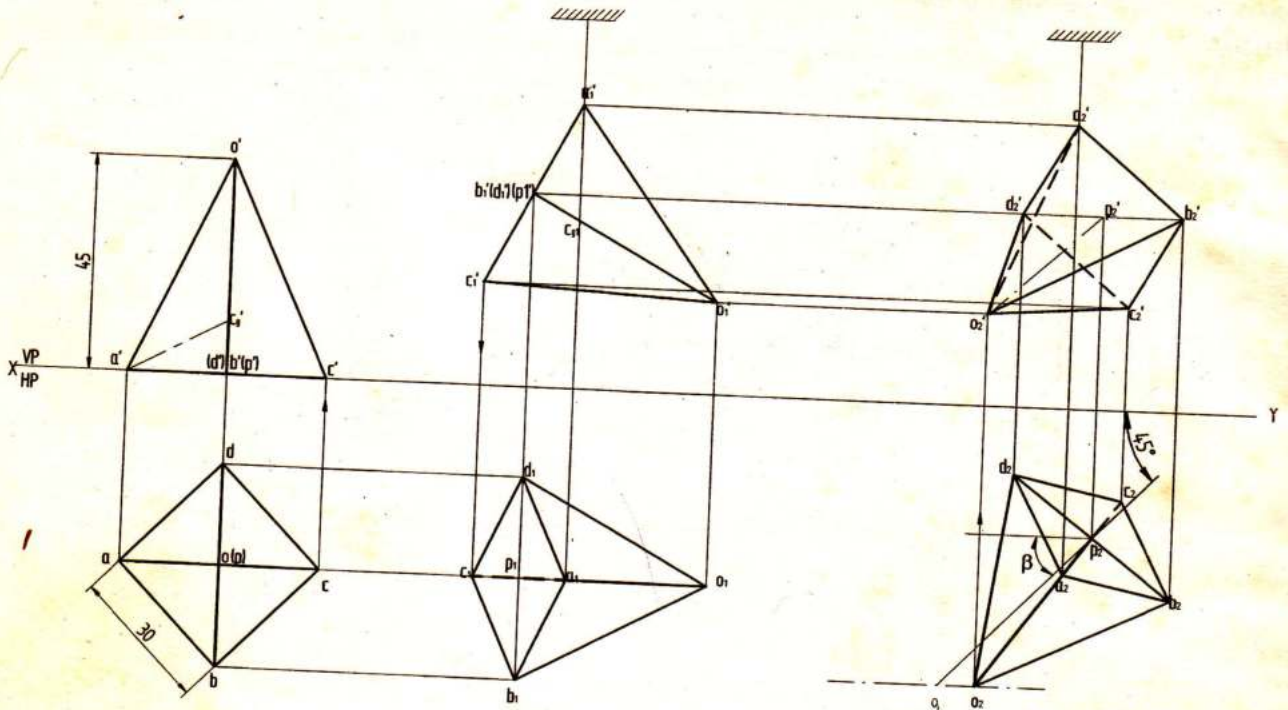
**Solution**



ANSWER  
 $\theta = 35^\circ$

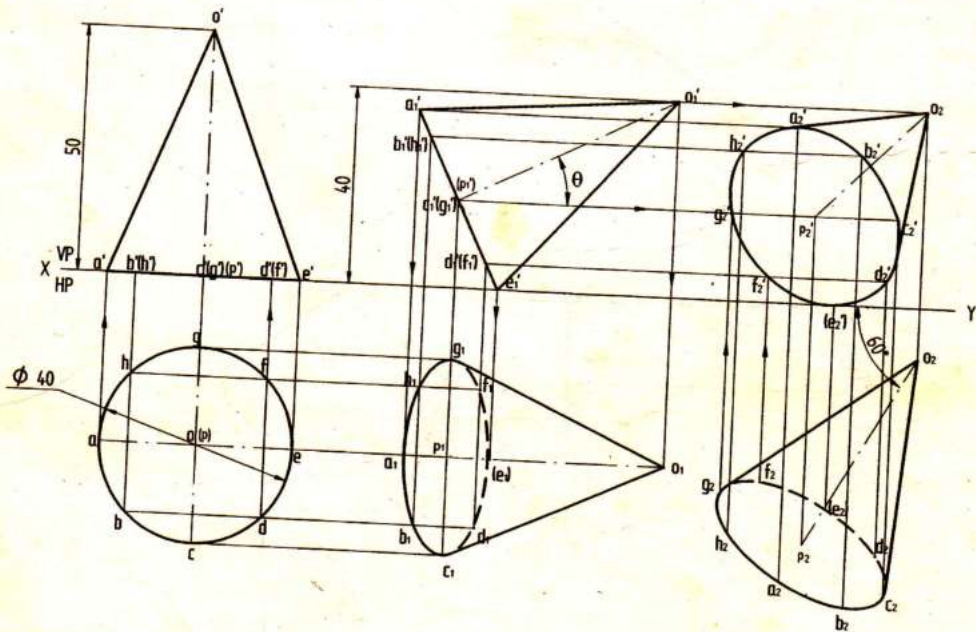
**Problem 49** A square pyramid of base sides 30 mm and height 60 mm is suspended by a thread tied to one of the corners of its base. It is then tilted such that the axis makes an angle of  $45^\circ$  with respect to the VP. Considering the apex of the solid to be nearer to the observer, draw the projections of the solid.

**Solution**



**Problem 50** A cone of base dia. 40 mm and axis length 50 mm is resting on HP on a point on the circumference of its base such that its apex is at 40 mm above the HP and its top view of the axis is inclined at  $60^\circ$  to VP. Draw the top and front views of the solid. Also, determine the inclinations of the axis when the base is nearer to the observer.

**Solution**



ANSWERS  $\theta = 26^\circ$   
 $\phi = 51^\circ$