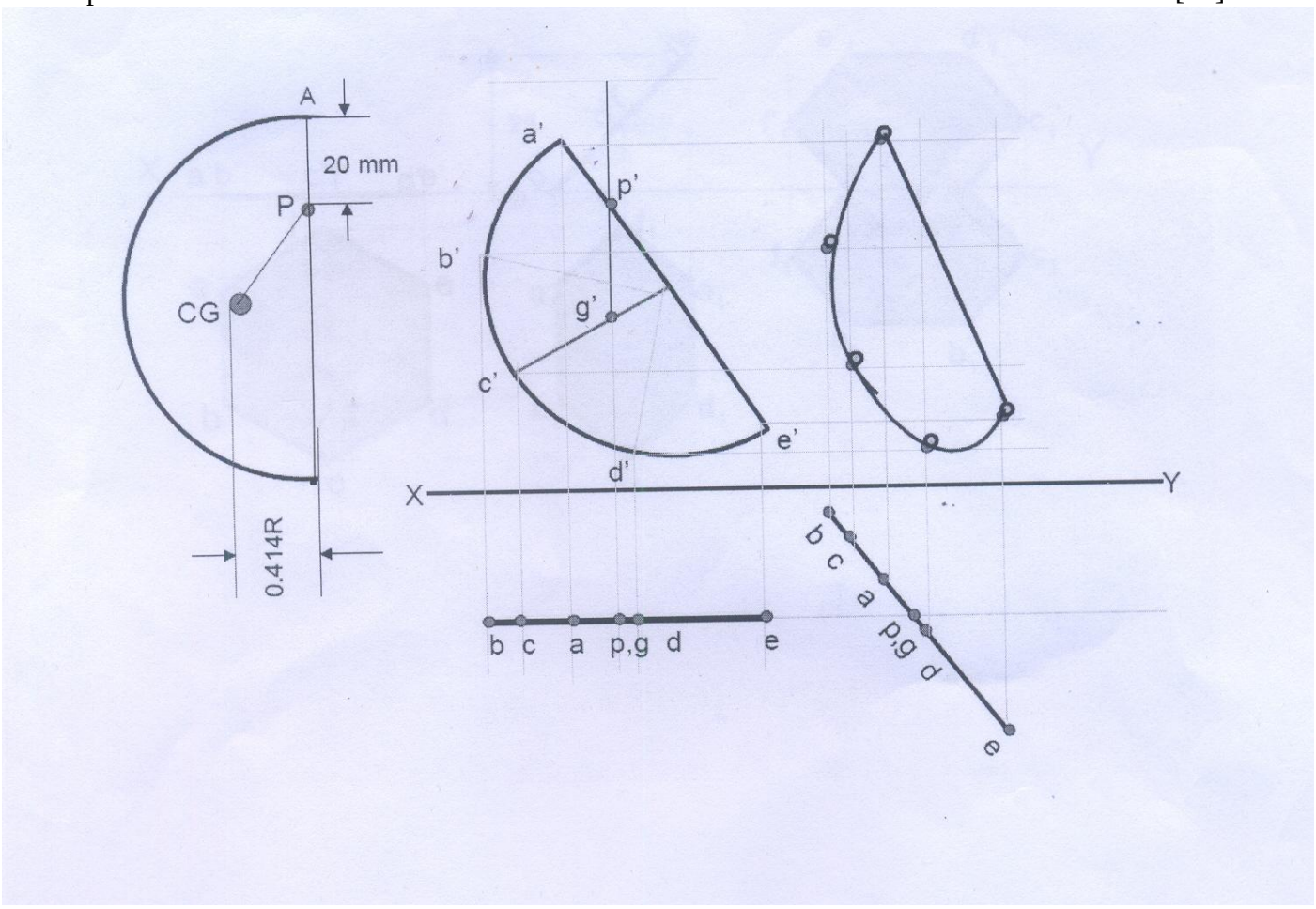
INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
Department of Civil Engineering
End-semester Examination

Time: 180 minutes **Time: 9-12 noon**
Total Marks: 150 **Date:14-11-2009**

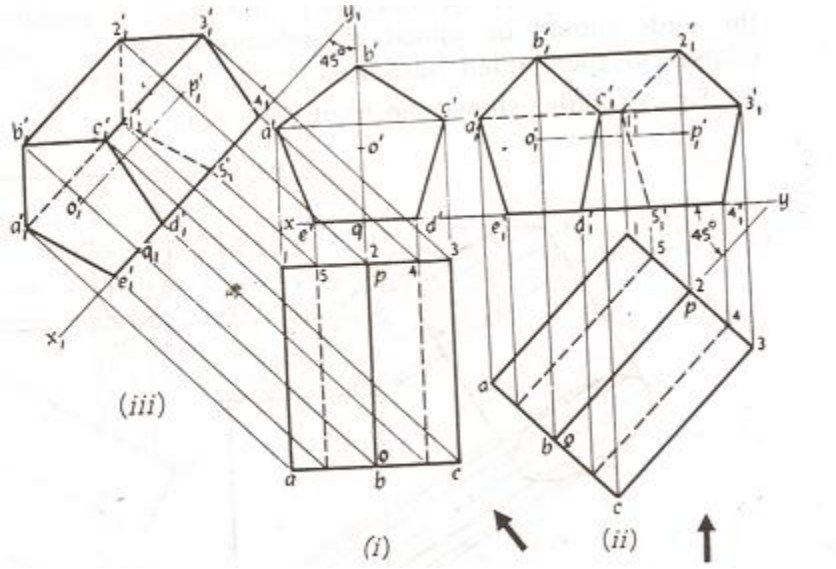
Answer all the Questions.

Hints:
(1) The construction lines should be drawn as thinner lines and should NOT be erased.
(2) Dimensioning and scale, as required, should be mentioned neatly.
(3) Only First-angle projection is to be used.

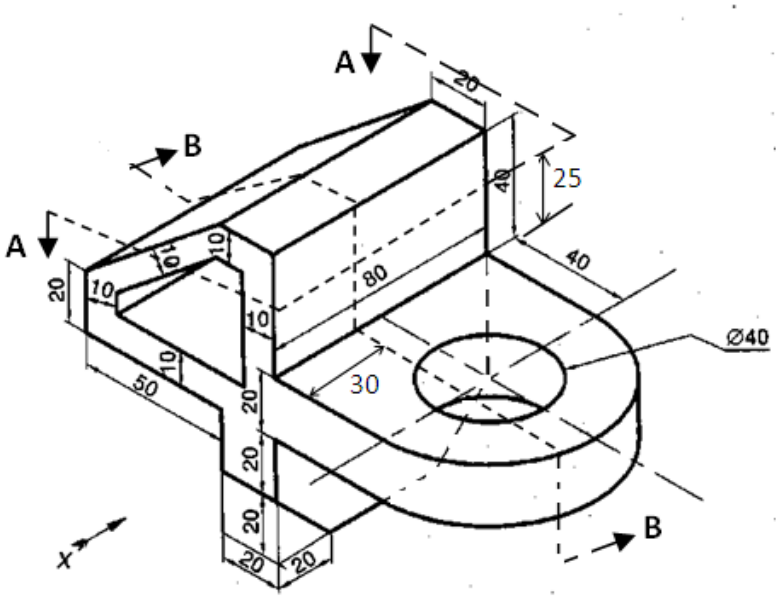
Q.1 A semicircular lamina of 100 mm diameter is suspended from a point on its straight edge 30 mm from the midpoint of that edge so that the surface makes an angle of 45^0 with VP. Draw Front view and Top view [25]

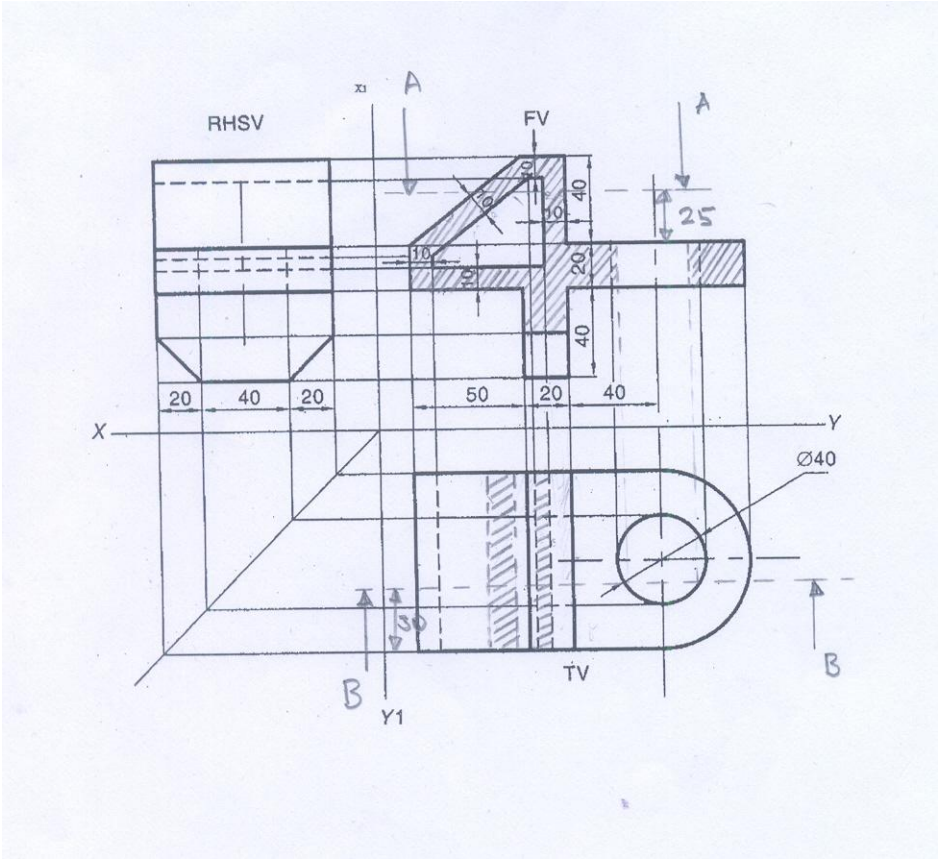


Q.2 Draw the projections of a pentagonal prism, with base 25 mm side and axis 50 mm long, resting on one of its rectangular faces on the HP, with the axis inclined at 45^0 to the VP. [25]

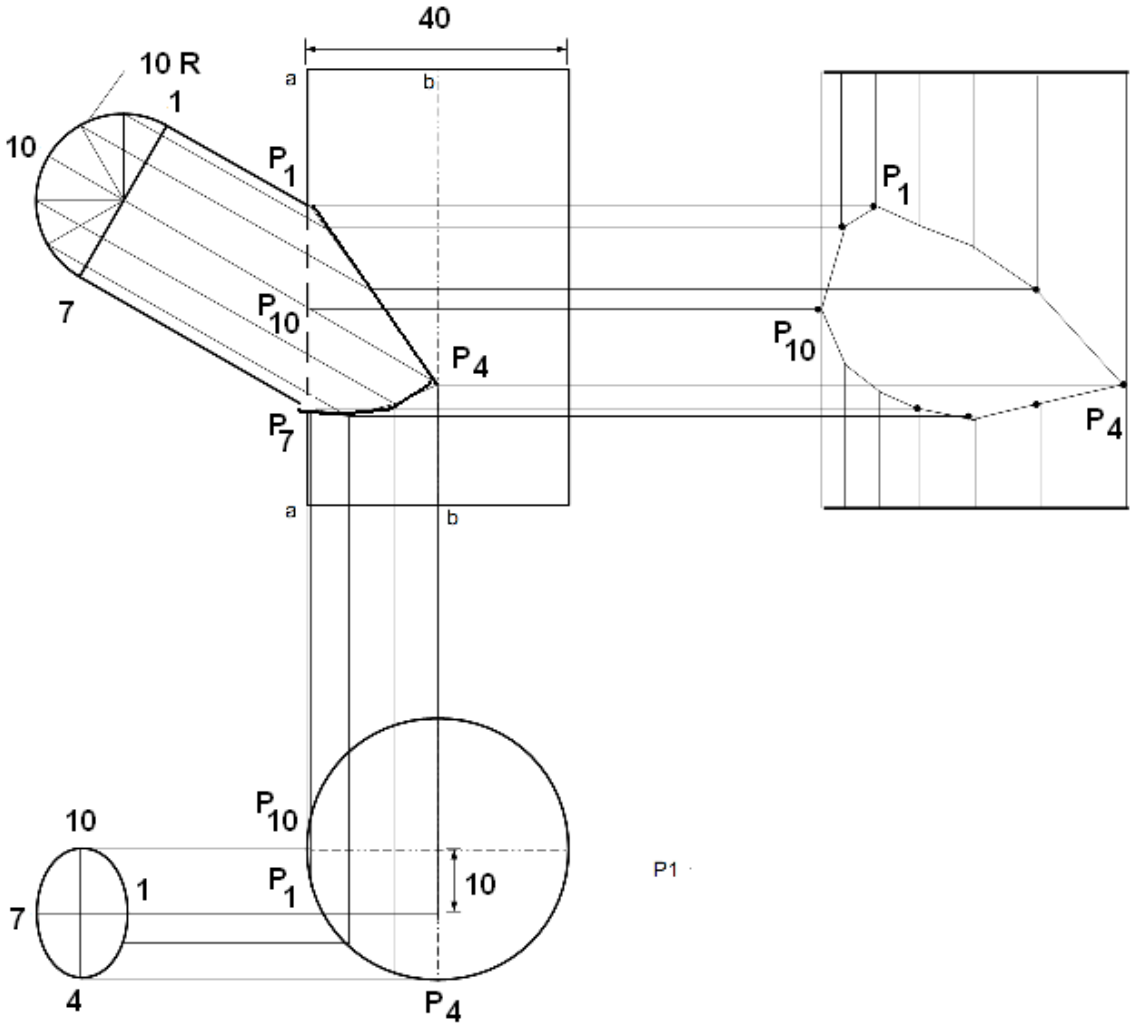


Q.3 Draw the sectional front view (BB) and the sectional top view (AA) of the object shown in figure below [25]

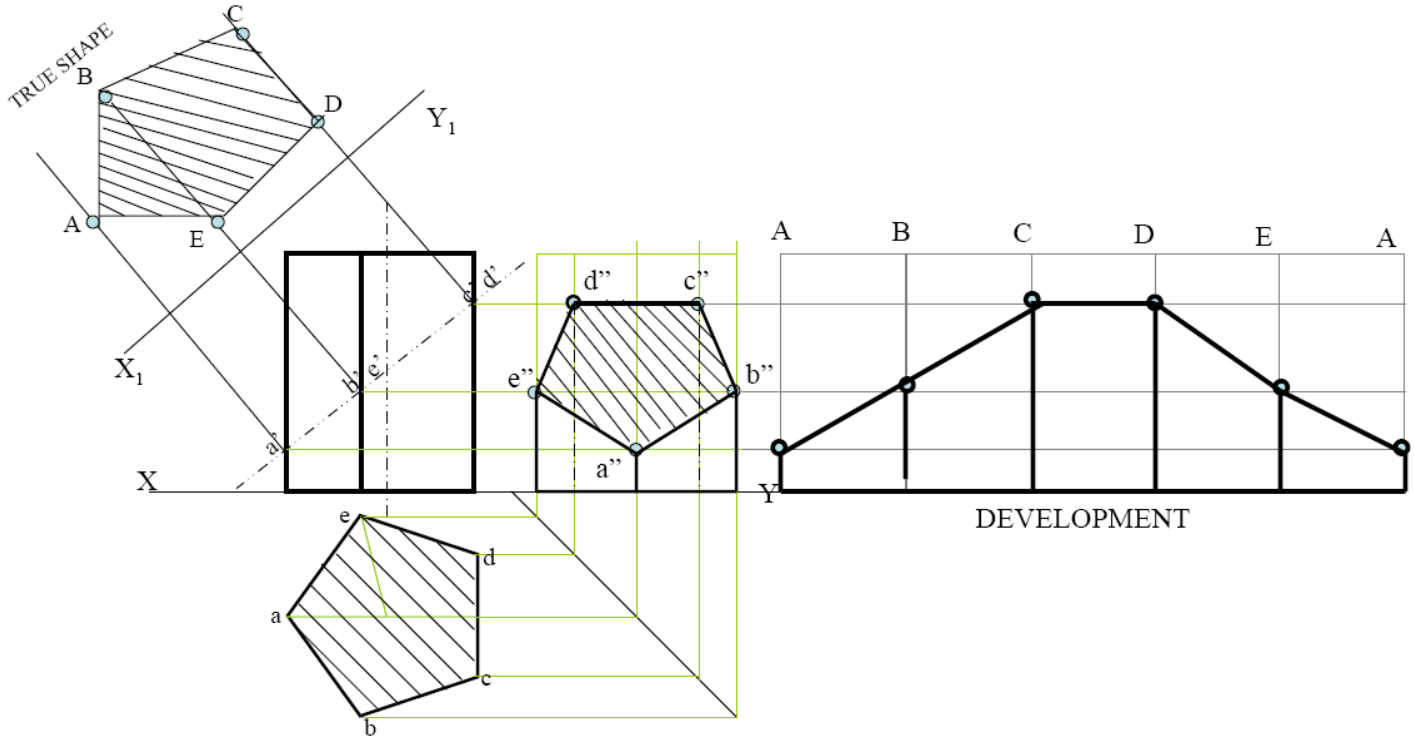




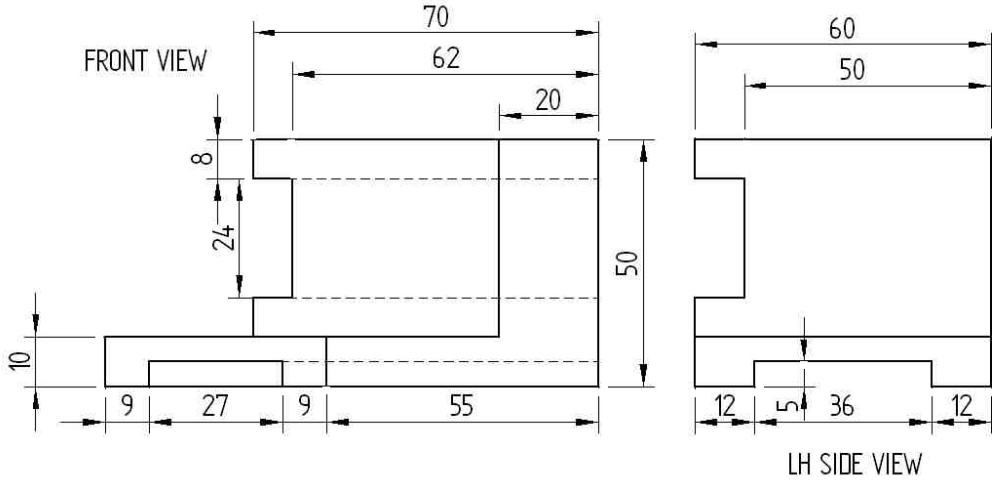
Q.4 A cylindrical pipe of 40 mm diameter has a branch pipe of 20 mm diameter. The axis of the main pipe is vertical. The axis of the branch pipe intersects the main pipe at an angle 60° and is also parallel to the VP. The axis of the branch pipe is 10 mm away from the axis of the main pipe. Draw the Front View and Top View showing the curve of intersections. [25]

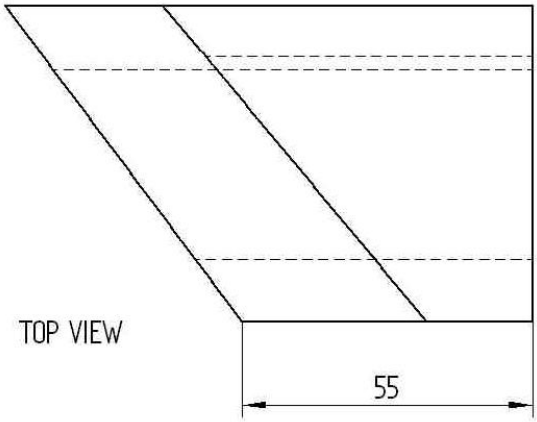


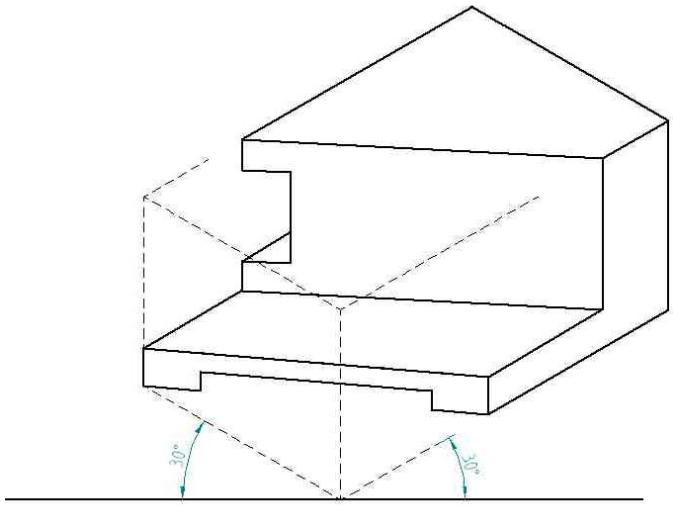
Q.5 A pentagonal prism, 30 mm base side and 50 mm axis is standing on HP on its base whose one side is perpendicular to VP. It is cut by a section plane 45^0 inclined to HP, through mid-point of axis. Draw FV, sectional TV and sectional Side view. Also draw true shape of section and development of surface of remaining solid. [25]



Q.6 Draw the isometric view of the object shown in the three views, shown in Figure below. [25]







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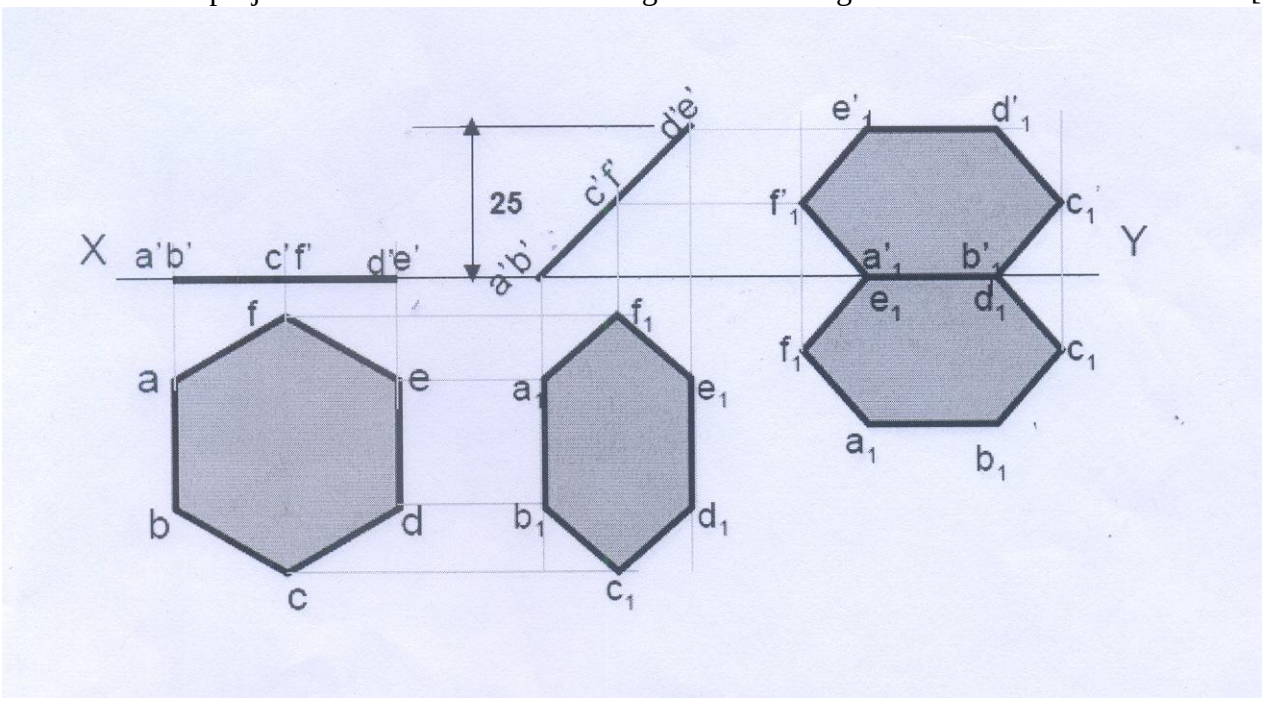
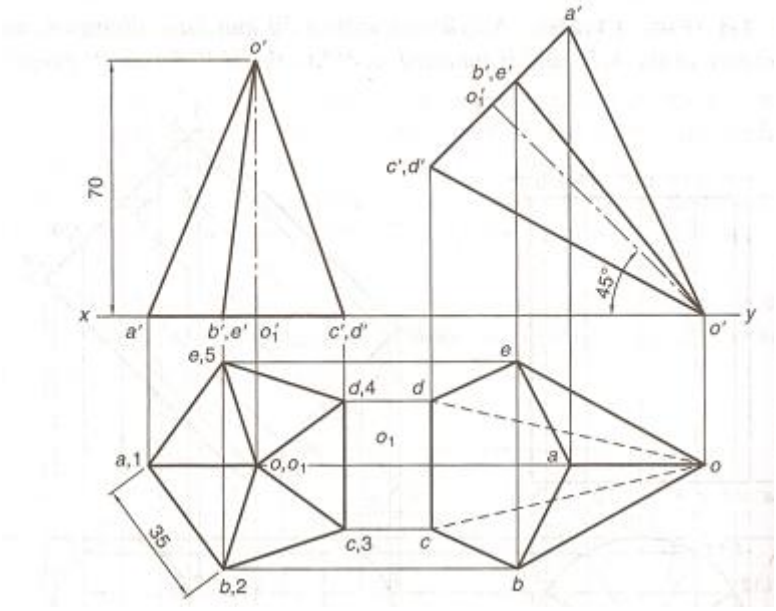
Hints:
(1) The construction lines should be drawn as thinner lines and should NOT be erased.
(2) Dimensioning and scale, as required, should be mentioned neatly.
(3) Only First-angle projection is to be used.

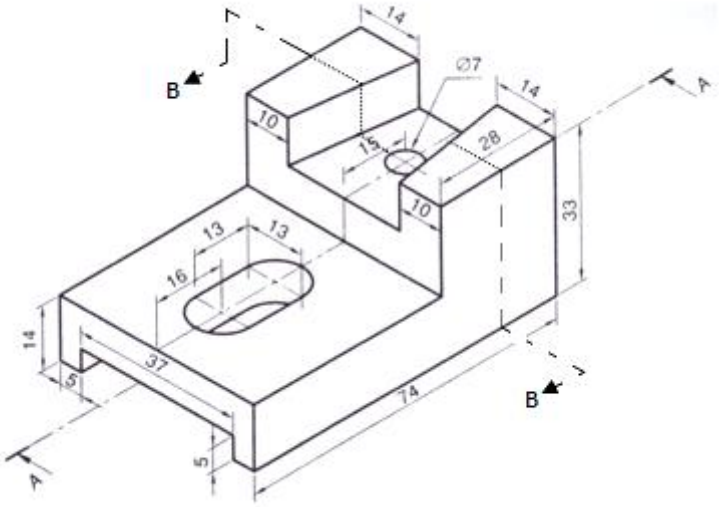
Q.1 A hexagonal lamina has its one side in HP and its opposite parallel side is 25 mm above HP and in VP. Draw its projections. Take side of the hexagon 30 mm long. [25]

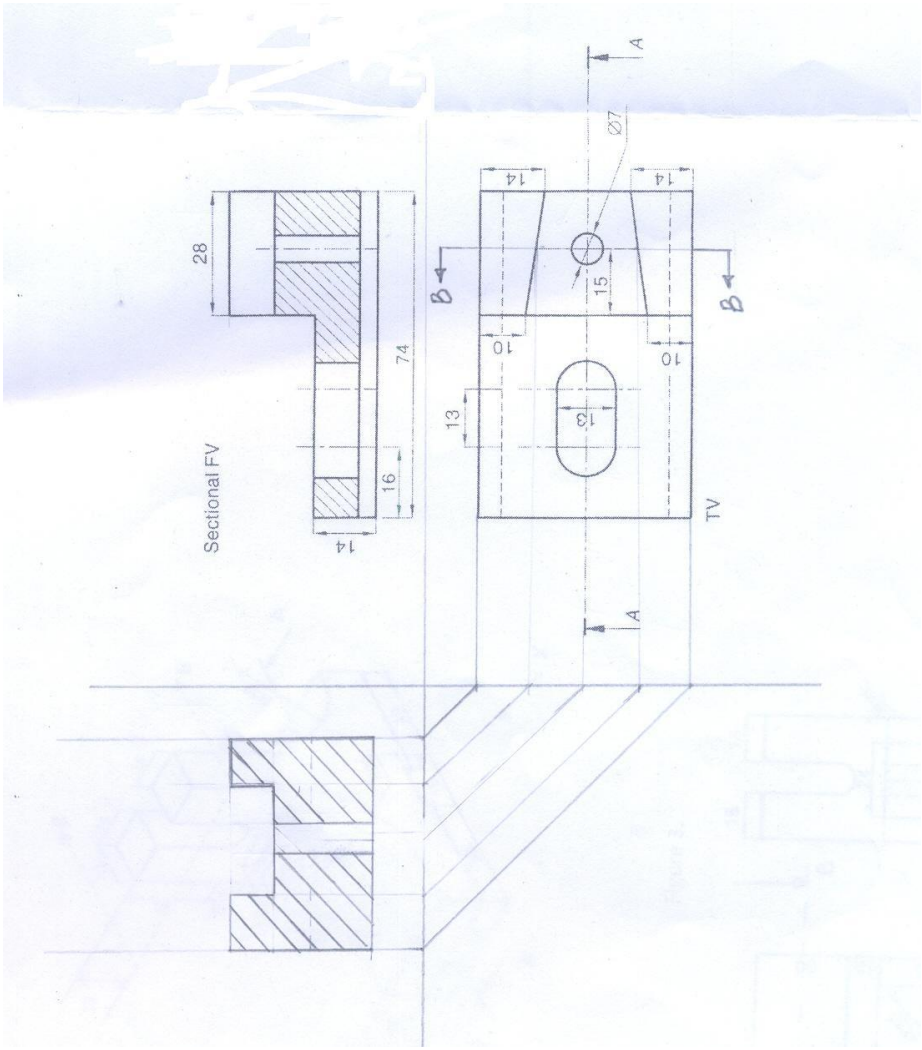


Q.2 A Pentagonal pyramid having a heavy base with a 35 mm side and 70 mm long axis has an edge of the base parallel to the HP and its apex lies in the HP. Its axis is parallel to the VP and inclined at 45^0 to the HP. Draw Front and Top views. [25]

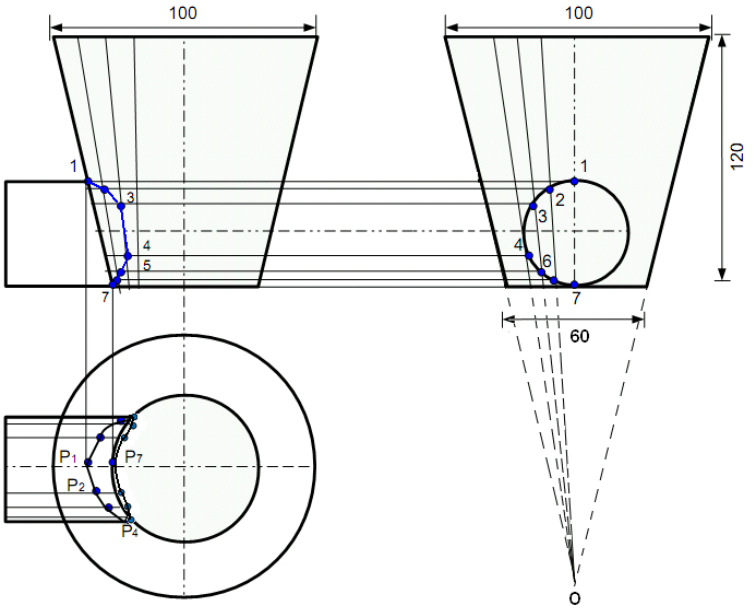


Q.3 Draw the sectional front view (AA) and the sectional RHSV (BB) of the object shown in the figure below [25]

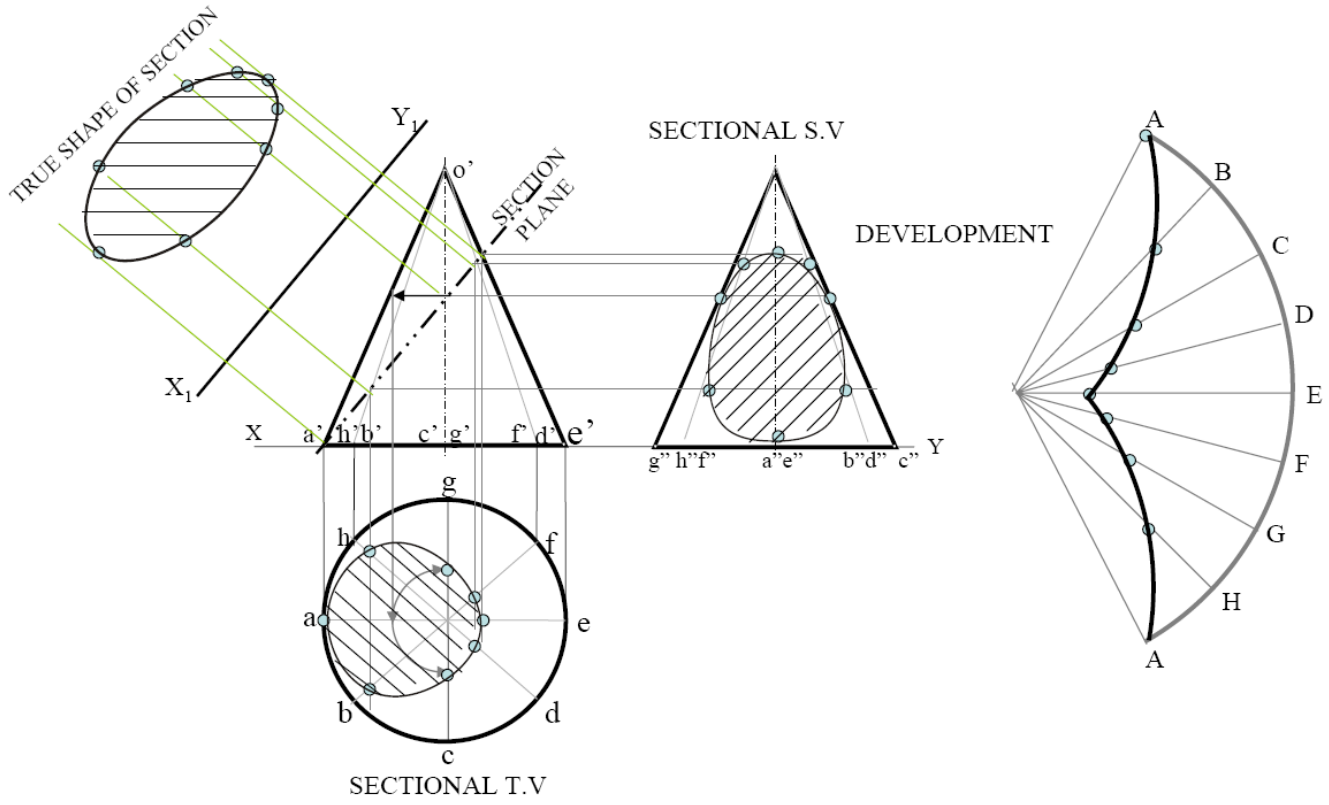




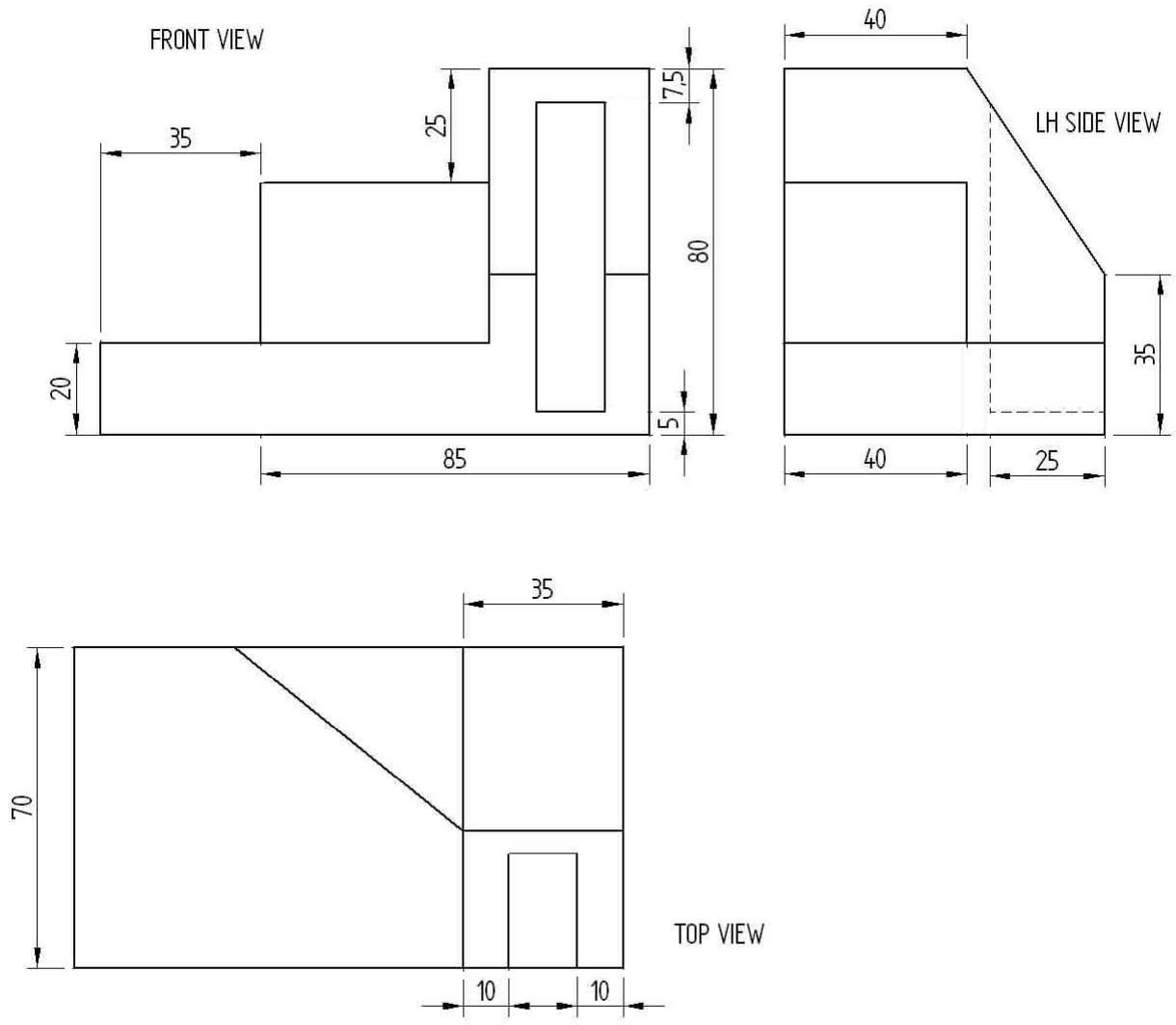
Q.4 A conical hopper is 120 mm high with 60 mm diameter at the bottom and 100 mm diameter at the top and is resting on the HP. A horizontal cylinder of diameter 40 mm is connected to the hopper such that axis of the horizontal cylinder is 20 mm above the bottom of the hopper. Axes of the hopper and the cylinder are parallel to the VP and intersect each other. Draw the Front View and Top View showing the curve of intersections. [25]

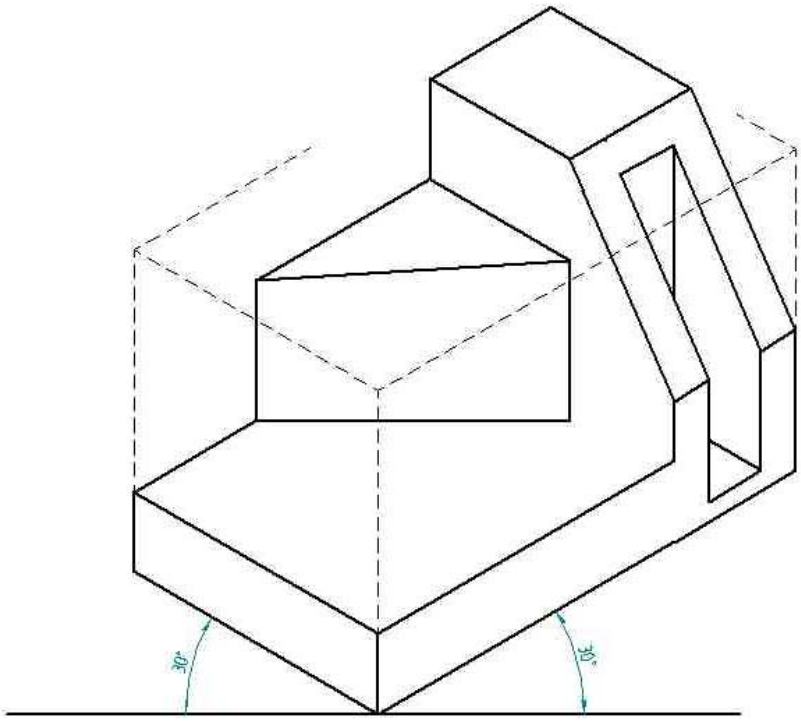


Q.5 A cone, 50 mm base diameter and 70 mm axis is standing on its base on HP. It is cut by a section plane 45^0 inclined to HP passing through the base end of the generator. Draw FV, TV, sectional views, true shape of the section and development of surfaces of remaining solid. [25]



Q.6 Draw the isometric view of the object shown in the three views shown in the Figure below.




30°
30°

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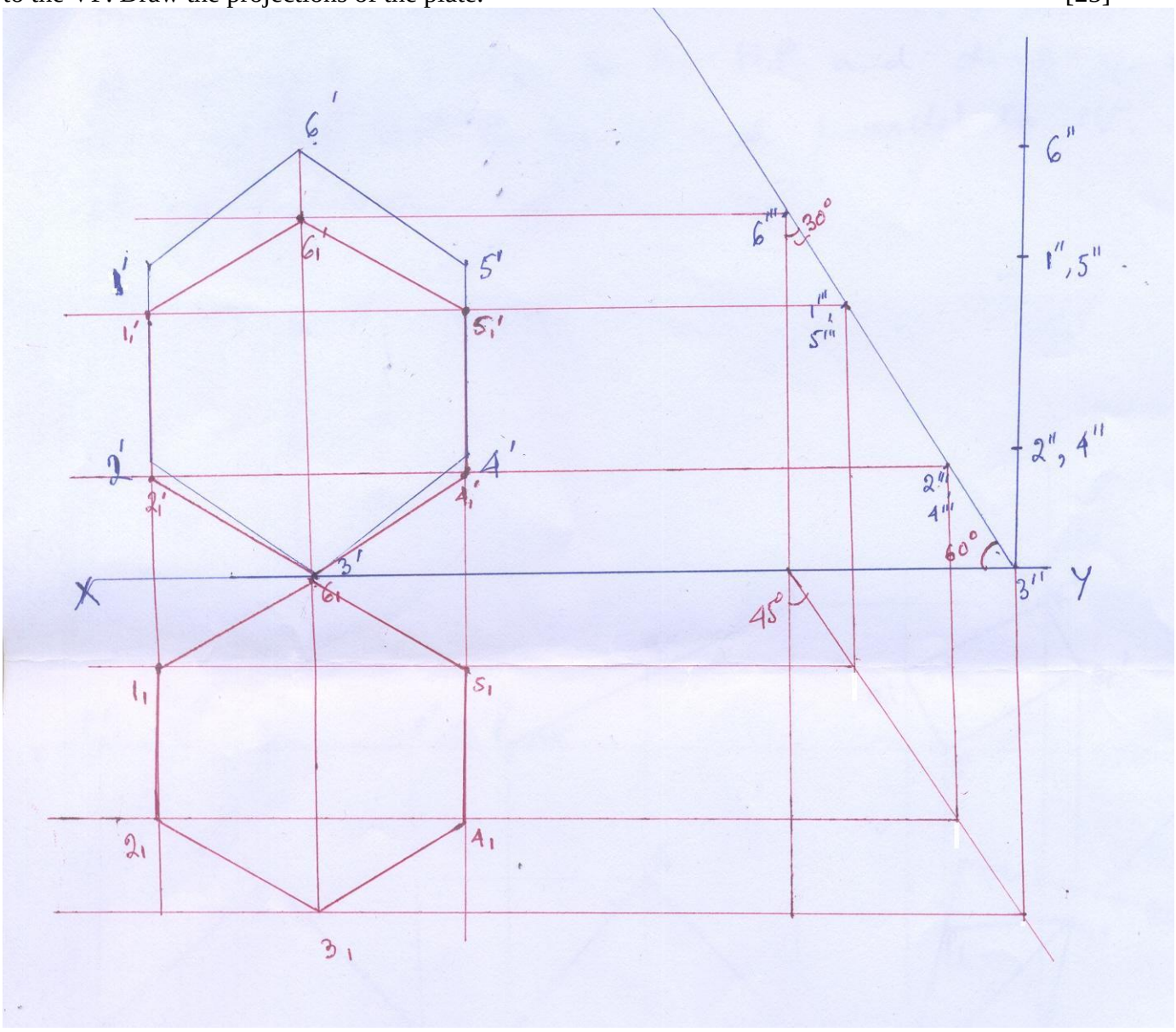
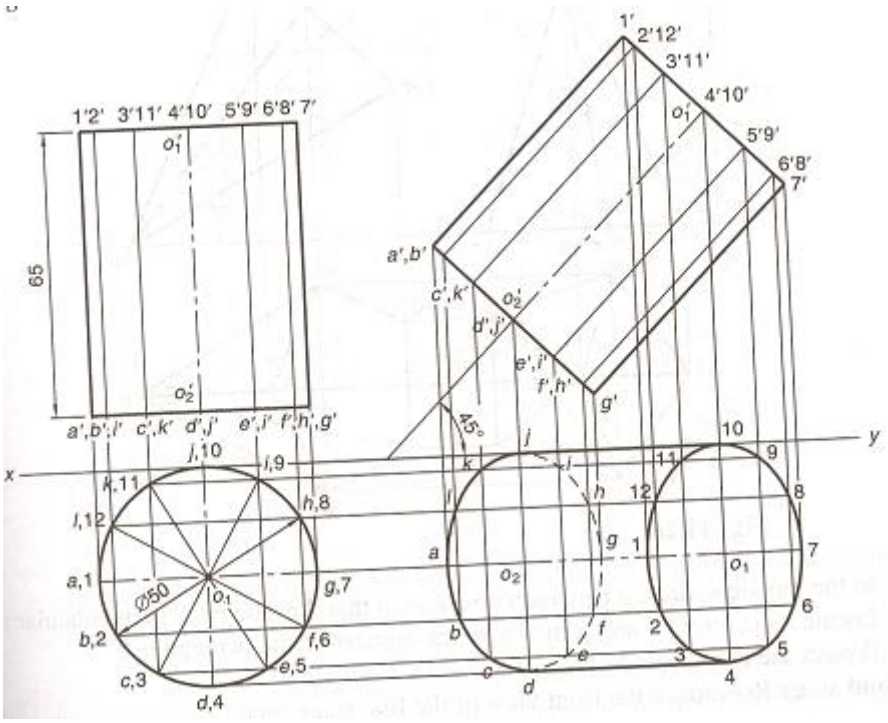
Q.1 A regular hexagonal plate, having sides of 30 mm and negligible thickness, has one corner touching VP and another opposite corner touching HP. The plate is inclined at 60^0 to the HP and 30^0 to the VP. Draw the projections of the plate. [25]



Q.2 A cylinder with a 50 mm base diameter and a 65 mm long axis has a generator in the V.P. and is inclined at 45^0 to the HP. Draw its projections. [25]



Q. 3 Draw the sectional front view (AA) and sectional top view (BB) of the object shown in figure below [25]

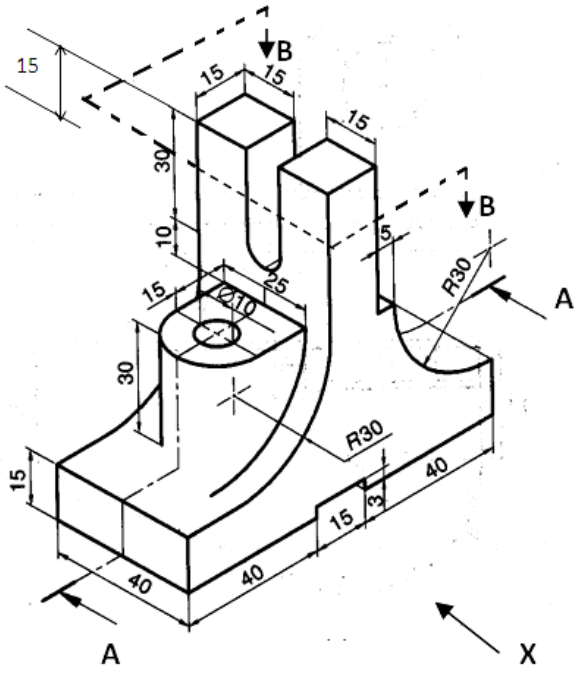
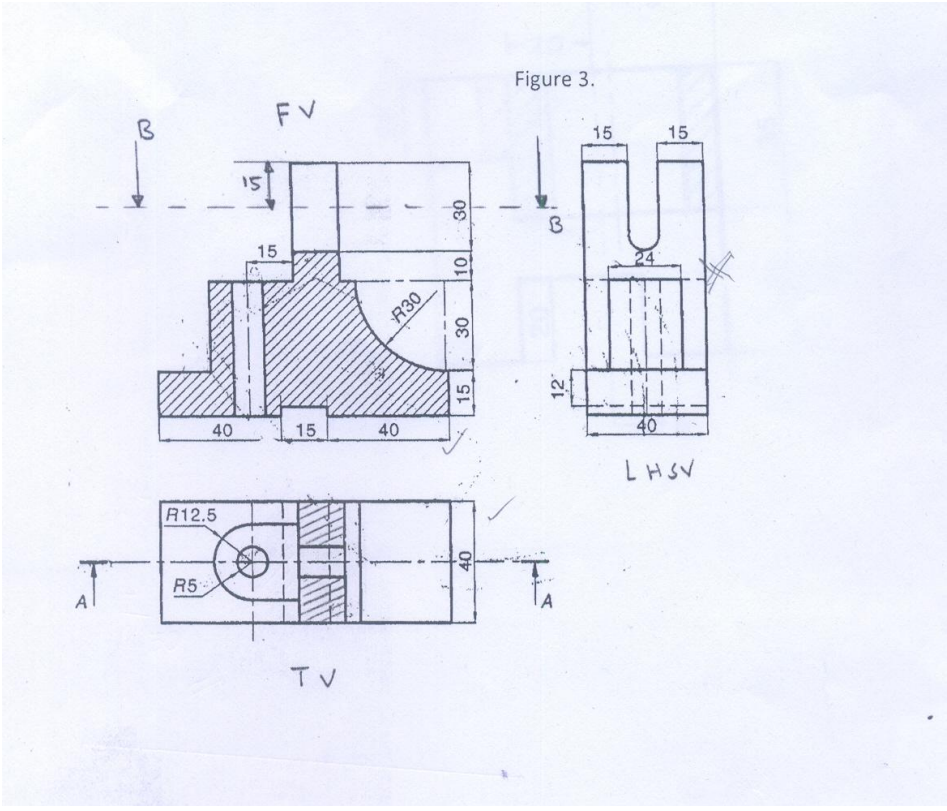
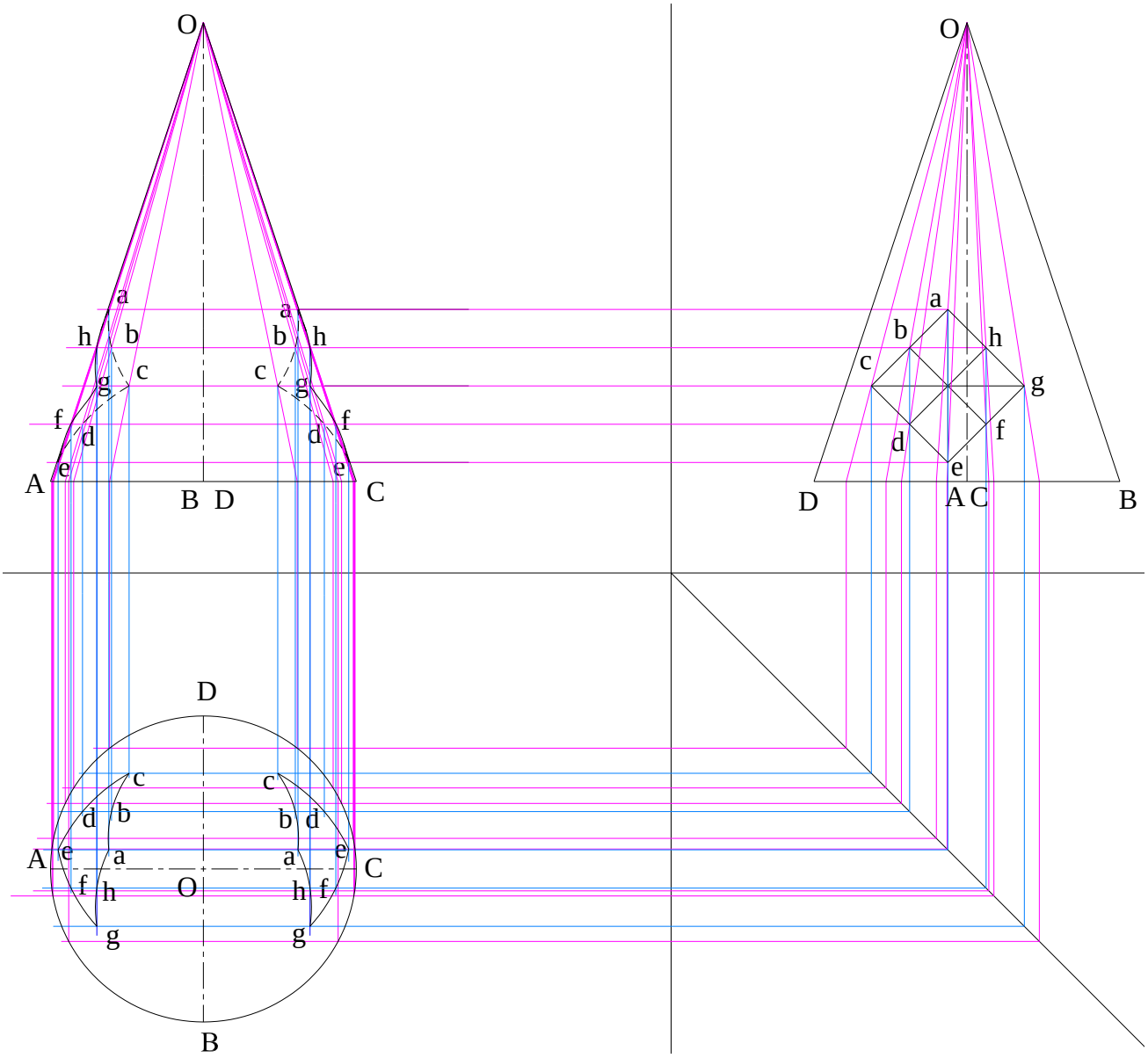


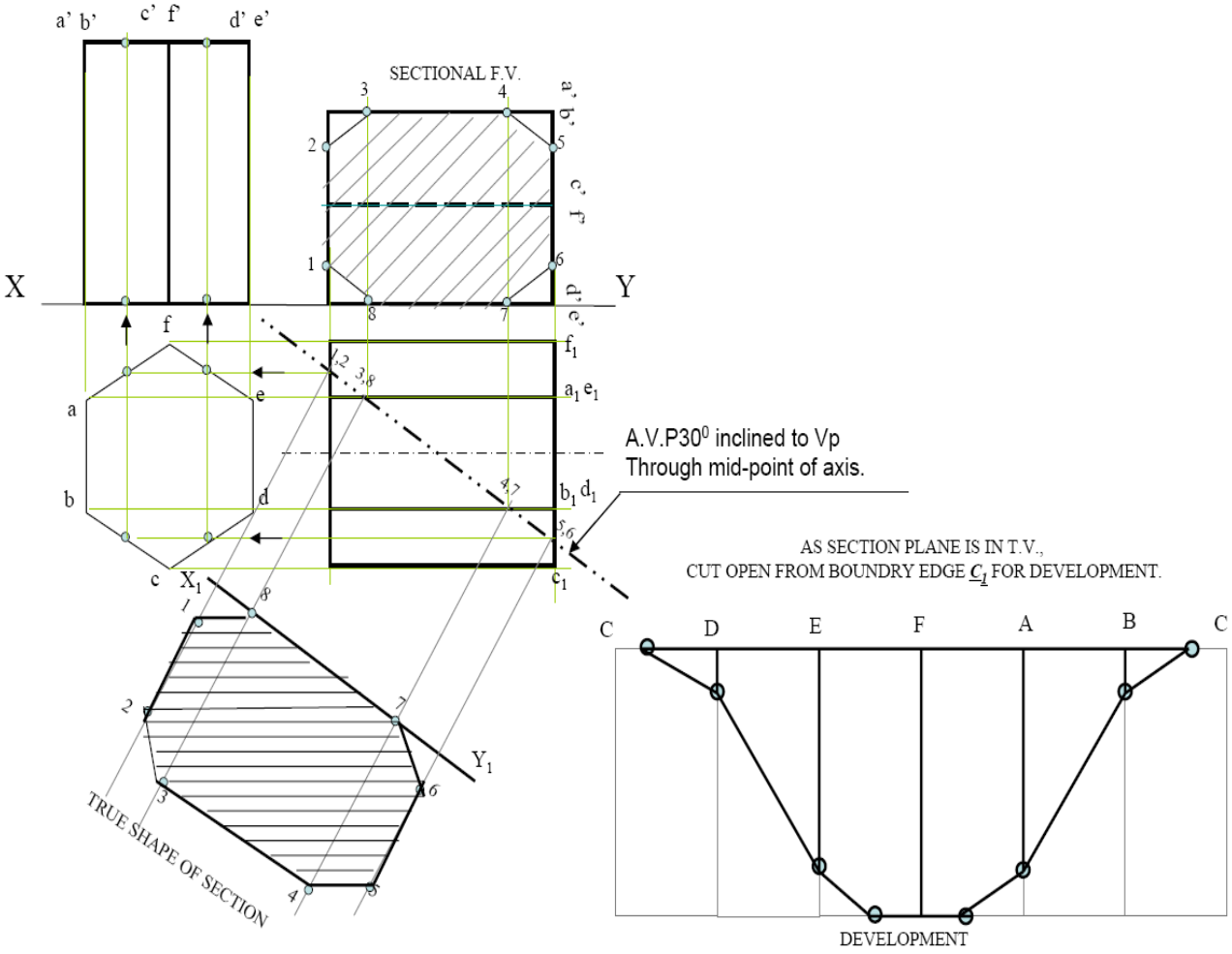
Figure 3.



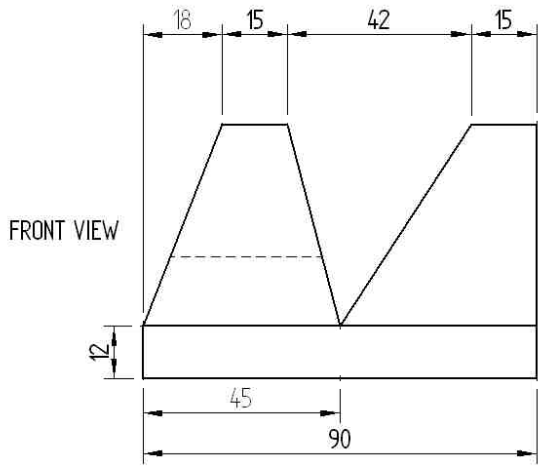
Q.4 A cone, base 216 mm diameter and axis 324 mm long, has a square hole of 76 mm side cut through it. The axis of the hole, parallel to V. P. and H. P., is 14 mm apart from the axis of the cone. The axis is also nearer to VP and 68 mm above the base of the cone. Draw three views of the cone when it is resting on its base on the ground with the face of the hole equally inclined to the HP. [25]

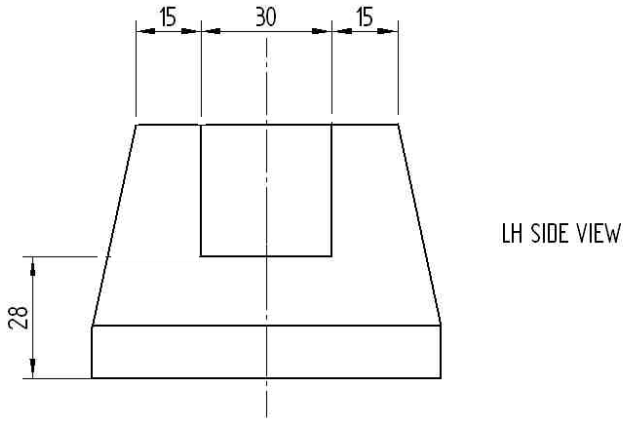


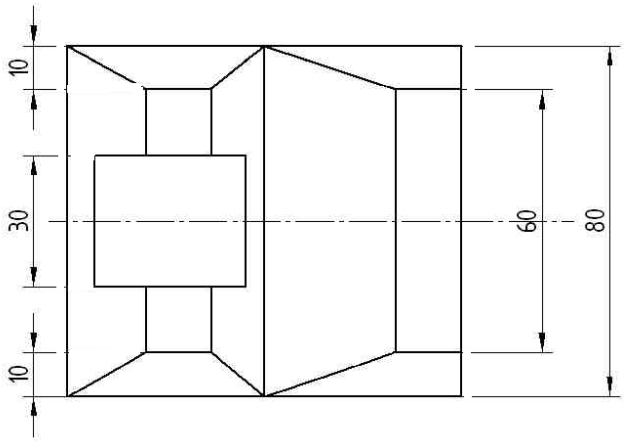
Q.5 A hexagonal prism of 30 mm base side and 55 mm axis is lying on HP on its rectangular face with axis parallel to VP. It is cut by a section plane normal to HP and 30^0 inclined to VP bisecting axis. Draw sectional Views, true shape and development. [25]

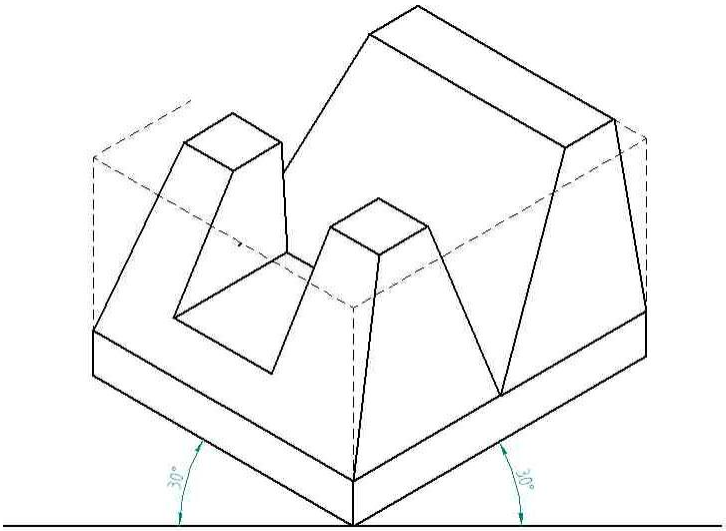


Q.6 Draw the isometric view of the object shown in the three views, shown in the Figure below. [25]









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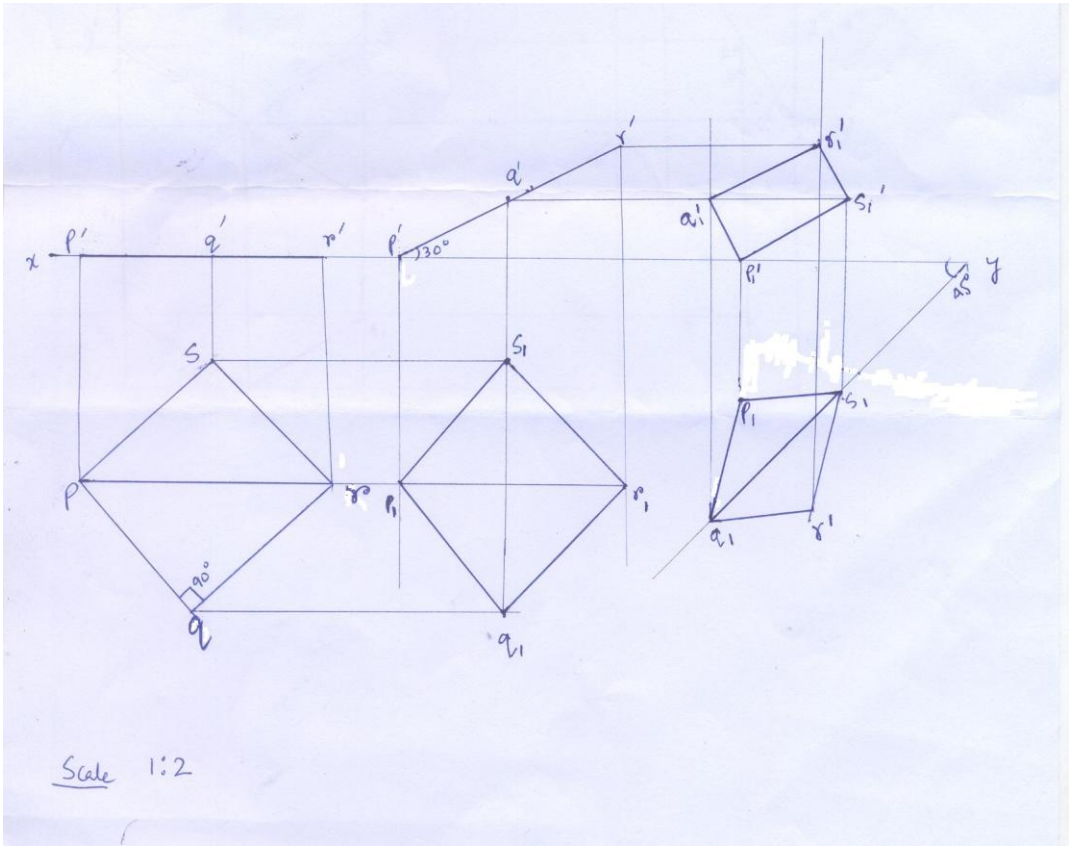
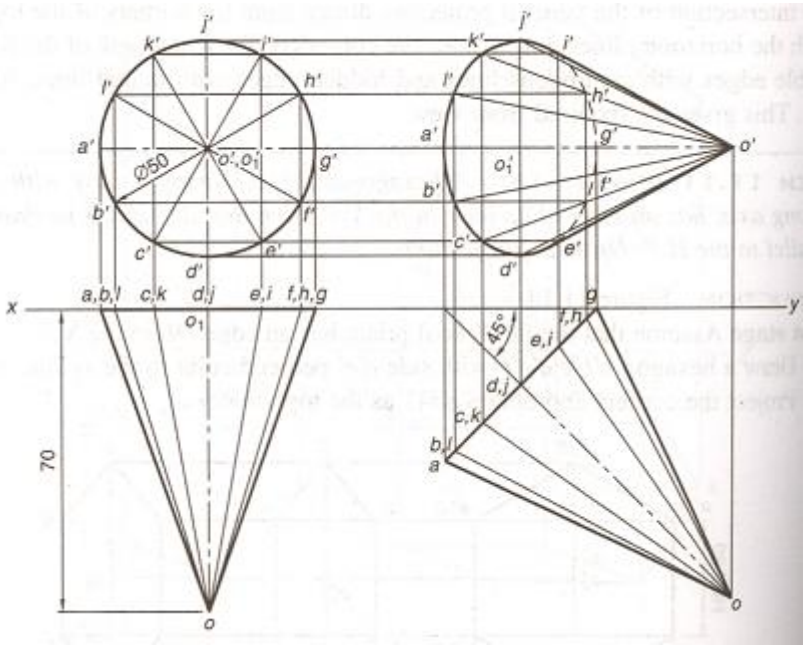
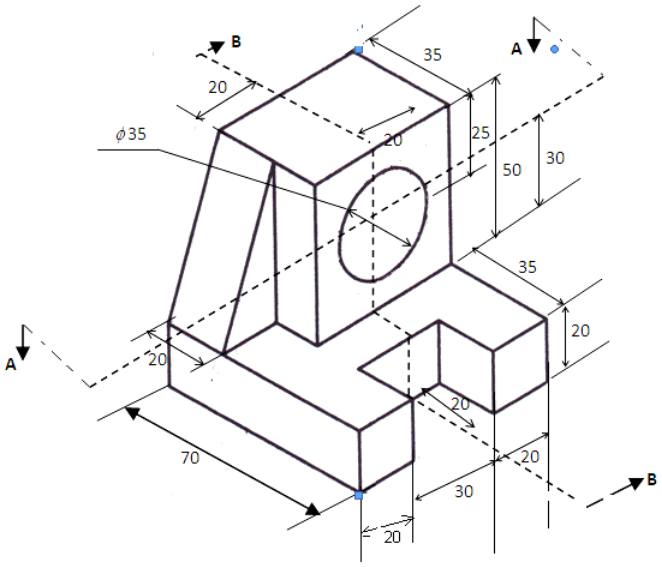
Q.1 A square lamina PQRS has sides measuring 70 mm. One corner P is located on the HP, diagonal PR is inclined at 30^0 to the HP and diagonal QS is inclined at 45^0 to the VP. Draw its projections. [25]

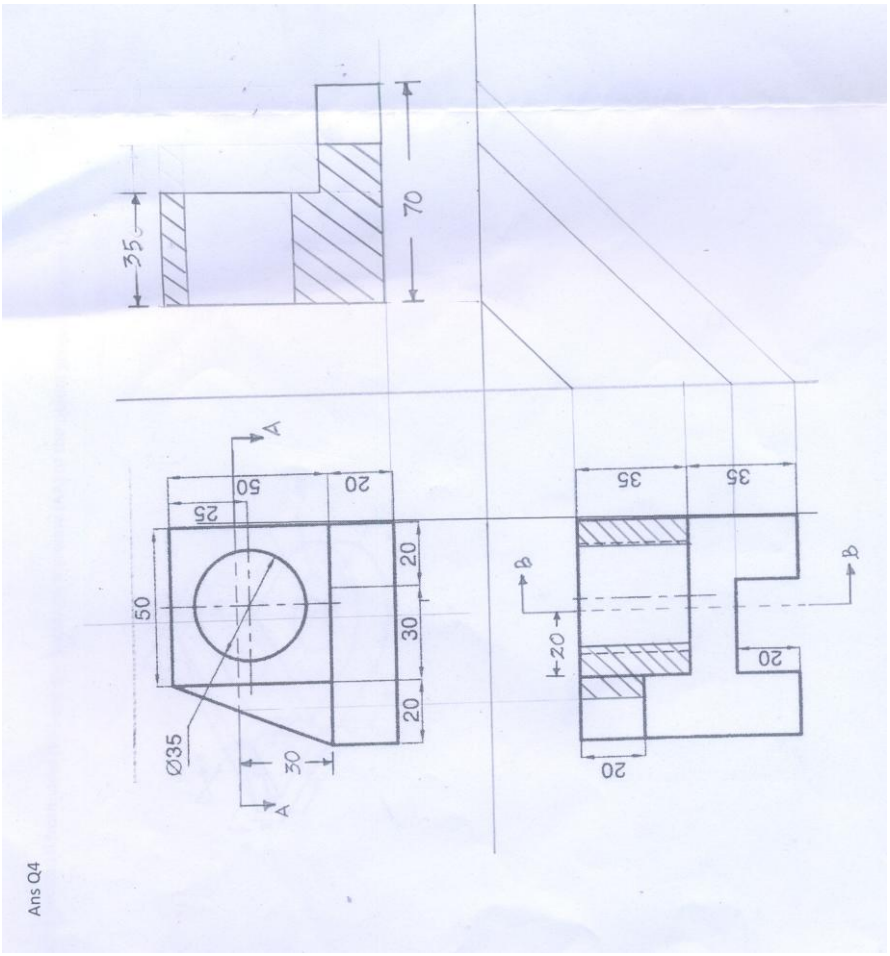


Q.2 A cone having 50 mm diameter and 70 mm long axis has a point of its base circle in the VP, such that the axis of the cone is inclined at 45^0 to the VP and parallel to the H.P. Draw its projections.[25]

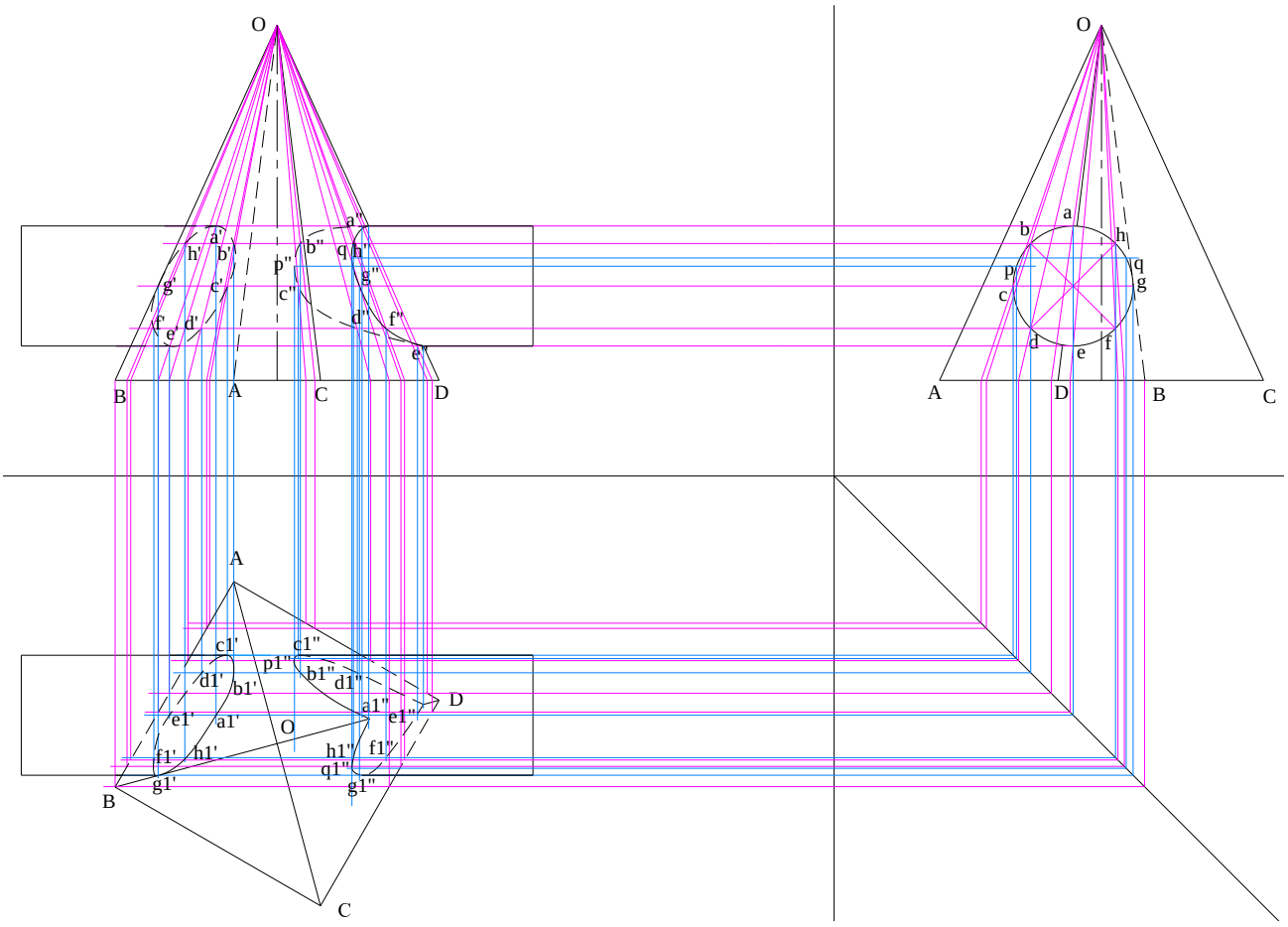


Q.3 Draw the sectional top view of horizontal section plane passing through AA and sectional LHSV of the vertical section plane passing through BB of the object shown in the figure below [25]

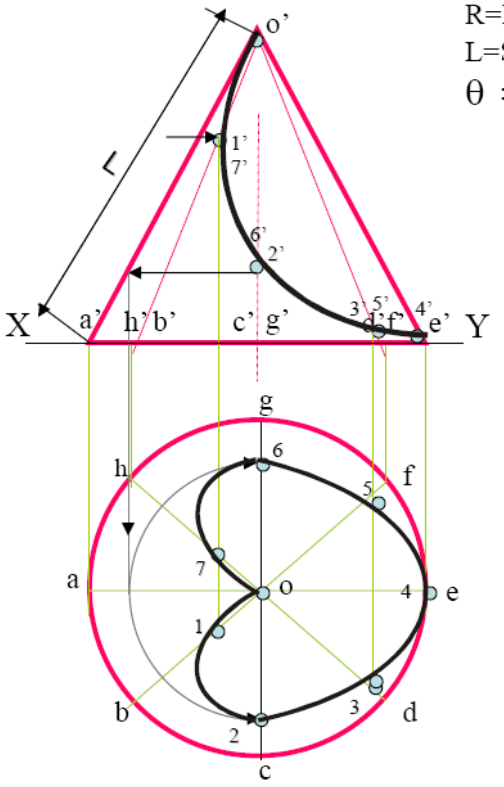




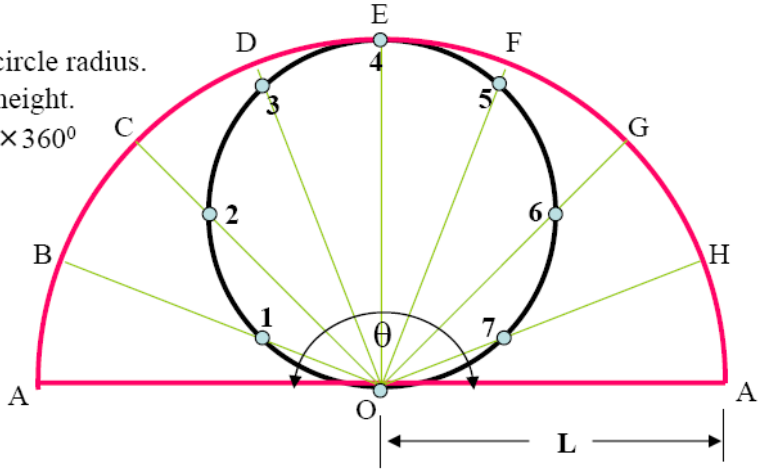
Q.4 A right square pyramid of 188 mm side of base and height 282 mm stands with its base on HP. One of its base edges is inclined at 30^{o} to the VP. A cylinder of 96 mm diameter penetrates the pyramid such that its axis is parallel to both V. P. and H. P. The axis of the cylinder is 22 mm apart from the axis of the pyramid. The axis of the cylinder is also nearer to VP and 76 mm above the base of pyramid. Draw the projections showing curves of intersections. [25]



Q.5 Draw a semicircle of 100 mm diameter and inscribe in it a largest circle. If the semicircle is the development of a cone and inscribed circle is some curve on it, then draw the projections of cone showing that curve. [25]



R=Base circle radius.
L=Slant height.
$\theta = \frac{R}{L} \times 360^0$



Q.6 Draw the isometric view of the object shown in the three views shown in the Figure below’

[25]