SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
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SCHOOL OF COMPUTING

SCHOOL OF BIO AND CHEMICAL ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

DEPARTMENT OF INFORMATION TECHNOLOGY

DEPARTMENT OF CHEMICAL ENGINEERING

DEPARTMENT OF BIOTECHNOLOGY

DEPARTMENT OF BIOMEDICAL ENGINEERING

UNIT – IV - SECTION OF SOLIDS – SMEA1102

SECTION OF SOLIDS

The hidden or internal parts of an object are shown by sectional views in technical drawings. The sectional view of an object is obtained by cutting through the object by a Suitable plane known as the section plane or cutting plane and removing the portion lying between the plane and the observer. The surface produced by cutting the object is called the section and its projection is called a sectional plan or sectional elevation. The section is indicated by thin section lines uniformly spaced and inclined at 45°.

A sectional view of an object is obtained by projecting the retained portion of the Jet which is left behind when object is cut by an imaginary section plane and the portion the object between the section plane and the observer is assumed as removed.

The object is cut by a section plane AA. The front half of the object between the Section plane and the observer are removed. The view of the retained portion of the object is projection VP. The top view is projected for the whole uncut object.

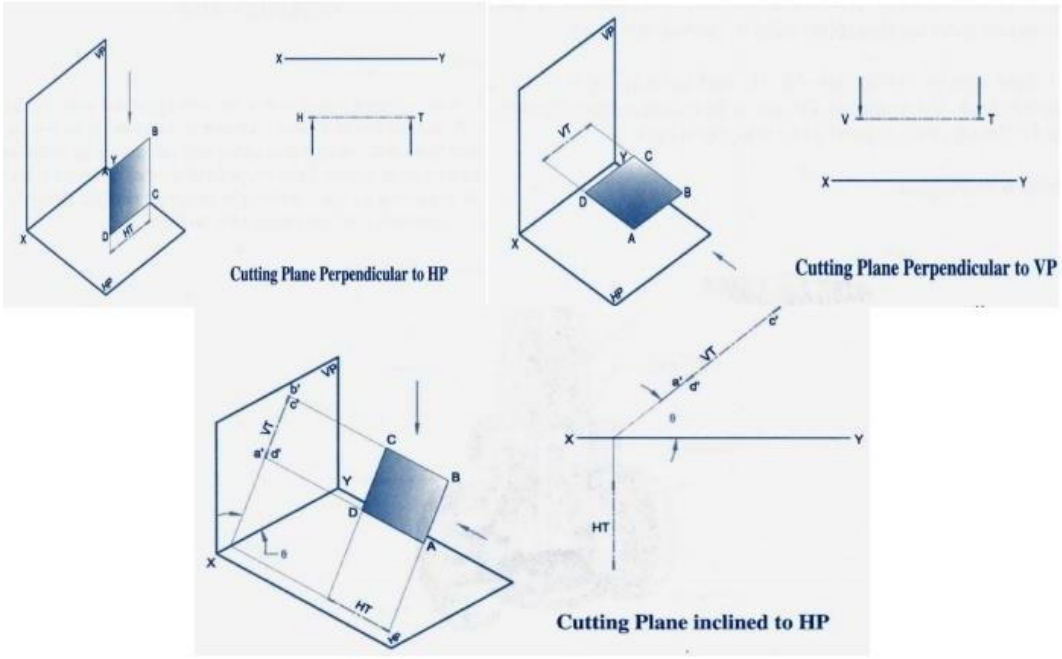

Figure 4.1

Types of sectional views of solids:

By using the five different types of perpendicular section planes we .obtain the following five types of sectional views of solids:

1. Section of solids obtained by horizontal planes.

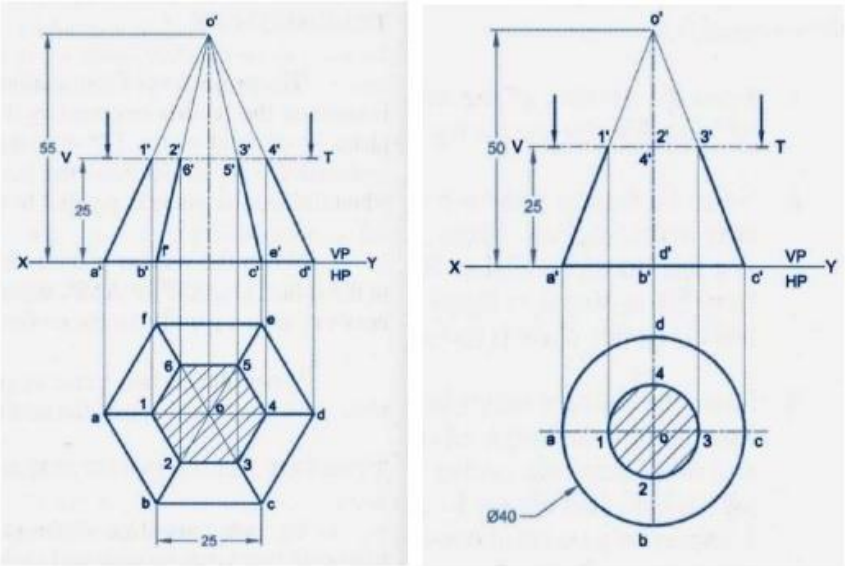

Figure 4.2

2. Section of solids obtained by vertical planes.

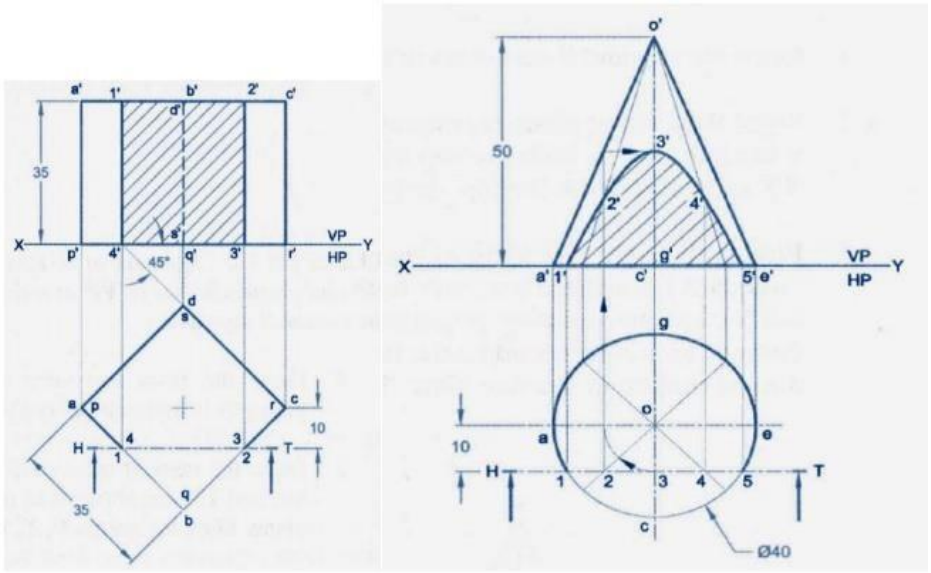

Figure 4.3

TYPES OF SECTION PLANES

A square pyramid 50 mm base side and axis 90 mm long is resting on HP at its base with a side of base parallel to VP. The pyramid is cut by a section plane parallel to HP and perpendicular to VP, bisecting the axis. Draw the sectional views and the true shape of the section.

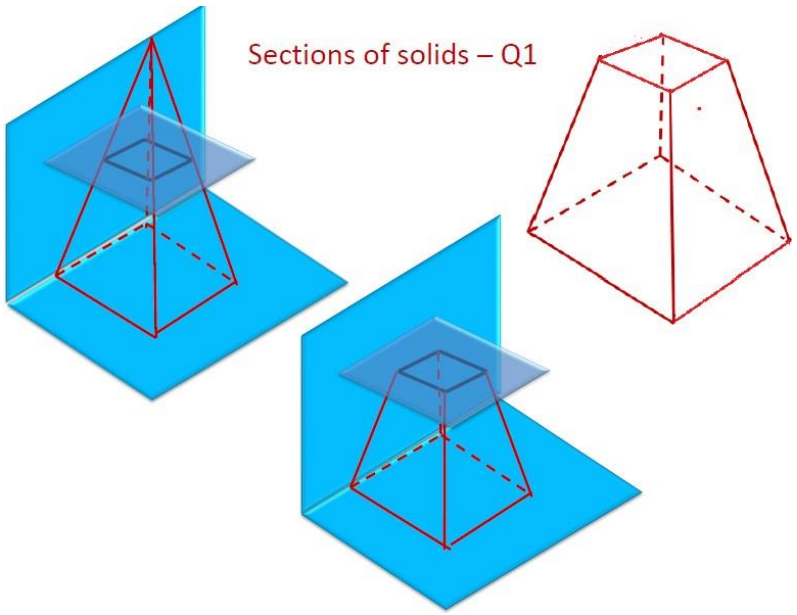

Figure 4.4

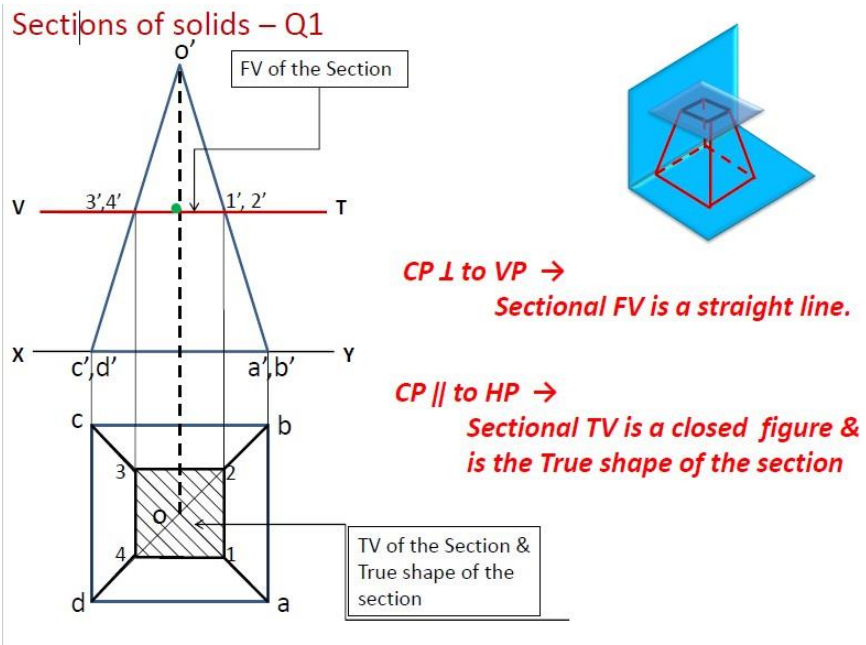

Figure 4.5

A square pyramid 50mm base side and axis 90mm long is resting on HP at its base with a side of base parallel to VP. The pyramid is cut by a section plane inclined at 45° to HP and perpendicular to VP, bisecting the axis. Draw the sectional views and the true shape of the section.

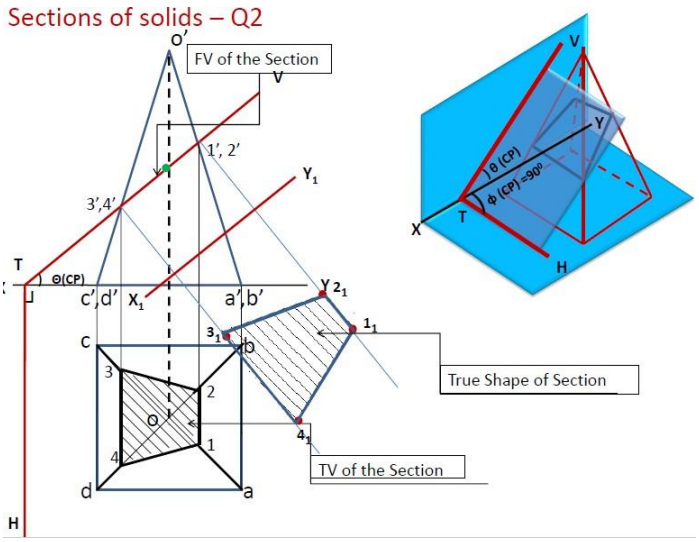

Figure 4.6

A square pyramid 60mm base side and axis 90mm long is resting on HP at its base. The pyramid is cut by a section plane in such a way that the true shape of the section is a trapezium with parallel sides 40mm and 20mm. Draw the FV and TV showing the section. Also show the true shape of the section.

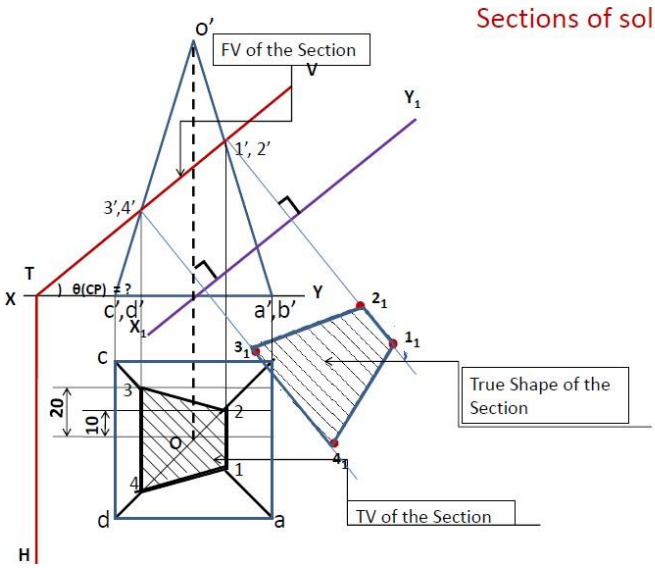

Figure 4.7

A cone is resting on its base on HP. It is cut by a plane inclined 45° to HP and perpendicular to VP. It cuts the axis of the cone at a point 40mm below the vertex. Draw the front view, sectional top view and the true shape of the section, if the diameter of the cone base is 80mm and the length of the axis is 90mm.

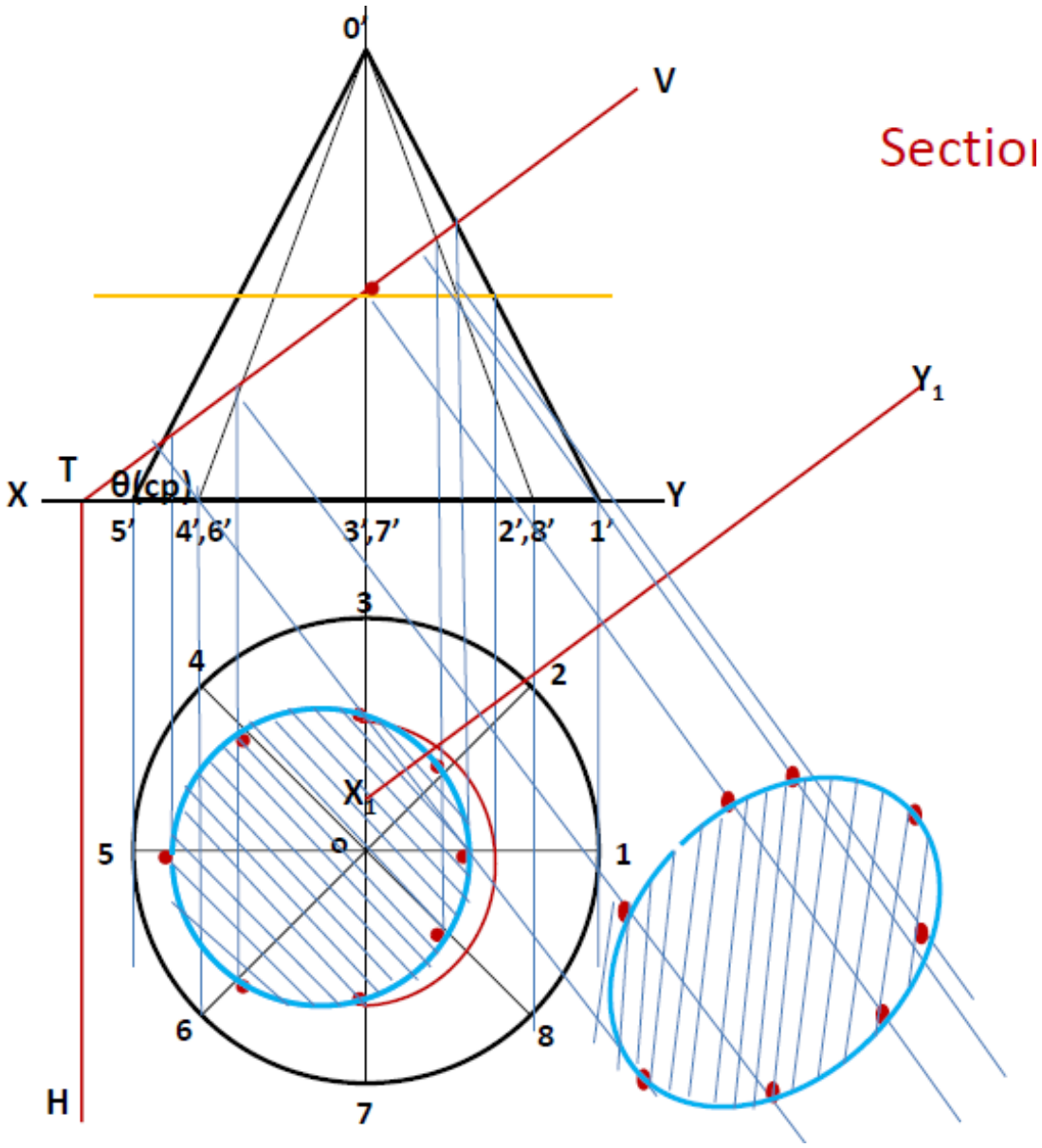

Figure 4.8

A cone of base diameter 120mm and height 135mm is resting on HP on its base. It is cut by an inclined HP such that the true shape obtained is an ellipse whose major axis is 100mm long. Draw the projections of cone showing sectional views and the true shape of the section.

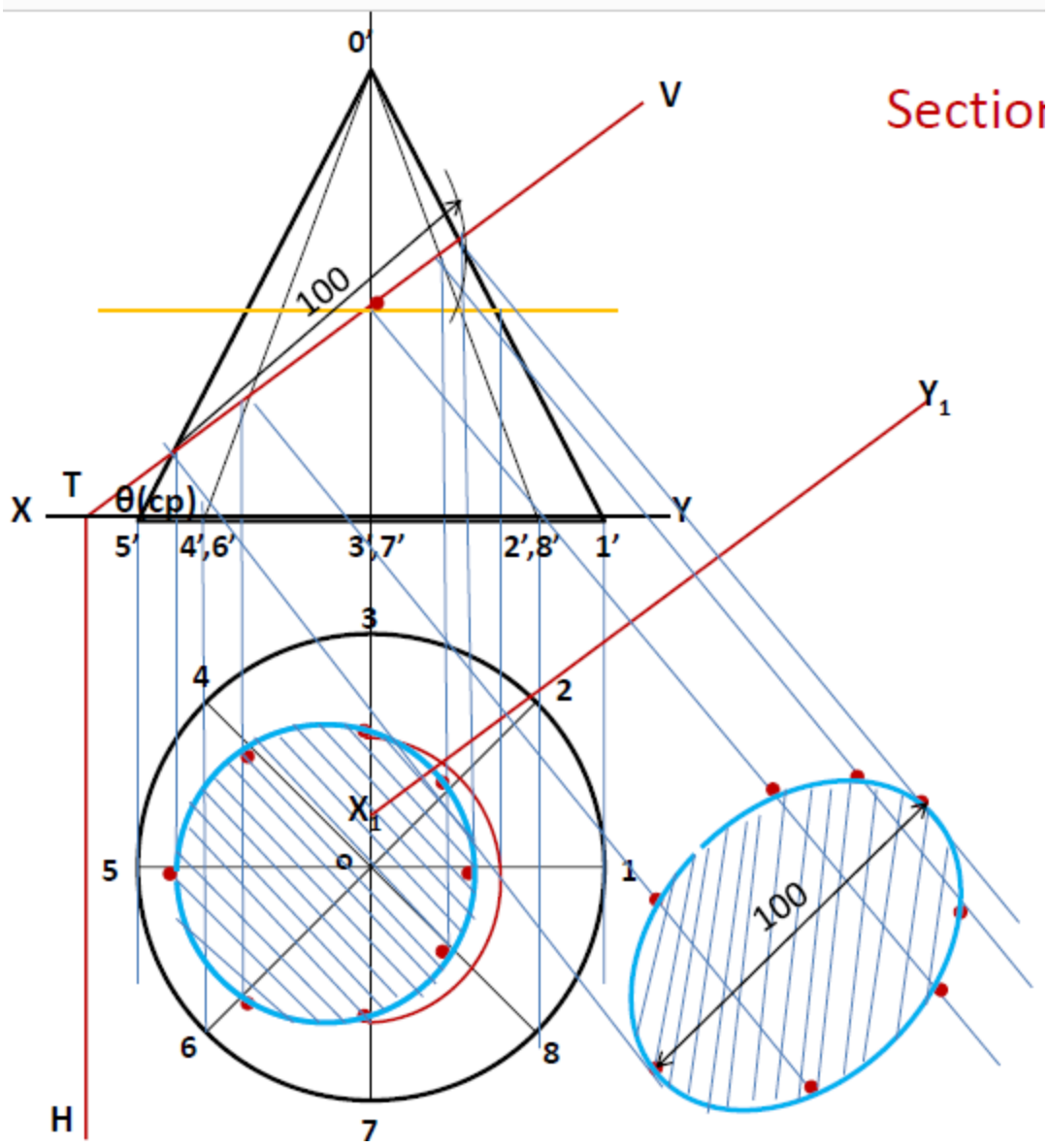

Figure 4.9

A cone base 60mm diameter and axis 70mm stands vertically with its base on HP. The vertical trace of a section plane perpendicular to VP and parallel to one of the end generators of the cone passes at a distance of 15mm from it. Draw the sectional plan and the true shape of the section.

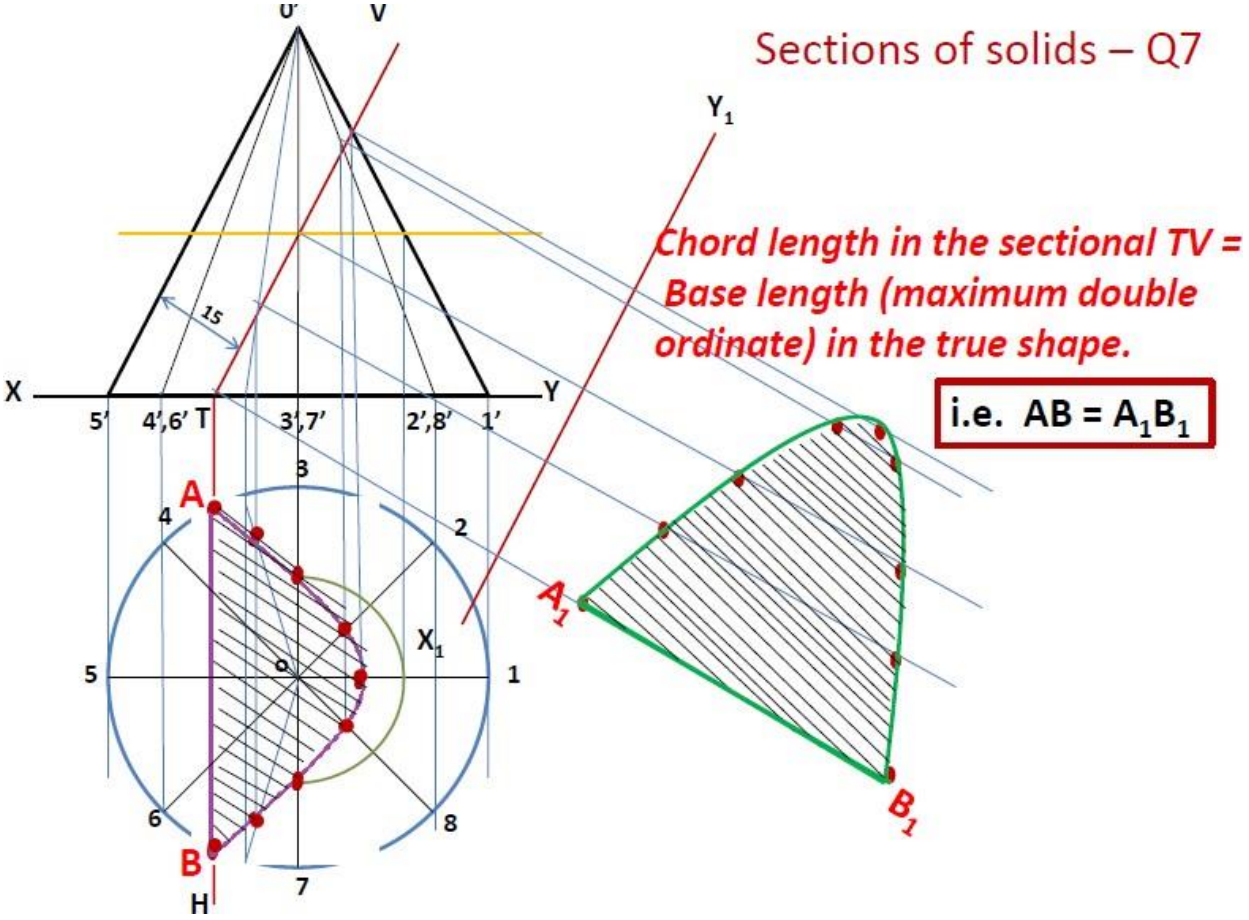

Figure 4.10

A cone of base diameter 50mm and axis 60mm long is resting on HP on its base. It is cut by a section plane such that the true shape is an isosceles triangle of base 40mm. Draw the sectional views and the true shape of the section.

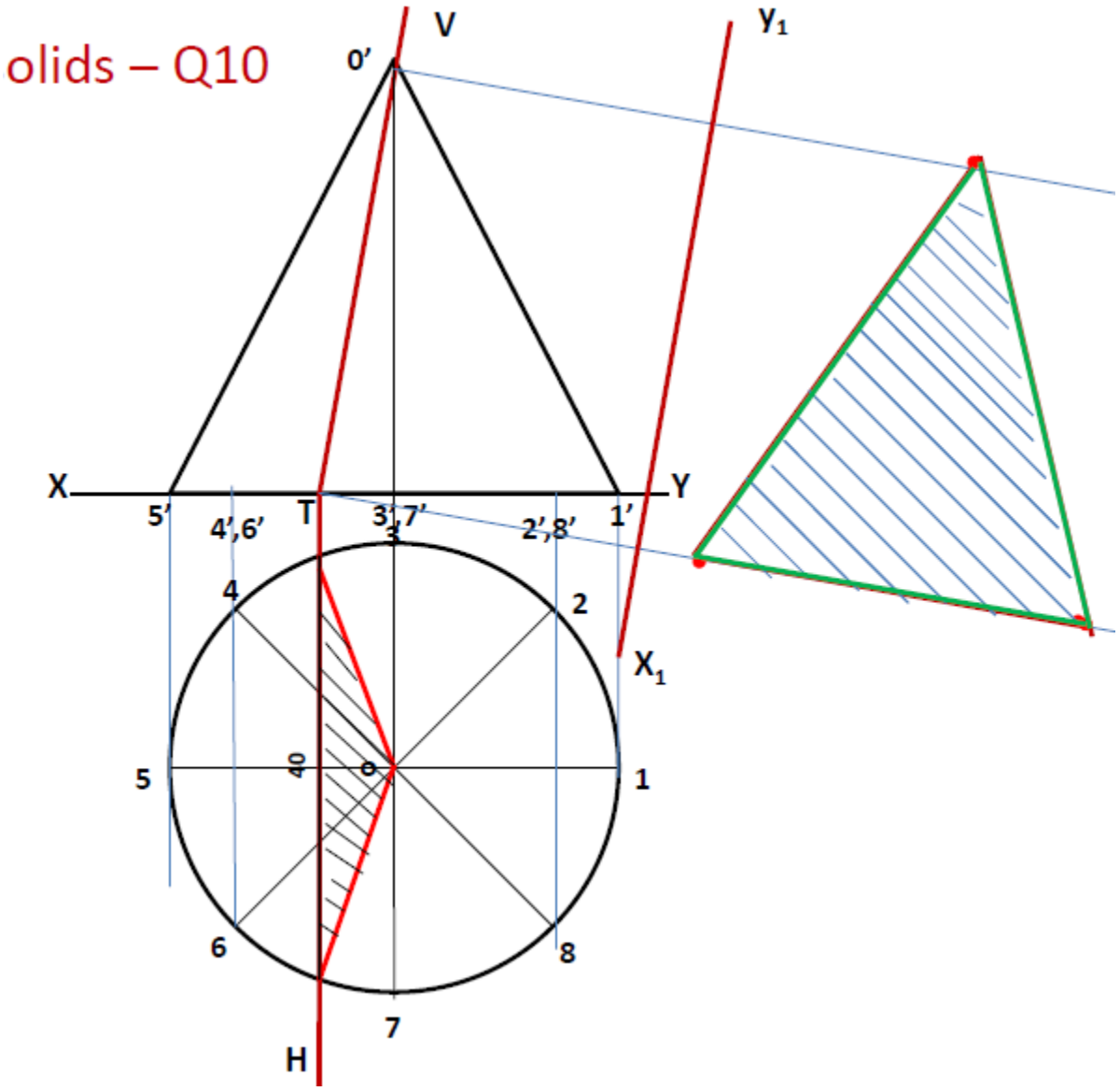

Figure 4.11

A cone of base diameter 50mm and axis 55mm long is resting on HP on its base. It is cut by a section plane perpendicular to both HP and VP and 6mm away from the axis. Show the sectional side view. Mark the height of the section.

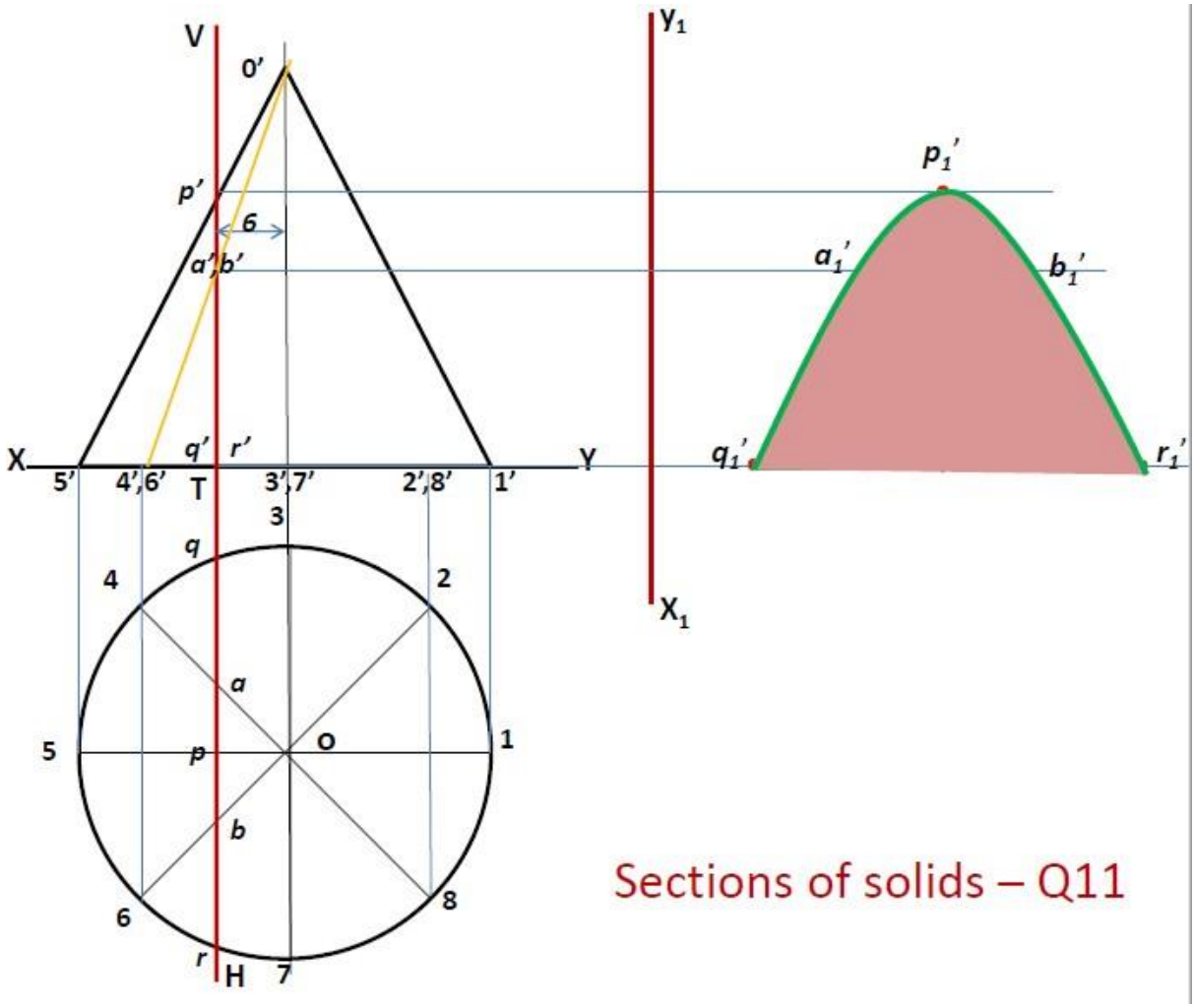

Figure 4.12

A cone base 60mm diameter and axis 90mm stands vertically with its base on HP. It is cut by a vertical section plane inclined at 30° to VP and passing through a point on the cone 10mm off the axis. Draw the sectional views and the true shape of the section.

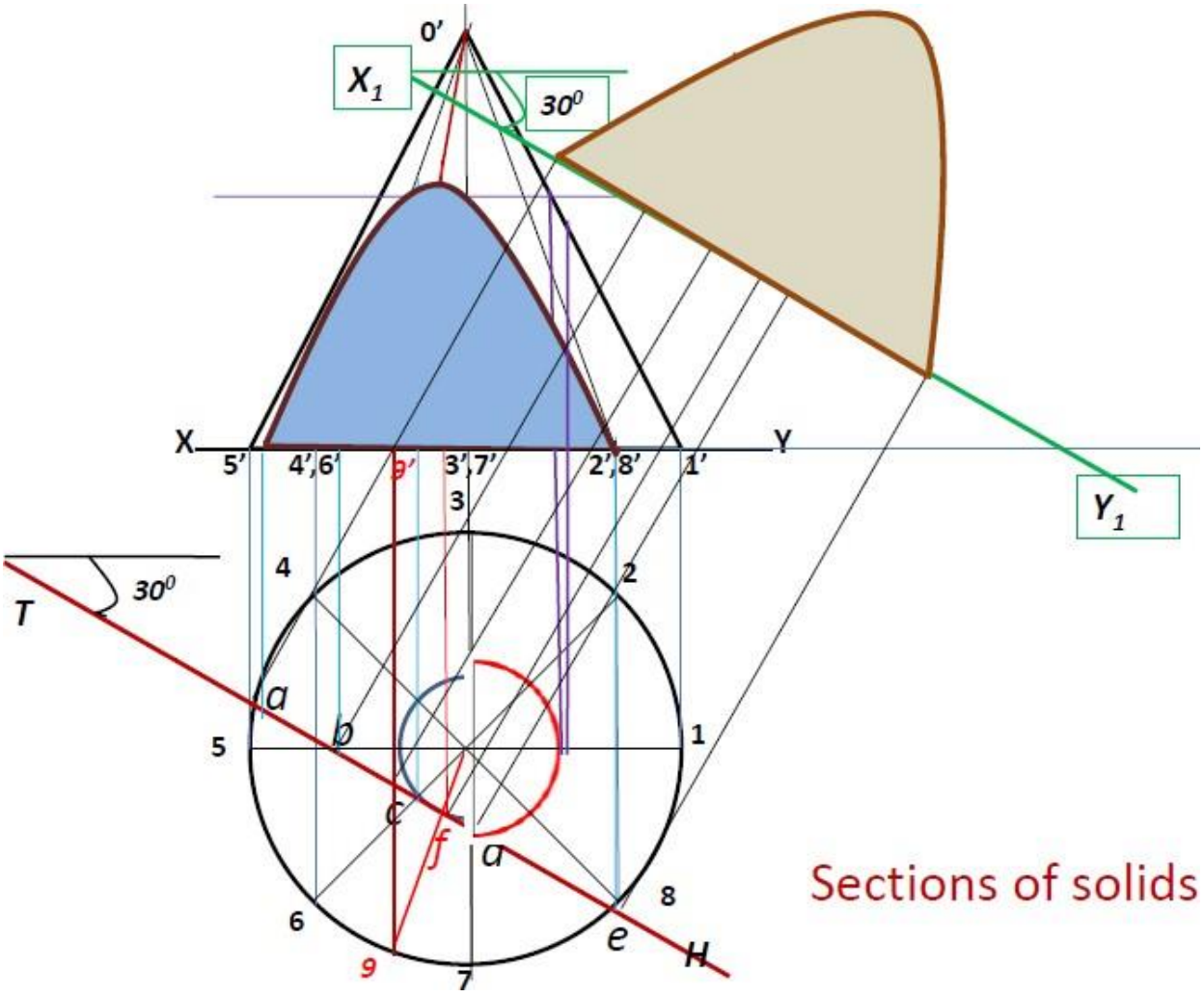

Figure 4.13

A cube of 50mm side is cut by an inclined plane such that the true shape obtained is a regular hexagon. Draw the sectional views and the true shape of the section.

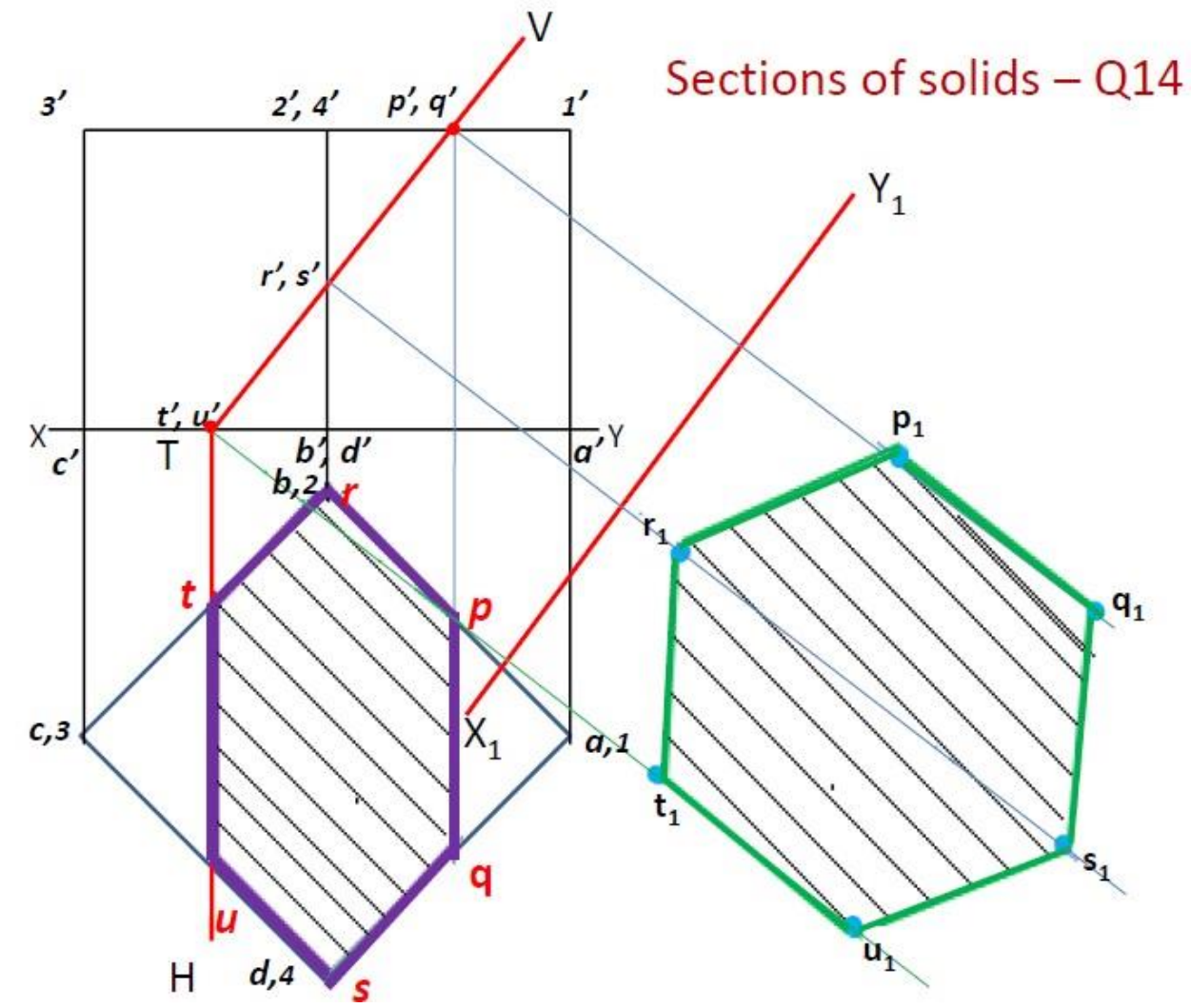

Figure 4.14

A hexagonal pyramid, side of base 30mm and axis 60mm long, is resting on its base on ground with two base edges parallel to VP. It is cut by a vertical plane inclined at 30° to VP and cutting the pyramid 5mm off the axis. Draw the top view, sectional front view and the true shape of the section.

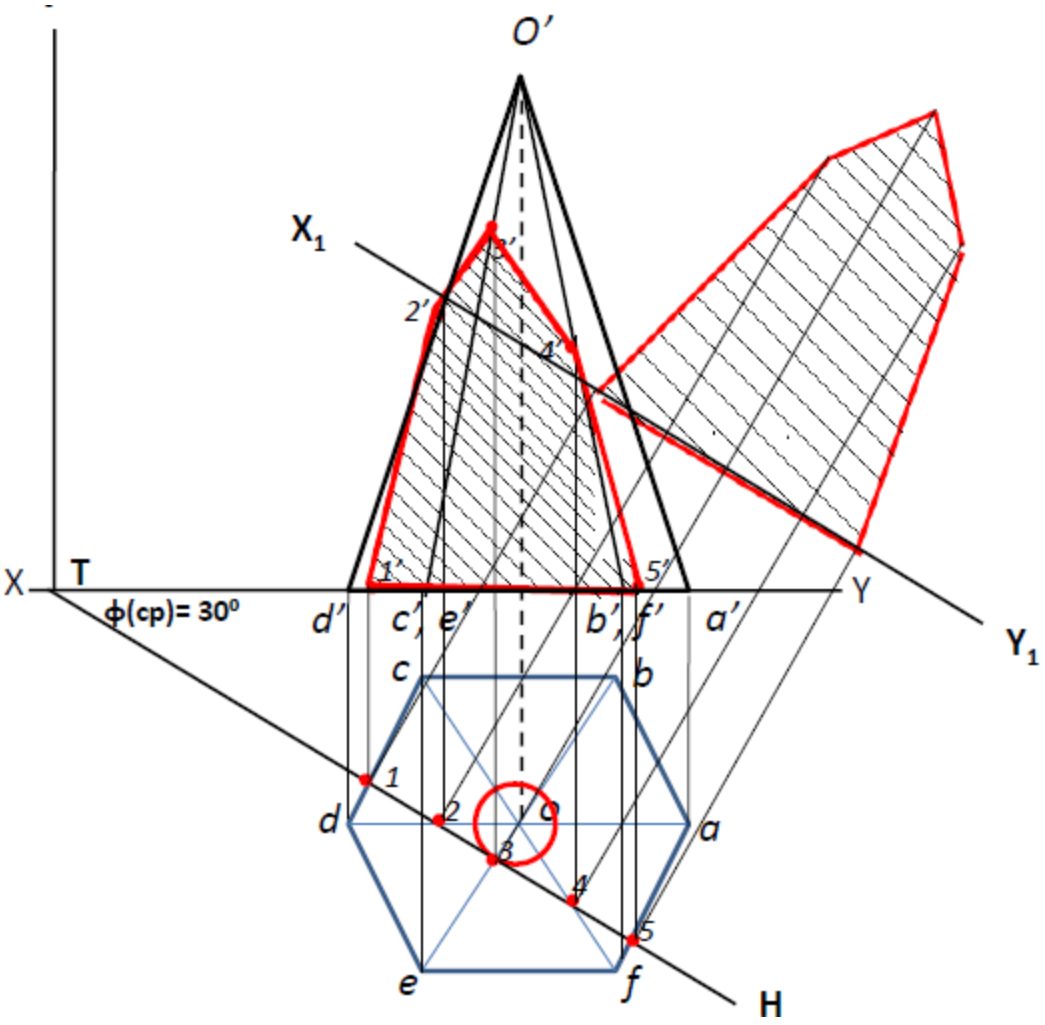

Figure 4.15