

**LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING**  
**DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

**Sections of Solids**

*Note: You can also use the same problem for the Development of Surfaces by including the content.*

**Section plane perpendicular to H.P. and parallel to V.P:**

1. A hexagonal prism, side of base 30 mm and axis 60 mm long, rests with its base on H.P. such that one of its rectangular faces is parallel to V.P. A section plane perpendicular to H.P. and parallel to V.P. cuts the prism at a distance of 10 mm from its axis. Draw its top and sectional front views.
2. A cube of 35 mm long edges is resting on the H.P. on one end of its faces with a vertical face inclined at  $30^\circ$  to the V.P. It is cut by a section plane parallel to V.P. and 9 mm away from the axis and further away from the V.P. Draw its sectional front view and the top view.
3. A pentagonal pyramid side of base 35 mm and axis 60 mm long, rests with its base on H.P. such that one of the edges of the base is perpendicular to V.P. A section plane perpendicular to H.P. and parallel to V.P. cuts the pyramid at a distance of 20 mm from the corner of the base nearer to the observer. Draw its top and sectional front views. Also draw true shape of the section.
4. A cone, base 70 mm diameter axis 75 mm long and resting on its base on the H.P. Draw the sectional front view and the top view of the cone when it is cut by a section plane which is parallel to V.P. at a distance 15 mm from its center.
5. A cylinder of 50 mm diameter and 60 mm height stands vertically with its base on the H.P. It is cut by a section plane perpendicular to H.P. and parallel to V.P. and at a distance of 15 mm from the axis. Draw the top and sectional front view.
6. A rectangular prism side of base 40 mm x 25 mm and height 60 mm, rests with its base on H.P. such that one of its larger rectangular faces is parallel to V.P. A section plane perpendicular to H.P. and parallel to V.P. cuts the prism into two equal halves. Draw its top view and sectional front view. (Additional Problem)
7. A sphere of 50 mm diameter is cut by a section plane parallel to V.P. and passing through at a distance of 15 mm from its center. (Additional Problem)

**Section plane perpendicular to V.P. and parallel to H.P:**

8. A pentagonal pyramid side of base 30 mm and axis 60 mm long, rests with its base on H.P. and one of the edges of its base is perpendicular to V.P. It is cut by a section plane perpendicular to V.P. parallel to H.P. and passing through the axis at a point 35 mm above the base. Draw the front and sectional top views.
9. A hexagonal pyramid side of base 30 mm and axis 60 mm long, rests with its base on H.P. and one of the edges of its base is parallel to V.P. It is cut by a horizontal section plane at a distance of 38 mm above the base. Draw the front and sectional top views.
10. A cube of 50 mm side rests with one of its edges on H.P. such that the square faces containing that edge are making equal inclinations with H.P. A horizontal section plane cuts the cube at a distance of 18 mm below the edge nearer to the observer. Obtain front and sectional top views.

**Section plane perpendicular to V.P. and inclined to H.P:**

11. A square prism, side of base 30 mm and axis 60 mm long, resting with its base on H.P. and one of its rectangular faces is inclined at  $30^\circ$  to V.P. A section plane perpendicular to V.P. and inclined at  $60^\circ$  to H.P. cuts the axis of the prism at a point 20 mm from its top end. Draw its front view, sectional top view and true shape of section.
12. A cube of 35 mm long edges is resting on the ground on one of its faces with a vertical face inclined at  $30^\circ$  to the V.P. It is cut by a section plane perpendicular to V.P. inclined at  $45^\circ$  to the H.P. and passing through the top end of the axis. Draw its front view, sectional top view and true shape of section.
13. A square prism, base 40 mm side, axis 80 mm long, has its base on the ground and its faces equally inclined to the V.P. It is cut by a plane perpendicular to the V.P. inclined at  $60^\circ$  to the H.P. and passing through a point on the axis 55 mm above the ground. Draw its front view, sectional top view and another top view on an AIP parallel to the section plane.
14. A pentagonal pyramid, side of base 26 mm and 52 mm height, rests with its base on H.P. One of the edges of its base is perpendicular to V.P. A section plane perpendicular to V.P. and inclined at  $45^\circ$  to H.P. bisects the axis. Draw the sectional top view and project another top view on an AIP parallel to the section plane showing true shape of section.
15. A pentagonal pyramid side of base 30 mm and axis 60 mm long rests with its base on H.P. and an edge of its base is parallel to V.P. A section plane perpendicular to V.P. and inclined at  $45^\circ$  to H.P. passes through the axis at a point 35 mm above the base. Draw the sectional top view.
16. A hexagonal pyramid side of base 25 mm and axis 50 mm long rests with its base on H.P. and an edge of its base is perpendicular to V.P. It is cut by a section plane perpendicular to V.P. inclined at  $30^\circ$  to H.P. and passing through a point on the axis 20 mm below the apex. Draw the sectional side view, sectional top view and true shape of the section.
17. A square pyramid base 40 mm side and axis 65 mm long has its base on the ground and all the edges of the base equally inclined to the V.P. It is cut by a section plane, perpendicular to the V.P. inclined at  $45^\circ$  to the H.P. and bisecting the axis. Draw its sectional top view, sectional side view and true shape of the section.
18. A cone, base 75 mm diameter and axis, 80 mm long is resting on its base on the ground. It is cut by a section plane perpendicular to the V.P. inclined at  $45^\circ$  to the H.P. and cutting the axis at a point 35 mm from the apex. Draw its front view, sectional top view, sectional side view and true shape of the section.
19. A cone, base 50 mm diameter and axis 65 mm long, rests with its base on H.P. It is cut by a section plane perpendicular to V.P. inclined at  $45^\circ$  to the H.P. and passing through a point on the axis 35 mm above the base. Draw the sectional top view and true shape of the section.

**Section plane perpendicular to H.P. and inclined to V.P:**

20. A square prism, side of base 40 mm and axis 60 mm long, rests with its base on H.P. such that one of its rectangular faces is inclined at  $30^\circ$  to V.P. A section plane perpendicular to H.P. and inclined at  $60^\circ$  to V.P. passes through the prism such that a rectangular face which is making  $60^\circ$  with V.P. is cut into two halves. Draw the top view, sectional front view and true shape of the section.
21. A hexagonal pyramid side of base 25 mm and axis 55 mm long rests with its base on H.P. such that one of the edges of its base is perpendicular to V.P. It is cut by a section plane perpendicular to H.P. inclined at  $45^\circ$  to V.P. and passing through the pyramid at a distance of 10 mm from the axis. Draw the top view, sectional front view and true shape of the section.
22. A cone base 70 mm diameter axis 75 mm long and resting on its base on the ground is cut by a vertical section plane, the H.T. of which makes an angle of  $60^\circ$  with the reference line and is 12 mm away from the top view of the axis. Draw the
  - (i) Sectional front view and true shape of the section
  - (ii) Sectional front view and top view when the same section plane is parallel to the V.P.