INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
Department of Mechanical Engineering

ME119 – Engineering Drawing and Graphics 2017-18 Semester II

Sheet 7: Sections of Solids

Instruction:

- Practice all problems in rough before coming to the Drawing Session.
- For more details of the exercises in this sheet, refer Chapters 14 of the text book (N. D. Bhatt, Engineering Drawing, 53rd Ed.).
- Scale, dimension the drawings suitably. Label the important nodes/points on the drawings. Mention the scale if it is not 1:1.
- You may use the MIRROR command to reflect points around lines of symmetry.
- Make the title block and name plate before starting the drawing.
- Use 1st angle projection unless mentioned otherwise.

1. A square prism, with a base side of 45mm and an axis length of 90mm, is resting on a longer edge on the HP. A rectangular face through the edge is inclined at 30deg to the HP. The axis of the prism is perpendicular to the VP. An auxiliary vertical plane inclined at 70deg to the VP and passing through the midpoint of the axis cuts the prism. Draw the top view, sectional front view and sectional side view of the prism.
2. A triangular prism with a base side of 50mm and a height of 80mm is standing on its end on the ground with a side of the end perpendicular to the VP. It is cut by an AIP in such a way that the true shape of the section is a trapezium with parallel sides of 40mm and 12mm. Draw the two main projections and an auxiliary view showing the true shape of the section. Find the angle made by the cutting plane with the HP.
3. A pentagonal pyramid having a base side of 45mm and a slant length of 80mm rests on its base on the HP with a base edge AB perpendicular to VP. A section plane passing through corner D and perpendicular to the slant face ABO cuts the solid. Draw the front view and sectional top view. The upper part of the solid is removed and kept on its cut surface on the HP without changing its orientation with respect to the VP. Draw the two views of the part of the pyramid.
4. A cylinder with a 60mm diameter and a 100mm height stands on its base on the HP. It is cut by two section planes, (i) an AIP inclined at 60deg to the HP and intersecting an extreme generator at a point 36mm from the base and, (ii) an AVP inclined at 75deg to the VP and 21mm away from the axis of the cylinder. Draw the sectional top view and sectional front view. (A generator of a circle is any straight line on the curved surface parallel to the axis of the cylinder.)
5. A circular plate with a diameter of 74mm and a thickness of 30mm stands on its curved surface on the HP with the axis inclined at 45deg to the VP. Two AIPs, leaning in opposite directions and each of them inclined at 45deg to the HP, cut the plate. The cutting planes intersect each other at the midpoint of the generator farthest from the HP. Draw the front view and sectional top view. (A generator of a circle is any straight line on the curved surface parallel to the axis of the cylinder.)
6. A cone of diameter 80mm is kept on the HP on one of its generators with the axis parallel to the VP. It is cut by an AIP such that the true shape of the section is an isosceles triangle with a base of 60mm and an altitude of 75mm. Draw front view, sectional top view and an auxiliary view showing the true shape of the section.