

INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
Department of Mechanical Engineering

ME119 – Engineering Drawing and Graphics

2017-18 Semester II

Sheet 6: Projection of Solids

Instruction:

- Practice all problems in rough before coming to the Drawing Session.
 - For more details of the exercises in this sheet, refer Chapter 13 of the text book (N. D. Bhatt, Engineering Drawing, 50th 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
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1. A cone which has a diameter of 30mm and axis 40 mm is resting with its slant side on the horizontal plane. The axis of this cone is parallel to the vertical plane. Draw the top and front views. Measure the angle of the axis with horizontal plane.
2. A cylinder with a diameter 50 mm and height 100 mm is inclined with respect to both the horizontal and vertical planes such that the TV projection of the circular faces appear as ellipses with minor axis length 30 mm. The major axis of the TV of the ellipse makes an angle of 30 deg w.r.t. the V.P. Sketch the TV and FV projections of the cylinder. Measure and report the true angle made by the axis of the cylinder w.r.t. the V.P.
3. A triangular prism, 40 mm base side 60 mm axis is lying on the horizontal plane on one rectangular face with axis perpendicular to vertical plane. One square pyramid is leaning on its face centrally with axis parallel to vertical plane. Its base side is 30 mm & axis is 60 mm long resting on horizontal plane on one edge of base. Draw FV & TV of both solids. Project another FV on an auxiliary Vertical Plane 45° inclined to VP.
4. A hexagonal prism of side 30mm and height 80 mm is resting with one of its rectangular faces on the horizontal plane. The axis of the prism makes an angle of 30° with vertical plane. Draw the TV and FV projections.
5. Three equal cones, base 50mm diameter and axis 75mm long, are placed on the ground on their bases, each touching the other two. A sphere of 40 mm diameter is placed centrally between them, so that it touches the 3 cones, either at the tips of the cones, or on the surface of the cones. Draw three views of the arrangement and determine the height of the center of the sphere above the ground.
6. A tetrahedron of sides 80 mm long is resting on the HP on one of its corners, labelled as A. The other corners are labelled B, C, D, with D being farthest away from the HP. The plane containing ABC makes an angle of 30 deg with respect to the HP, while the edge AB makes an angle of 45 deg w.r.t. the VP. Draw the TV and FV projections of the tetrahedron.