NATIONAL INSTITUTE OF TECHNOLOGY DURGAPUR

Engineering Graphics Sessional (MES 01), 2017-18

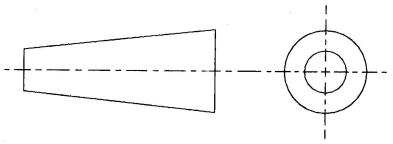
PROJECTION OF POINTS, LINES AND SURFACES

1. Points in different quadrants:

   Points P, Q, R and S are situated in different quadrants (i.e, dihedral angles). Draw "view from front" and "view from above" for each of them when
   - (i) P is 40 mm above HP and 20 mm in front of VP
   - (ii) Q is 45 mm above HP and 15 mm behind VP
   - (iii) R is 50 mm below HP and 25 mm behind VP
   - (iv) S is 45 mm below HP and 10 mm in front of VP.

   [Ref. to Fig. Prob. 1 for solution]

   For following problems, answer the questions according to the "FIRST ANGLE" projection system for which the symbol is:
   Note: "Elevation" means "view from front"
   "Plan" means "view from above"



2. For each of the points mentioned below, draw views as asked [Ref. Fig. Prob. 2]
   a) A, 45 mm above HP and 25 mm in front of VP. Draw elevation, plan and view from left.
   b) B, 20 mm above HP and 40 mm in front of VP. Draw elevation, plan and view from right.
   c) C, on the VP and 30 mm above HP. Draw elevation, plan and view from left.
   d) D, on the HP and 20 mm in front of VP. Draw elevation, plan and view from right.
   e) E, on the ground line. Draw elevation, plan and view from left.

3. a) Draw elevation, plan and "view from left" of the line AB when A is 10 mm above HP and 20 mm in front of VP while B is 40 mm above HP and 45 mm in front of VP, the distance between the projectors of A and B, measured along GL, being 40 mm.
   b) Draw elevation, plan and "view from right" of the line CD when C is on HP and 30 mm in front of VP while D is 35 mm above HP and on VP, the distance between the projectors of C and D being 40 mm.
   c) Draw elevation, plan and "view from left" of the line EF when E is 45 mm above HP and 10 mm in front of VP, while F is 15 mm above HP and 40 mm in front of VP. The projector of E coincides with that of F.

4. Two views of a triangular lamina are given in each of figures Prob. 4(a) and 4(b).
   a) Copy the views and draw "view from left".
   b) Copy the views and draw "view from right".

5. Two views of an irregular pentagonal lamina are given in Fig. Prob. 5. Copy the views and draw "view from left".

6. Two views of an irregular hexagonal lamina are given in Fig. Prob. 6. Copy the views and draw "view from right".

7. A triangular lamina ABC has the corner A on HP and 25 mm in front of VP. The plan of AB is at 45° to ground line. B is 50 mm above HP and 50 mm in front of VP while C is 10 mm above HP. The plan abc of the lamina is an equilateral triangle of the three points, C is the nearest to VP. Draw plan and elevation of the lamina and also "view from left".

8. A line AB is of length 60 mm. The end A is 10 mm above HP and 15 mm in front of VP. Draw plan and elevation of the line when it is — a) parallel to VP and perpendicular to HP, b) parallel to HP and perpendicular to VP, c) parallel to both HP and VP, d) parallel to VP and inclined to HP at 30°, e) parallel to HP and inclined to VP at 45°, f) inclined to HP at 30° and to VP at 45°.

9. A line CD is inclined to HP at 40° and to VP at 50°. It is of length 50 mm. The end C is 5 mm above HP and 10 mm in front of VP. Draw plan, elevation and "view from right" (check that in the "view from right", the true length of the line, its true inclinations with HP and VP are obtained).

10. a) Find the HT and VT of the line shown in Fig. Prob 10(a)
    b) Find the HT and VT of the line shown in Fig. Prob 10(b)