17205

**11819**

**4 Hours / 100 Marks** Seat No. | | | | | | | | |

***Instructions :*** (1) All Questions are *compulsory.*
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1.** (a) A pictorial view of an object is shown in Figure 1. Draw the following views according to the First angle method of projection.

(1) Sectional Front View, along section AA. **6**

(2) Top view. **4**

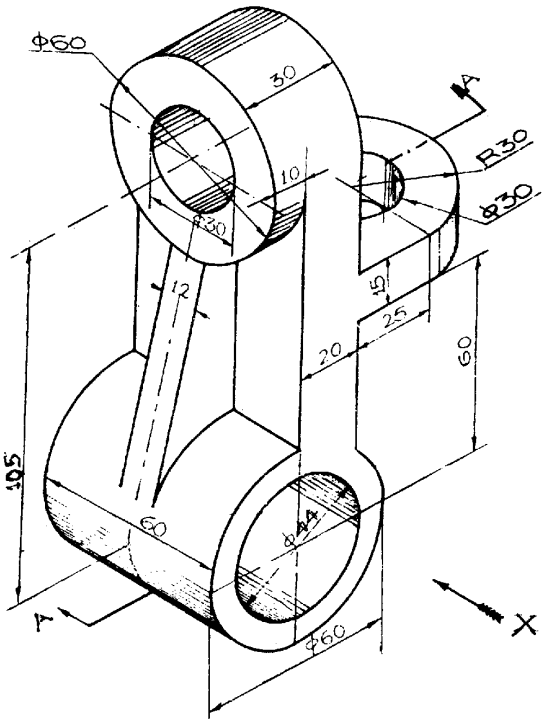


**Fig. No. 1**

(b) Figure 2 shows the Front View and Side view from left. Daw the following views of the objected using first angle method of projection :

(1) Front View **2**

(2) Left Hand Side View **3**

(3) Top View (missing view) **5**

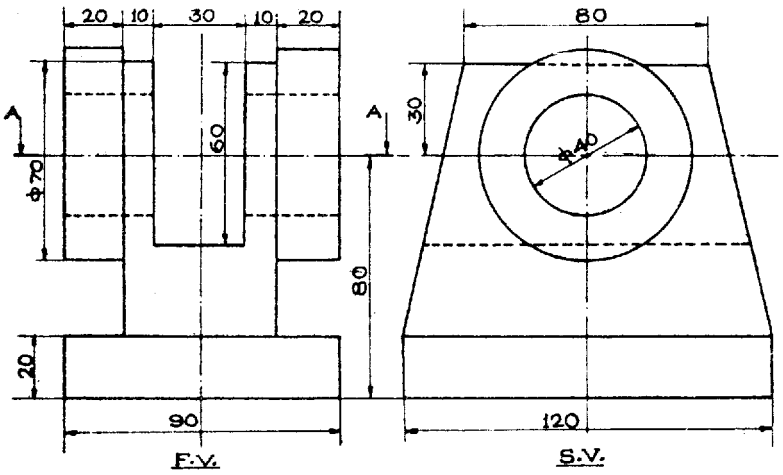


**Fig. No. 2**

**2.** (a) A line PQ, 90 mm long is inclined at 30° to HP, while its top view makes 50° with XY. End P is in VP and 15 mm above the HP. Draw its projections. Determine the inclination of the line with the VP. **8**

**(b) Attempt any ONE of the following :** **8**

(i) A circular plate of negligible thickness of 50 mm diameter has a point on its circumference in VP. Its surface is perpendicular to HP and inclined to VP such that front view appears as an ellipse with minor axis 35 mm. Draw its projections and find the inclination of plate with VP.

(ii) A 30° – 60° set-square has its shortest edge 50 mm long in VP. Its surface is perpendicular to HP and inclined to VP such that its front view appears as an isosceles triangle. Draw its three views and determine the inclination.

**3. Attempt any TWO of the following :** **16**

(a) A square pyramid, side of base 50 mm and axis 70 mm long has a triangular face parallel to HP. Draw its projections, when its axis is parallel to VP.

(b) A right circular cone, base 60 mm diameter an axis 80 mm is lying on the HP on one of its generators. Draw its projections.

(c) A tetrahedron of 60 mm edges is resting on one of its edges on the HP with that edge perpendicular to VP. Draw its projection when one of its faces containing that edge is vertical.

**4. Attempt any TWO of the following :** **16**

(a) A vertical right circular cylinder, base 70 mm diameter and axis 100 mm long, resting on the HP is cut by a section plane, perpendicular to VP and inclined at 45° to HP, passing through a point on the axis 22 mm from the top end. Draw front View, Sectional Top view and True Shape of Section.

(b) A tetrahedron of 70 mm edges stands on a face on the HP with an edge contained by that face parallel to VP. A vertical section plane inclined at 30° to VP and 10 mm away from the axis cuts the tetrahedron. Draw it Top View, Sectional Front View and True Shape.

(c) A pentagonal prims, base 40 mm side and axis 80 mm long stands, vertically on HP with an edge of base perpendicular to VP. A section plane is perpendicular to VP and inclined at 45° to HP cuts the axis of the prim at a point 20 mm from the top end. Draw front view, sectional top view and true shape of section.

**5. Attempt any TWO of the following :** **16**

(a) Draw the projection of the cone, base 70 mm diameter and height of axis 80 mm. A point P starts from a point on the circumference of the base and moves around the cone and returns to the same point by a shortest path. Find graphically the shortest path of P and represent it in the front view and top view of the cone.

(b) Draw the development of lateral surfaces of the parts P of the cylinder shown in Fig. No. 3.

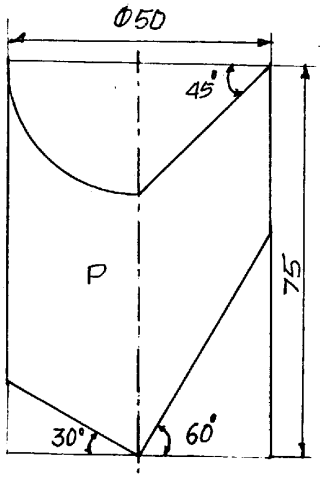


**Fig. No. 3**

(c) A chimney in the form of a frustum of a square pyramid. It is attached over a plane roof as indicate by the front view shown in Fig. No. 4. Draw the given front view, top view and the lateral surface development of the portion P.

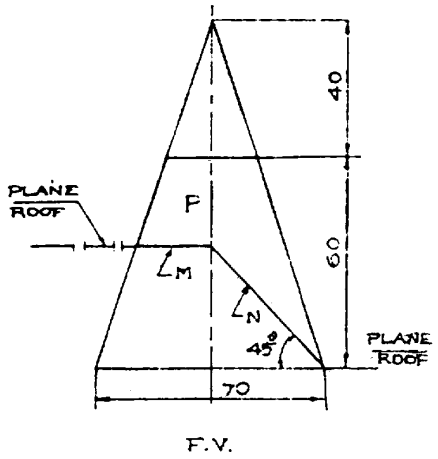


**Fig. No. 4**

**6. Draw neat and proportionate figure of any FOUR of the following : 16**

(a) Rag foundation bolt

(b) Castle nut

(c) Flange coupling

(d) Double rivetted lap joint

(e) Metric threads

(f) Hexagonal headed bolt