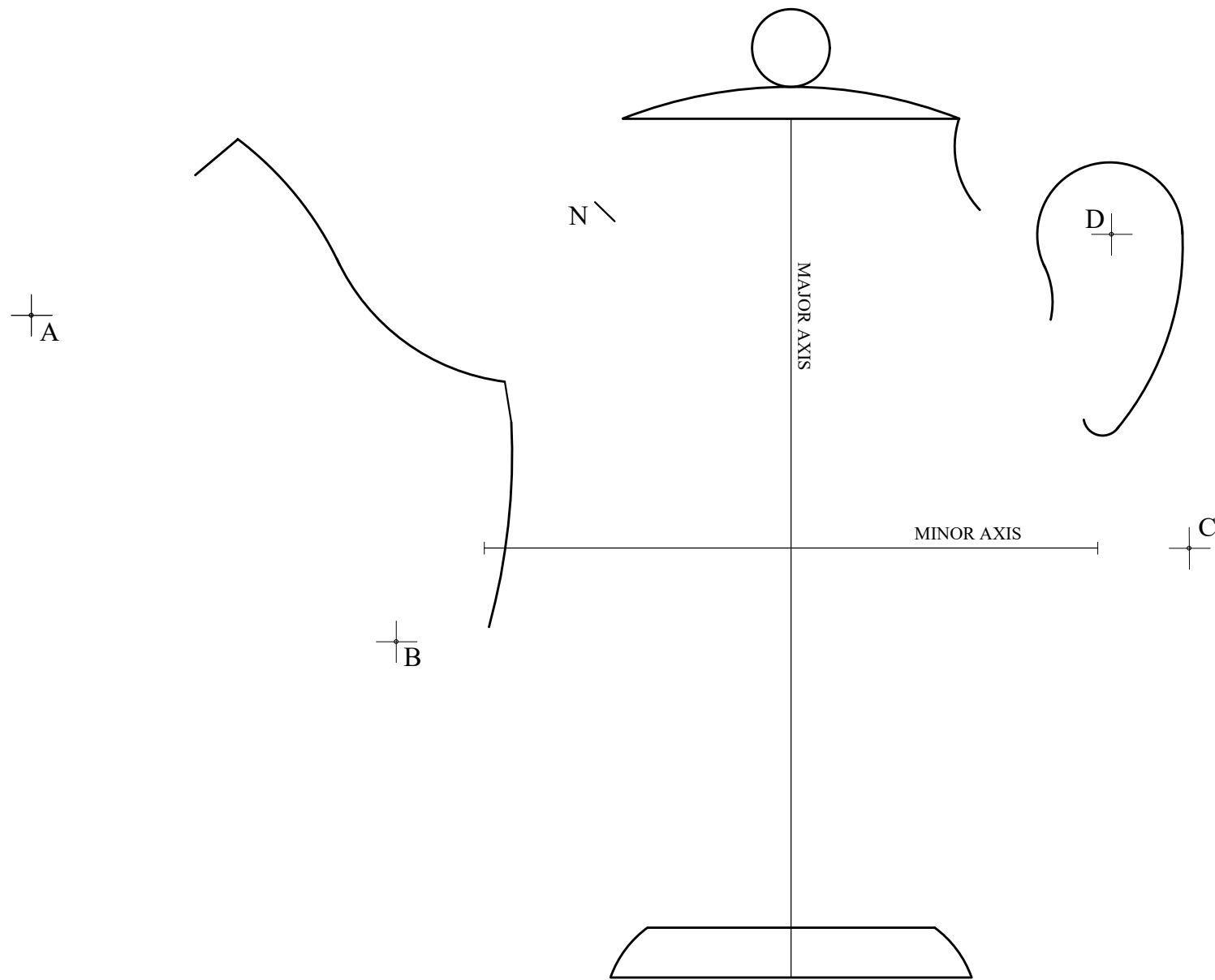
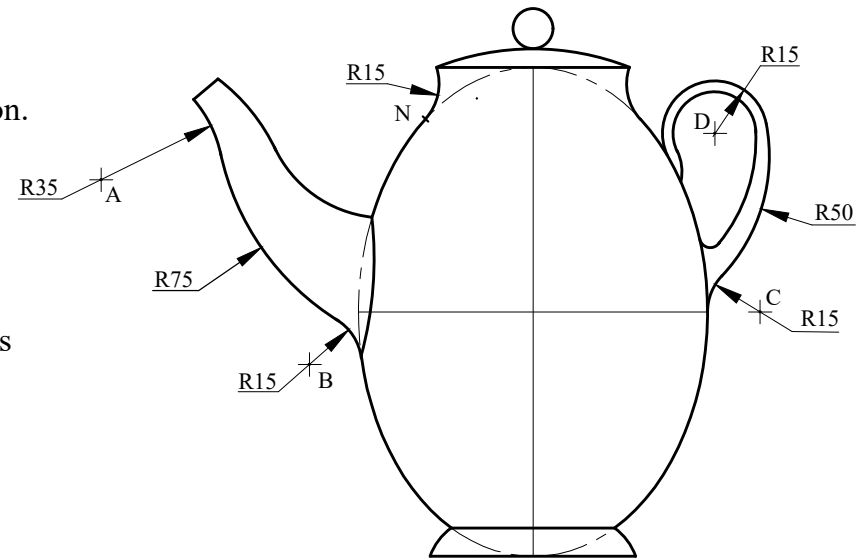


1. The dimensioned profile of a teapot is given.  
Using the given major and minor axes, complete the outline of the teapot by following these instructions:
  - a. Draw the part ellipse, showing clearly all necessary construction.
  - b. Locate the focal points and construct a normal at N.
  - c. Locate the centres and draw the arcs.

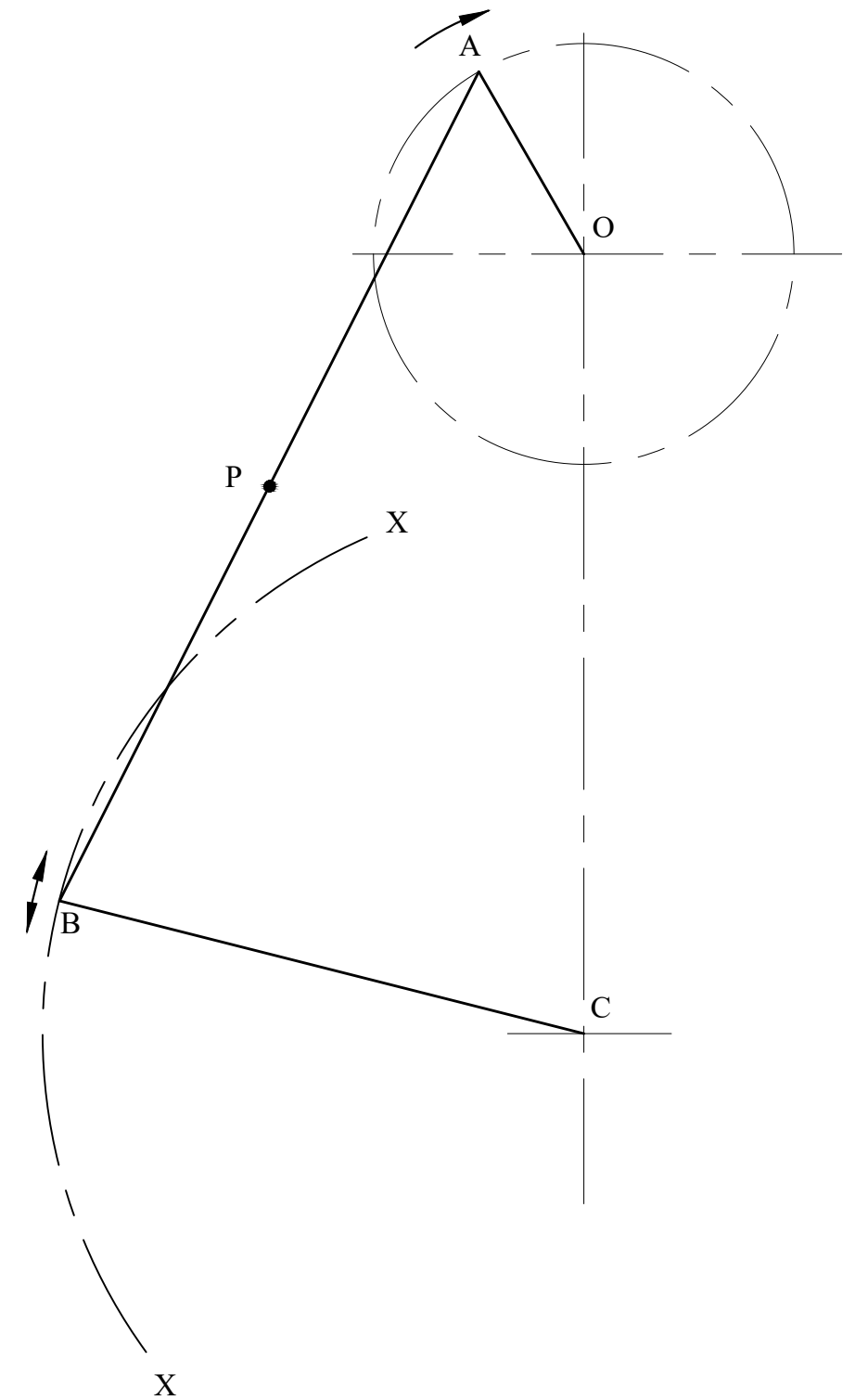
Note: 1. The centre of R15 (top left) lies on the normal.  
2. Show points of tangencies.

18 marks

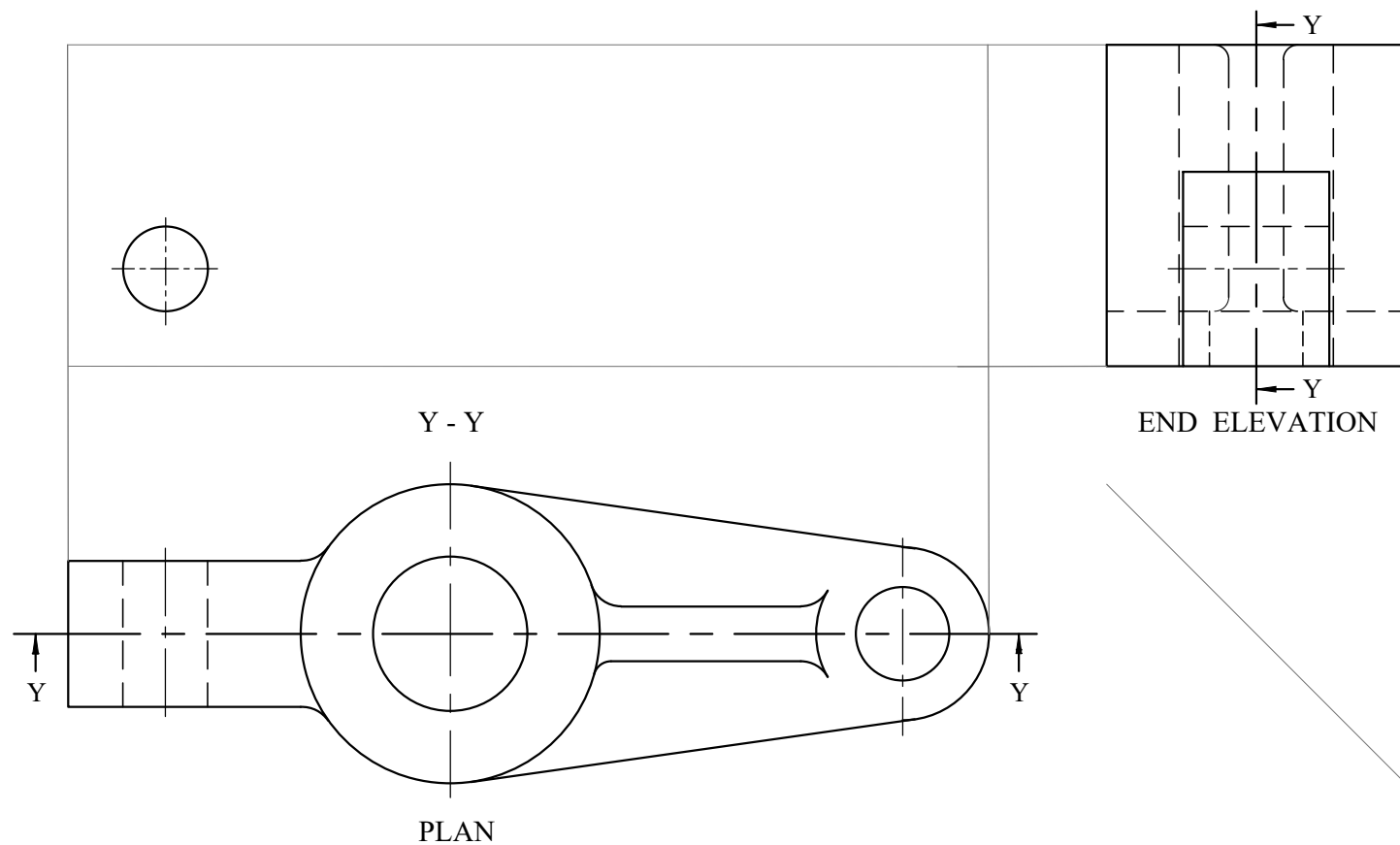
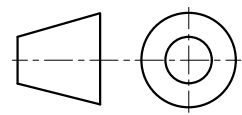
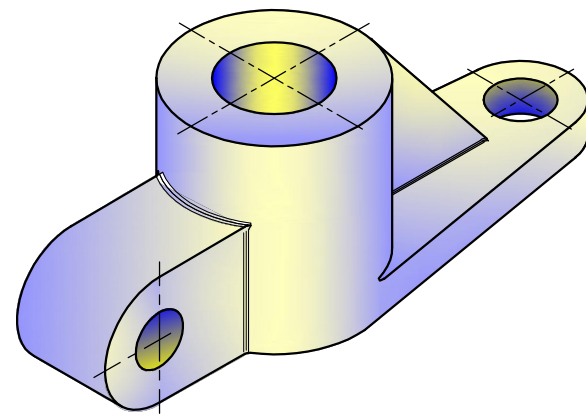


2. In the mechanism shown, crank OA rotates about O while end B of crank CB moves along the center-line X-X as indicated by the arrow.  
Both cranks are pivoted to a link AB.  
Plot the locus of point P on the link as A rotates one revolution in the direction shown.

12 marks



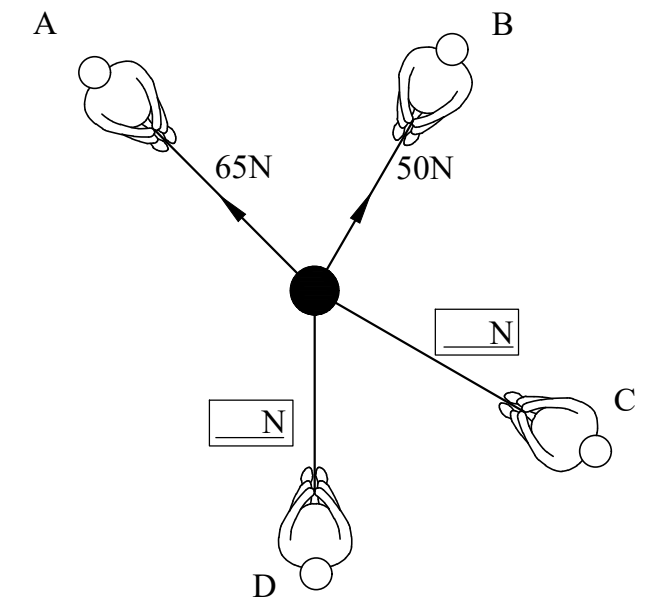
3. A pictorial representation of a cast iron bracket is given.  
 Also given are the End Elevation and Plan.  
 In the space provided complete the Sectional Front Elevation Y-Y.  
 14 marks



4. Four persons A, B, C and D are seen from above pulling a rope to hold an object suspended from a crane.  
 Person A is pulling with a force of 65 N in the direction shown while person B is pulling with a force of 50 N in the direction shown.  
 Using a scale of 10mm representing 10 N, draw a vector diagram to determine graphically the magnitude and direction of the force which person C and person D should use in order to hold the object from moving.

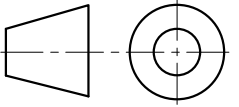
Notes: 1. Transfer all your answers to the given drawing.  
 2. All persons are pulling at the same time and in a horizontal plane.

12 marks

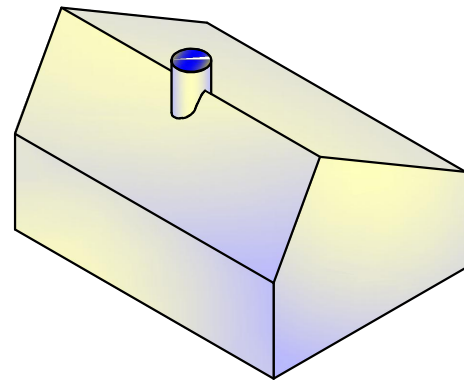


SCALE: \_\_\_\_\_

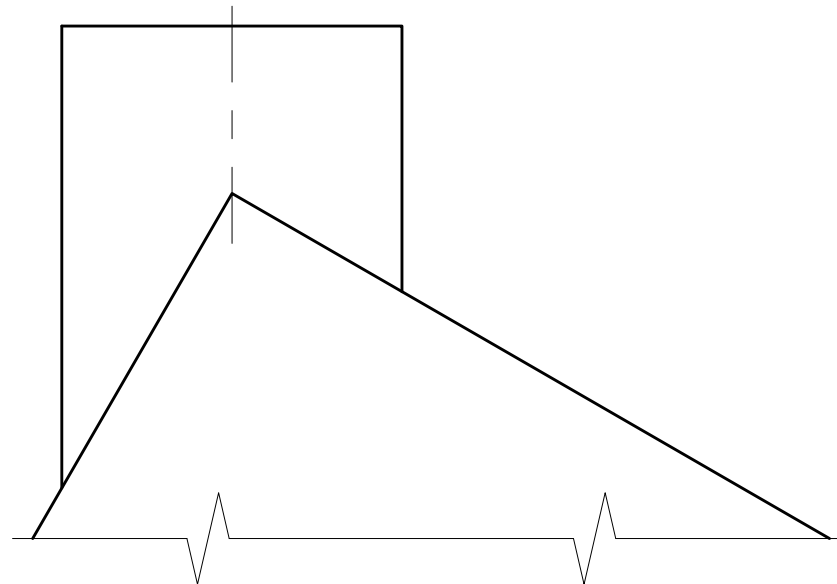
5. The pictorial view and three orthographic views of a factory given below show a cylindrical chimney resting on the vee shaped ceiling. Also given on the right is the front view, plan and an incomplete end view of the top part of the ceiling where the chimney is mounted. Using the necessary construction, complete the chimney in the end view, showing the curves of intersection between the chimney and the roof. Include hidden details.



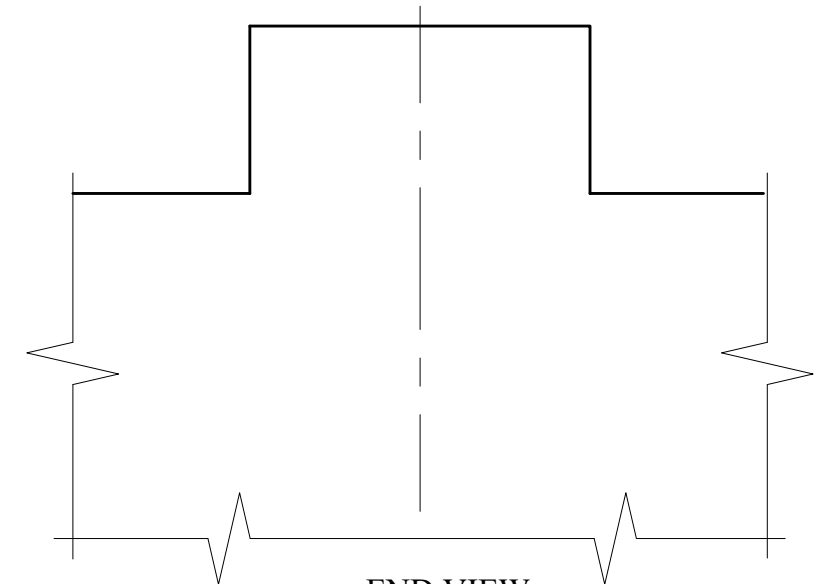
16 marks



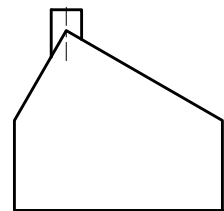
PICTORIAL VIEW



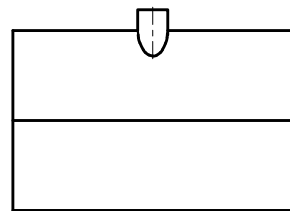
FRONT VIEW



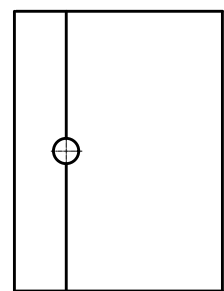
END VIEW



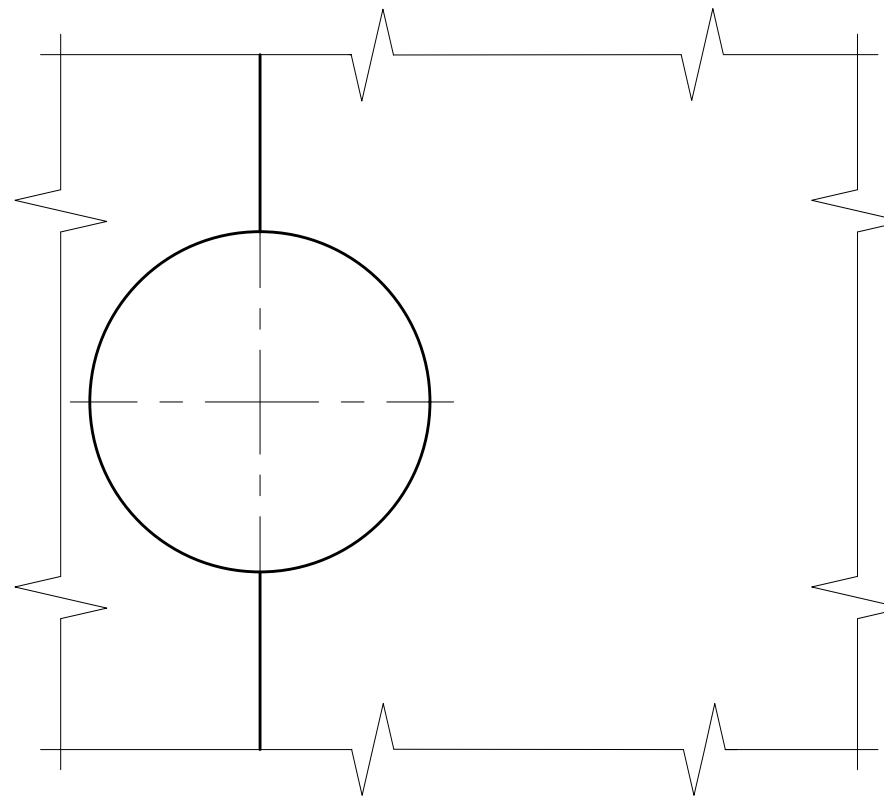
FRONT VIEW



END VIEW



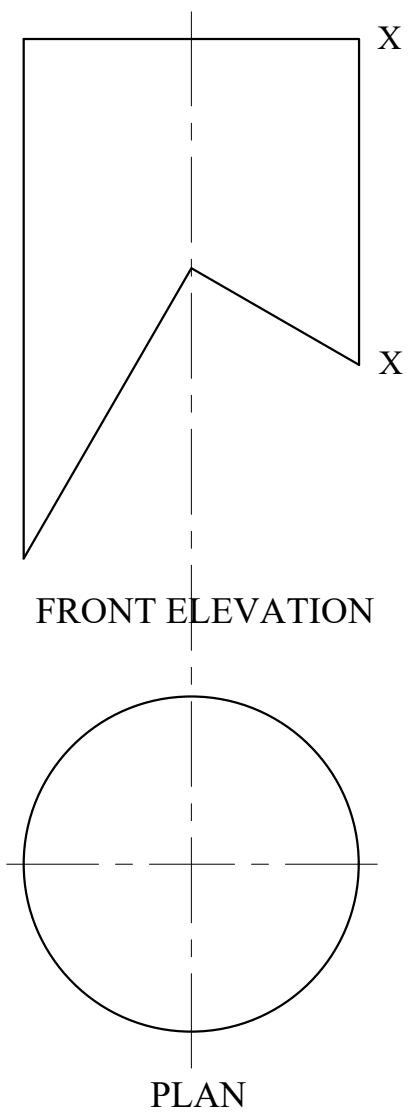
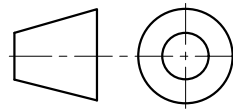
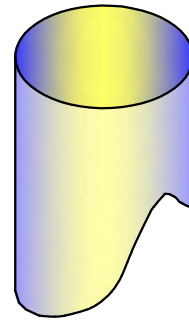
PLAN



PLAN

6. The outer cylindrical part of the chimney mentioned in question 5 is to be covered by a stainless steel sheet of metal shown in a pictorial view at the side. The Front Elevation and Plan of the truncated cylindrical cover is given below. On the given start lines, construct the development of the truncated cylinder, putting the end joint on XX.

14 marks

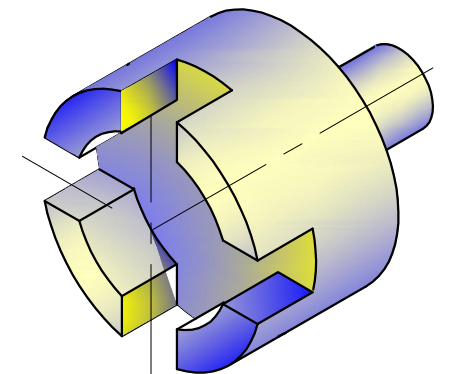
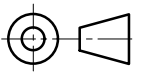
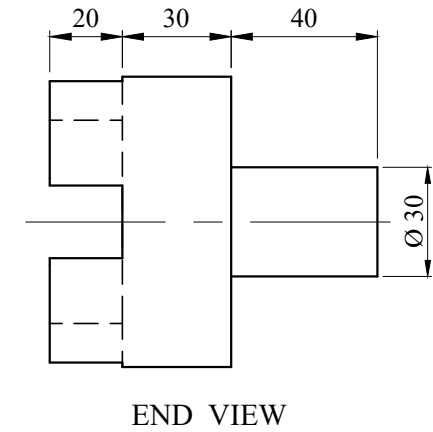
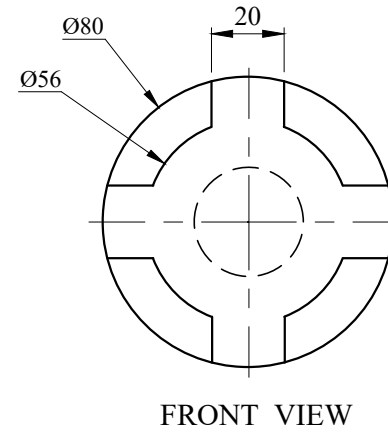


DEVELOPMENT

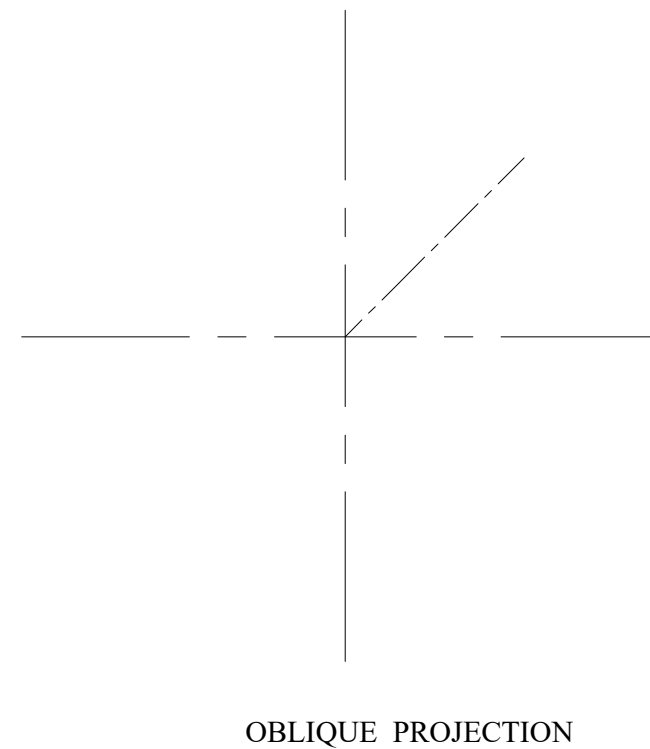


7. Two orthographic views and an isometric projection of a part coupling are given. To the given dimensions, draw a cabinet oblique projection of the part coupling, using the given start centre-lines.

14 marks



ISOMETRIC PROJECTION



OBLIQUE PROJECTION