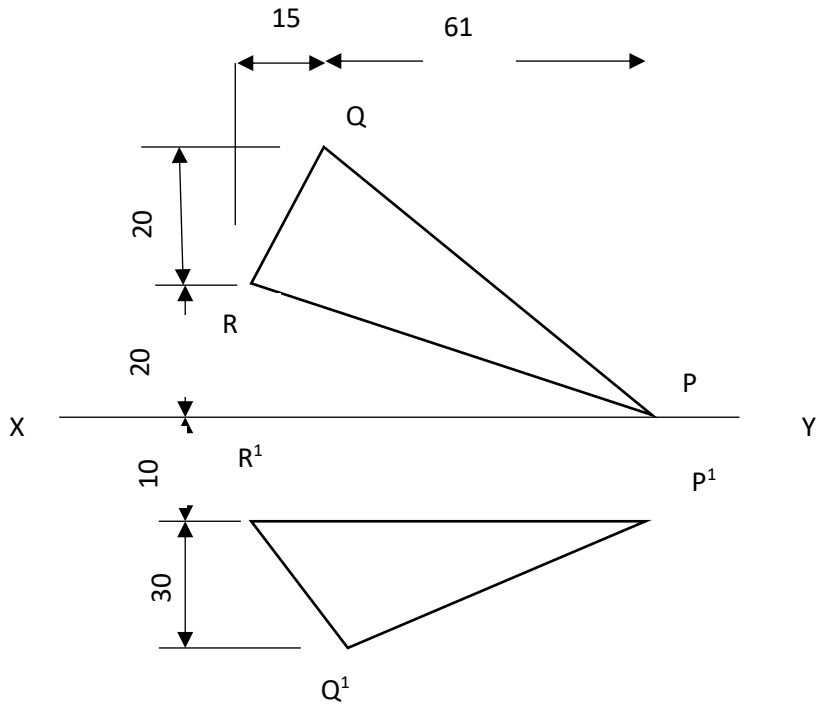
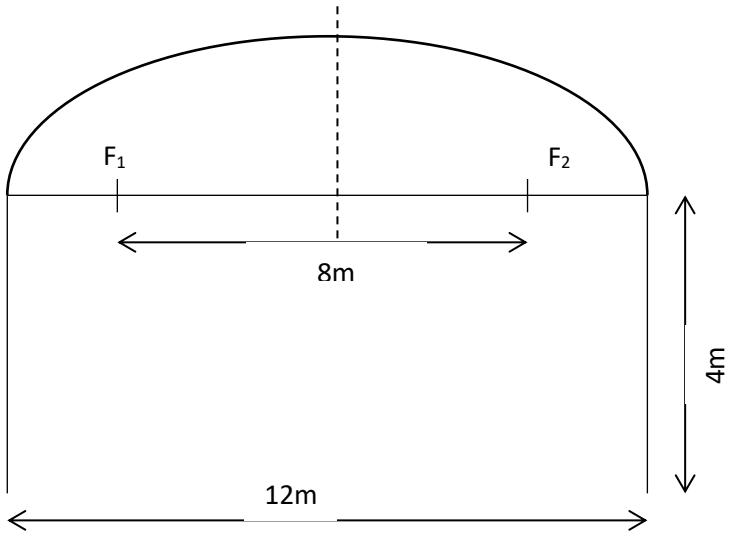
Attempt all questions exhaustively

1. (a) Find the true lengths of sides PQ and QR of the triangle shown in figure below.
   (b) Draw the true shape of the triangle



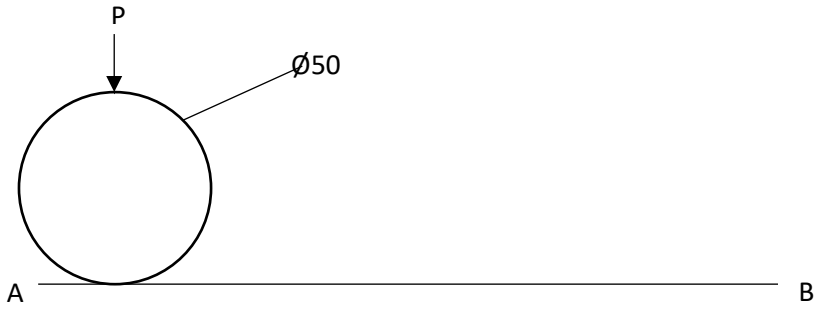
2. (a) The figure below shows a drawing of an elliptical arch with focal point F_1 and F_2. Using a scale 0f 10mm to 1m, draw the arch.



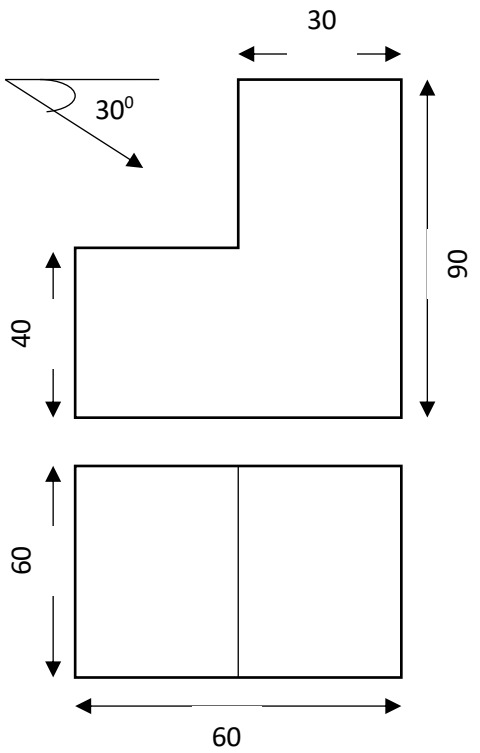
(b) The figure below shows a point P on the surface of a circular rim which rolls in a clockwise direction along a flat surface AB without slipping.

i. Starting from the given position, draw the locus of P for one revolution of the rim

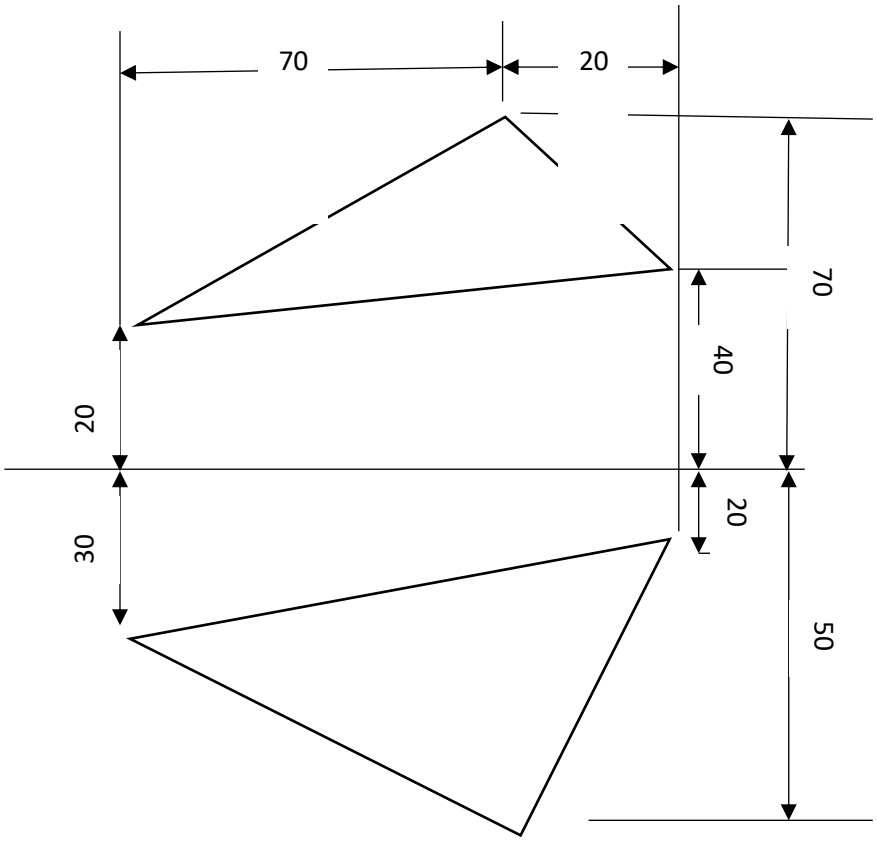
ii. Name the locus obtained.



3. The figure below shows the elevation and plan view of an object drawn in first angle projection.
   a) Draw the given views
   b) Project an auxiliary plan in the direction of arrow R



4. The front elevation and plan view of a triangular lamina drawn in first angle projection are shown in the figure below.
   a) Draw the given views
   b) Determine the true length of the sides of the lamina
   c) Draw the true shape of the lamina
   d) Measure and state the true lengths and angles of inclination of the lamina principle planes.


70
20
70
40
20
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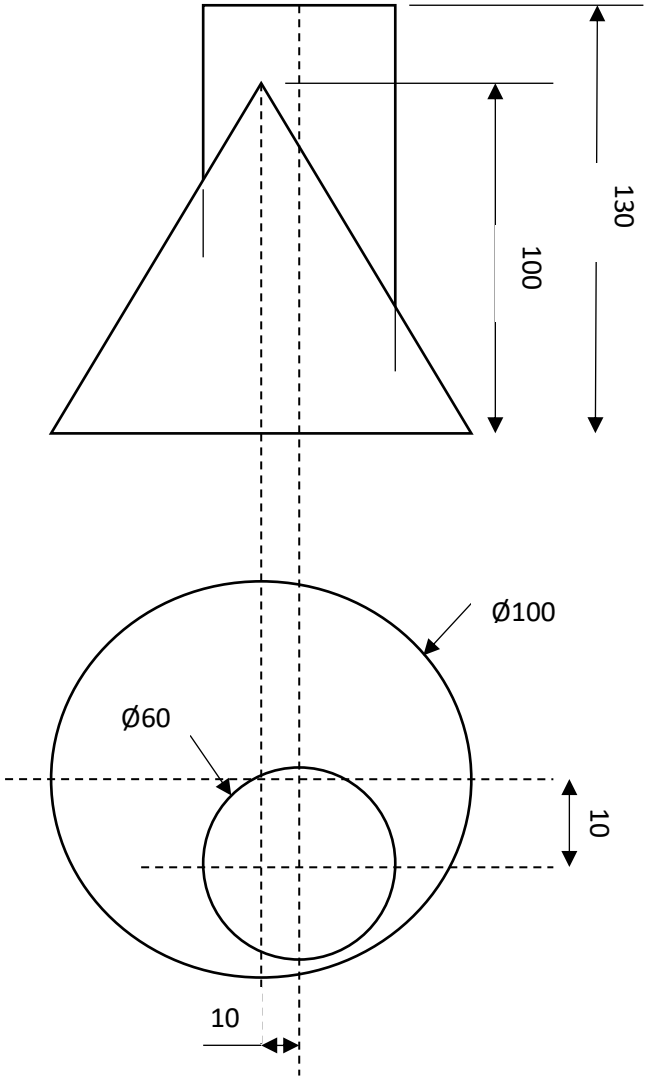
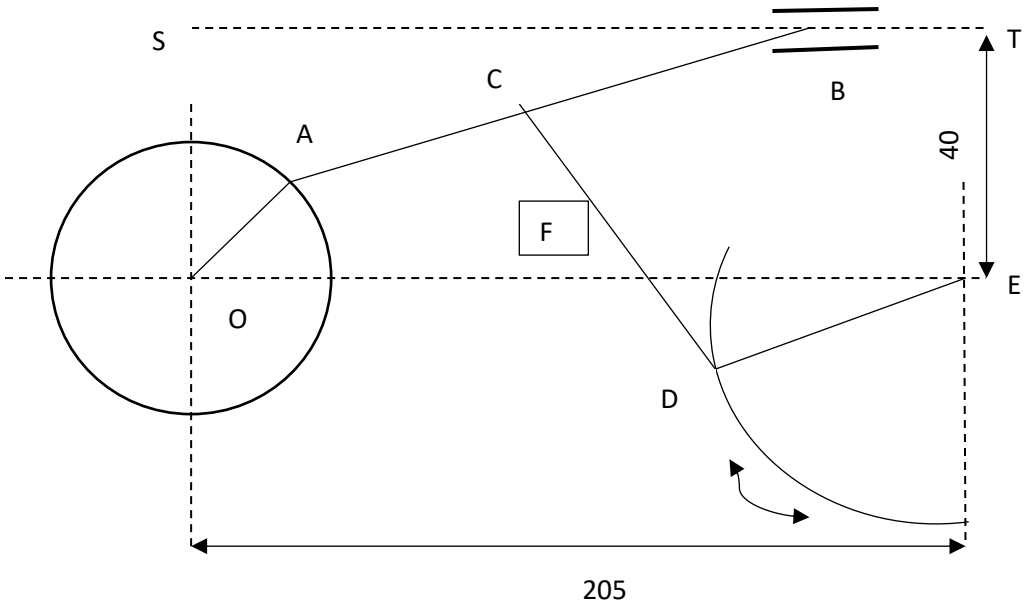
30
50

5. The figure below shows a right cone intersecting with a cylinder
   (a) Draw the given views
   (b) Complete the elevation with a curve of interpenetration



6. The figure below shows a mechanism in which OA rotates clockwise about O while ED oscillates about E. End B of link AB is constrained to reciprocate along axis ST. plot the locus of C and F for one revolution of OA.



AC= 85mm

OA= 30mm

AB= 170mm

CF= 55mm

DE= 80mm

CD= 130mm