

P720/1
Geometry and Mechanical Drawing
Paper 1
July/august
2019

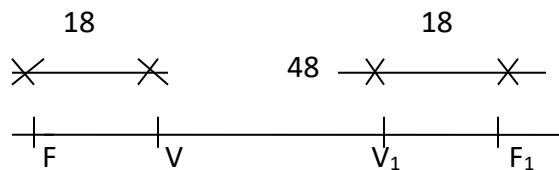
TECHNICAL DRAWING DEPARTMENT
S.6 INTERNAL MOCKS 2019
GEOMETRICAL AND MECHANICAL DRAWING
PAPER 720/1
TIME: 3 HRS

Instructions

- This paper consists of two questions A and B
- Attempt 3 (three) questions at least 2 (two) from each section
- Unless otherwise stated, all dimensions are millimeters
- Use geometrical methods only
- The given figures are not drawn to scale
- Be neat and orderly

SECTION A- PLANE GEOMETRY

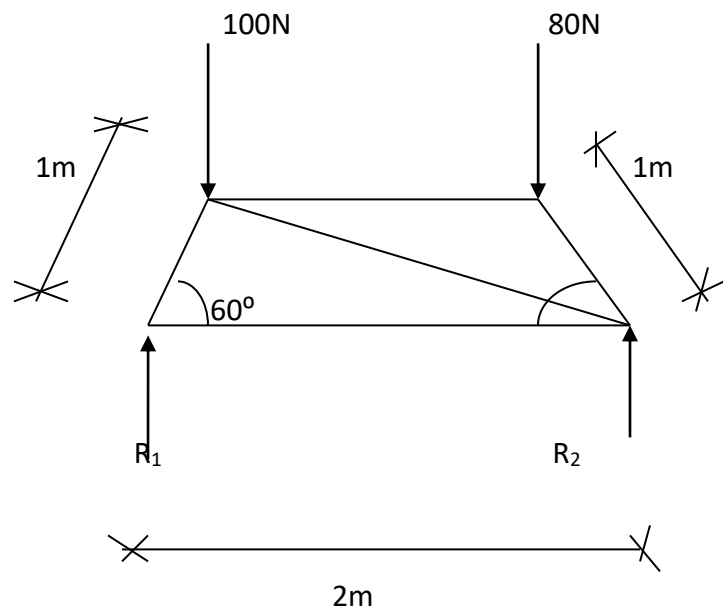
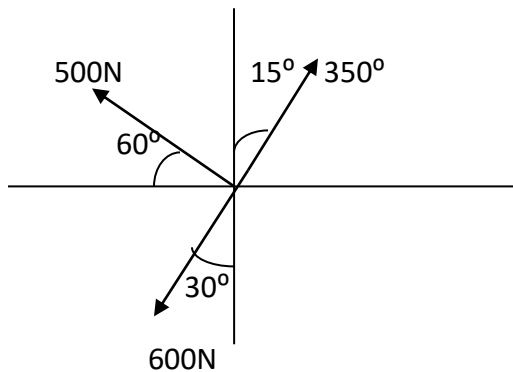
1. The figure shows an axis of a hyperbola, given VV the transverse axis, together with F and F_1 the focal points.
 - a) Determine the directrix
 - b) Construct the two branches of the hyperbola
 - c) Construct an evolute on one of the branches and construct a tangent and normal on the other branch.



- 2.a) Construct a diagonal scale of 20:1 to read up to 7mm.
 - b) Use the scale to construct a triangle, given its perimeter as 5.27mm, and ratio of its angles 2:3:4.
 - c) State the length of sides of the triangle, its altitude, and diameters of inscribed and circumscribed circles.
 - d) Transfer the triangle in (b) above and divide it into four equal parts using lines parallel to the base.
- 3.) A radial plate can rotate at 20 revolutions per minute and operates a off-set point follower line of active off set 20mm to right of concrete.
 - a) Draw the displacement diagram of the cam which will impact the following motion to the follower.
 - (i) Rise 48 with uniform velocity for 1 second
 - (ii) Dwell for 0.55 seconds
 - (iii) Return to initials position with uniform acceleration and retardation for 1.45 seconds.
 - b) Draw the profile of the cam.

4. Vector

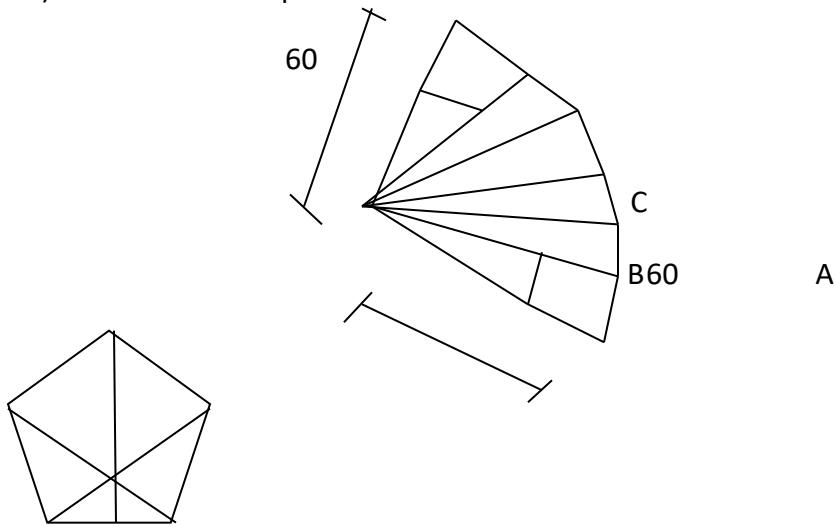
- a) The figure shows a system of coplanar concurrent forces acting at a point.
- (i) Draw the given figure
 - (ii) Determine graphically the magnitude and direction of the equilibrant.
- b) Figure 3 shows a simply supported frame work. Determine graphically,
- (i) the reactions R_1 and R_2
 - (ii) the forces acting in each member



5. The figure below shows the plan view of a right hexagonal pyramid, and a development of the sides after part of the pyramid has been cut away. For the remaining part. Draw full size;

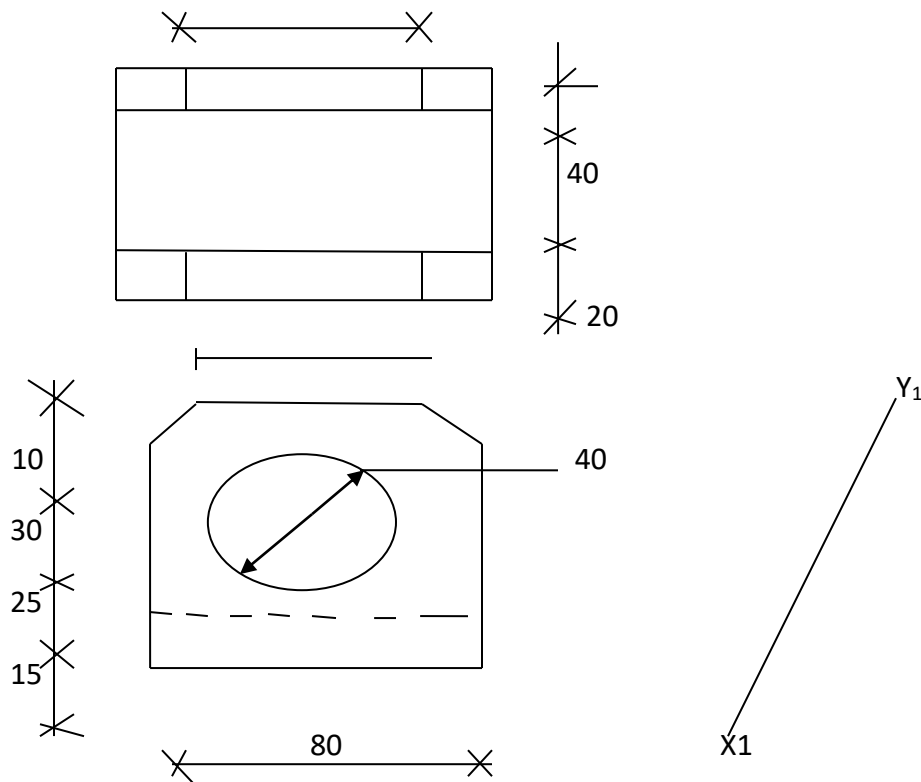
- a) the given development

- b) the plan and elevation
- c) the true shape of the section

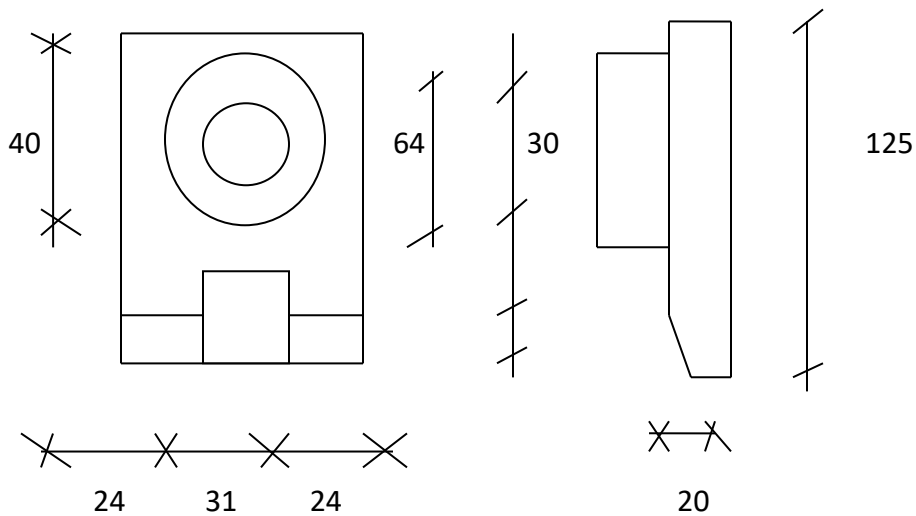


6) The figure below shows two views of a machine devise, drawn in third angle projection

- (a) Draw the given views
- (b) Project an auxiliary elevation of X_1Y_1

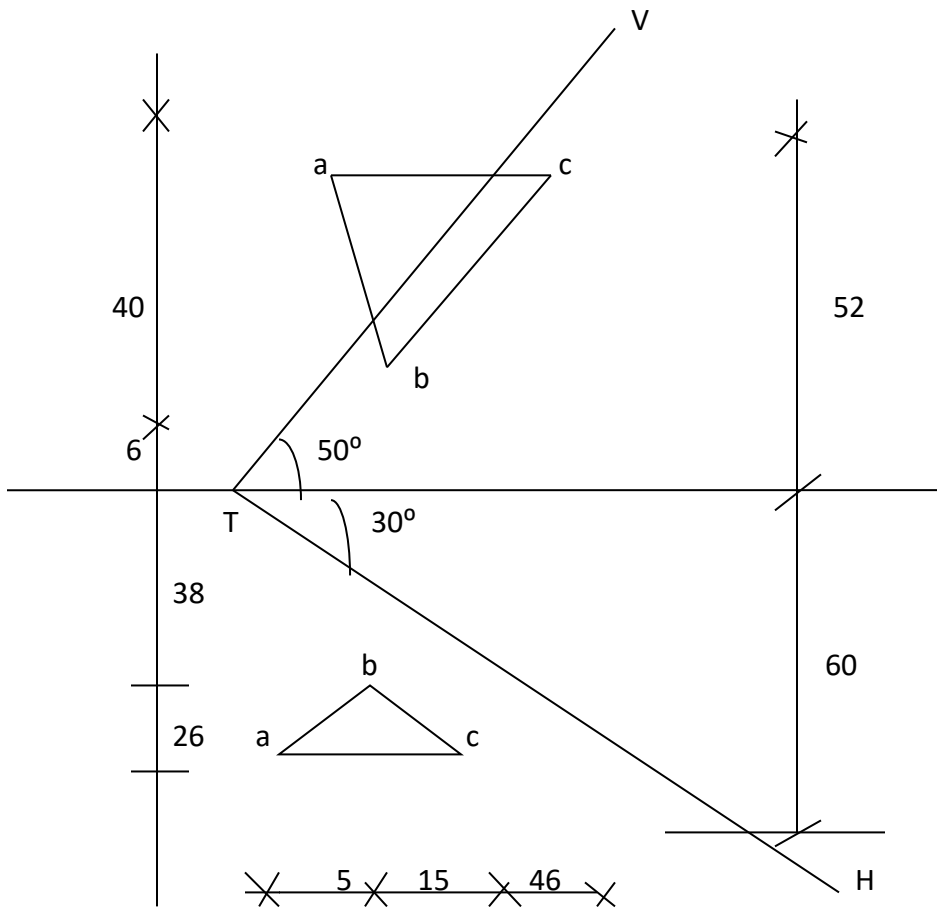


7. The figure below is of two views of a machined piece produce an isometric of the piece, taking point A to be the lowest point.



8. The figure below the traces VTH of an oblique plane, together with the front and plan view of a triangle lamina.
- a) Draw the given views

b) Project the lamina on to the oblique plane, and draw the front and plan of the projection.



END