AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA   M.80

LEAVING CERTIFICATE EXAMINATION, 1999

TECHNICAL DRAWING - ORDINARY LEVEL - PAPER I
(Plane and Solid Geometry)

THURSDAY, 17 JUNE - AFTERNOON 2.00 - 5.00

200 marks

INSTRUCTIONS

(a)   Answer **four** questions.
(b)   All questions carry equal marks.
(c)   Construction lines must be shown on all solutions.
(d)   Write the number of the question distinctly on the answer paper.
(e)   All dimensions on the question paper are given in millimetres.
(f)   First or third angle projection may be used.

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1.   An isometric view of a shaped solid is shown in Fig. 1.

   (a)   Draw an elevation of the solid looking in the direction of the arrow.
   (b)   Project a plan from the elevation.
   (c)   Project a new elevation from the plan of the solid which will show the true shape of surface A.
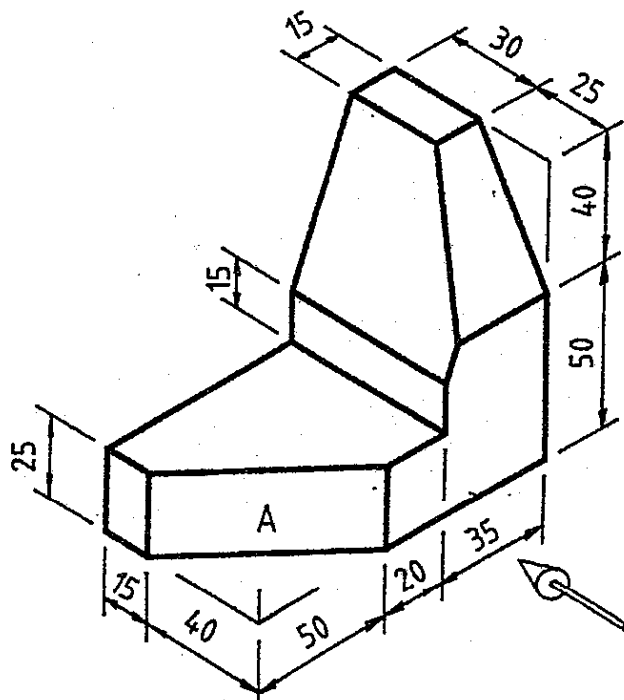

FIG. 1

2. Fig. 2 shows a quadrilateral ABCD in which the triangles ABC and ACD are equal in area. The triangle ABC has sides in the ratio of 5:5:2.

  (a) Draw the quadrilateral ABCD showing clearly how the points C and D are obtained.

  (b) Draw a square which shall have 1.5 times the area of the quadrilateral ABCD.
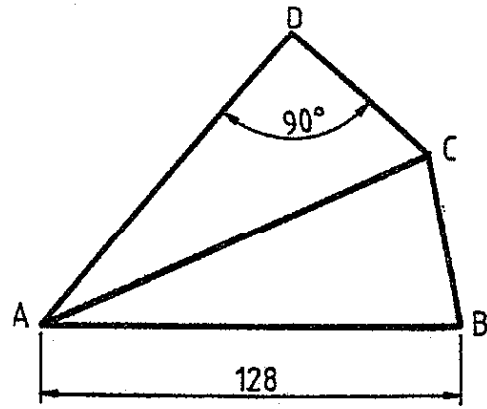

FIG. 2

3. Fig. 3 shows the plan and elevation of a cylinder A with a point P on its surface. Also shown is the plan of a right cone B with an altitude of 55mm. Both solids rest on the horizontal plane.

  (a) Draw the plan and elevation of both solids.

  (b) Draw the plan and elevation of a sphere which shall rest on the horizontal plane and be in contact with the cylinder at point P.

  (c) Draw the plan and elevation of another sphere in the position C, resting on the horizontal plane, having a diameter of 40mm and which shall be in contact with the cylinder A and the cone B.
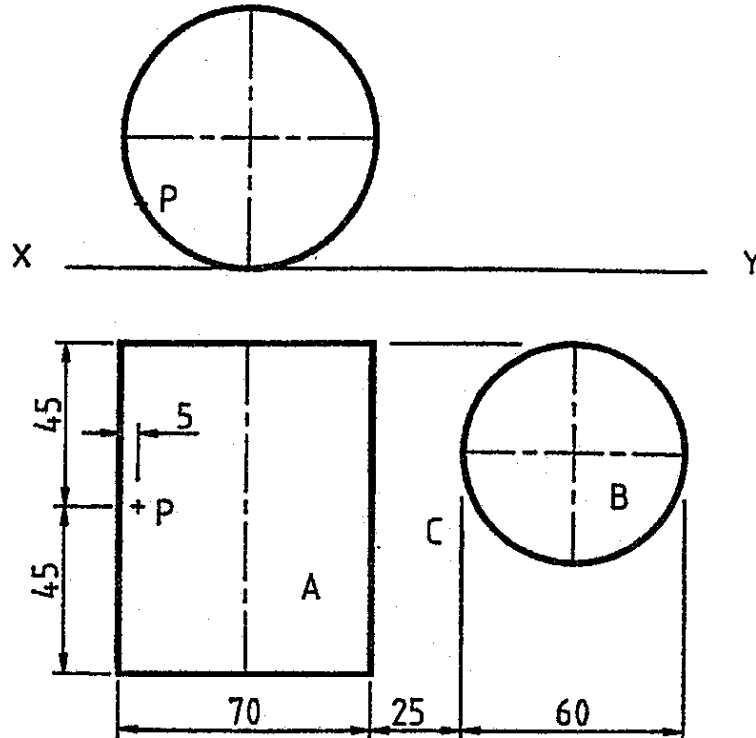

FIG. 3

4. The elevation and plan of a cylinder
with three points, A, B and P on its
surface are shown in Fig. 4.

    (a)   Show on the elevation of the cylinder the
    path of a helix which starts at the given
    point P and moves to the top of the cylinder
    in one revolution.

    (b)   Draw the elevation of another helix which
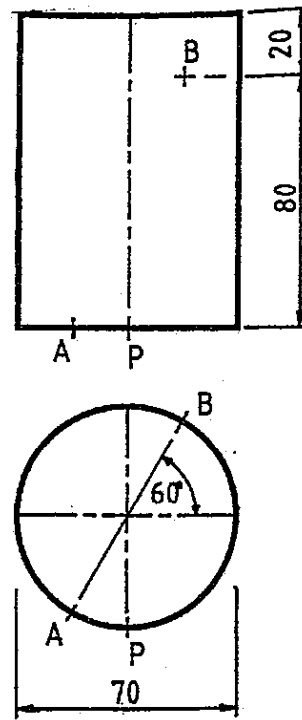   passes through the given points A and B.

FIG. 4

5. The elevation and plan of a solid which is to be cut by the oblique plane VTH are shown in Fig. 5.

    (a)   Draw the plan and elevation of the solid when it is cut by the oblique plane VTH.

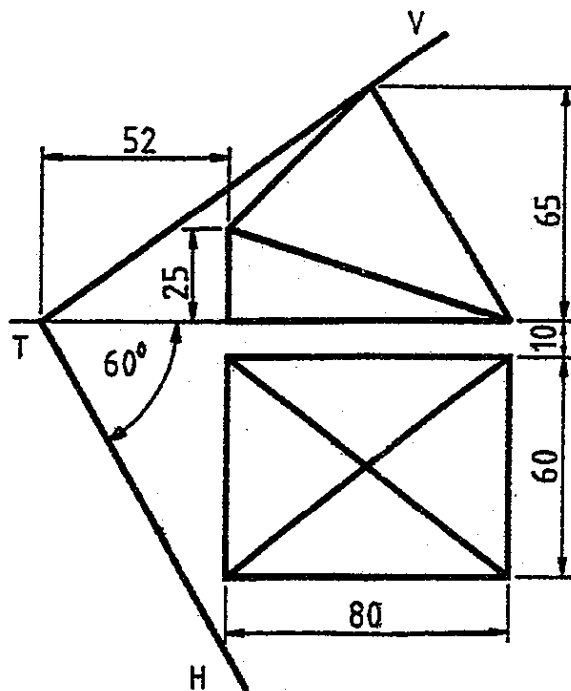   **(b)**   Draw the true shape of the cut surface of the solid.

FIG. 5

6. **(a)** In a parabola the distance from the focus to the vertex is 20mm. Draw a portion of the parabola.

(b) In Fig. 6 the line DD is the directrix of an ellipse and the line AB is the direction of the axis. The eccentricity of the ellipse is 0.7 and P is a point on the curve. Show how the position of the focus is determined and draw a portion of the curve.
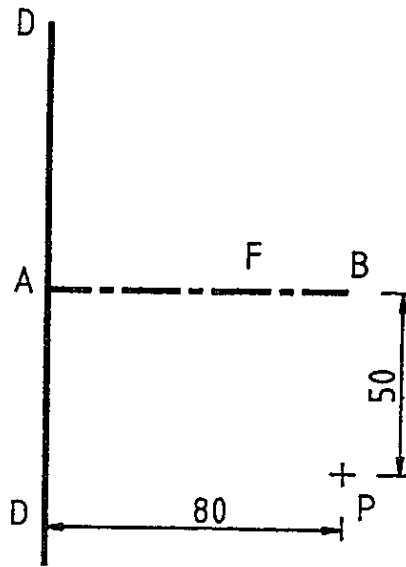

FIG. 6

7. Fig. 7 shows the elevation and plan of a rectangular based prism which has a square hole through it as shown.

(a) Draw the given views.
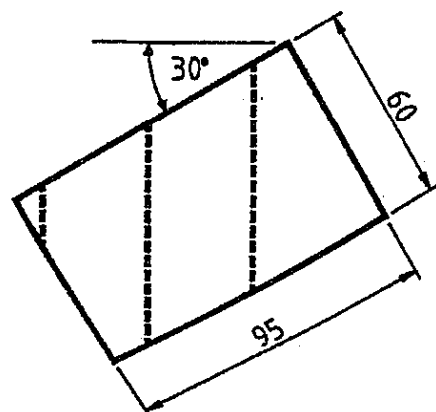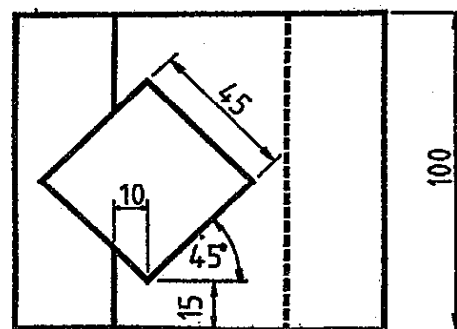
(b) Project an end view of the solid.

FIG. 7