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LEAVING CERTIFICATE EXAMINATION, 2002

TECHNICAL DRAWING - ORDINARY LEVEL - PAPER I

PLANE AND SOLID GEOMETRY

THURSDAY, 13 JUNE - AFTERNOON 2.30 to 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 questions, distinctly, on the answer paper.
(e)   First or third angle projection must be used.
(f)   All measurements are given in millimetres.

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

   (a) Draw and 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 the surface A.
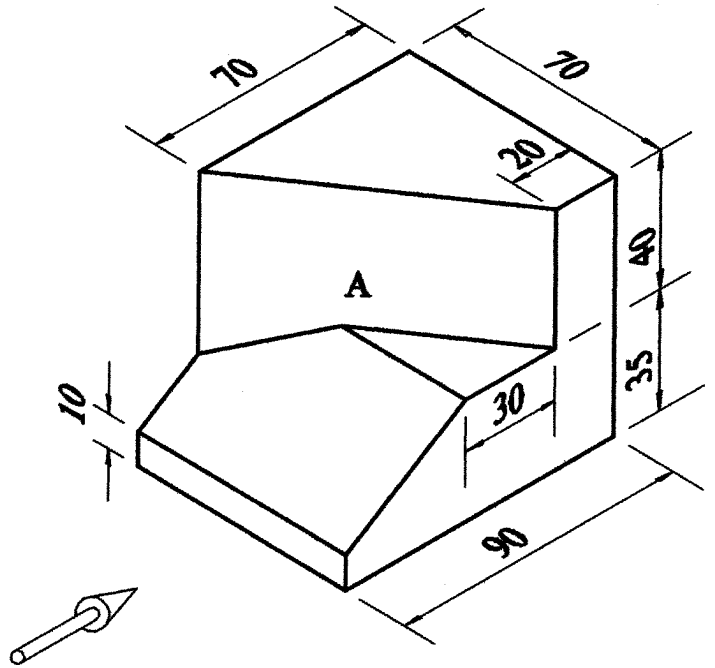

Fig. 1

2. Fig. 2 shows a quadrilateral ABCD and a triangle BCE. The sides of the quadrilateral are in the ratio of 2:3:4:5. The triangle BCE is half the area of the quadrilateral.

   (a) Draw the given figures showing clearly how the points C, D and E are obtained.

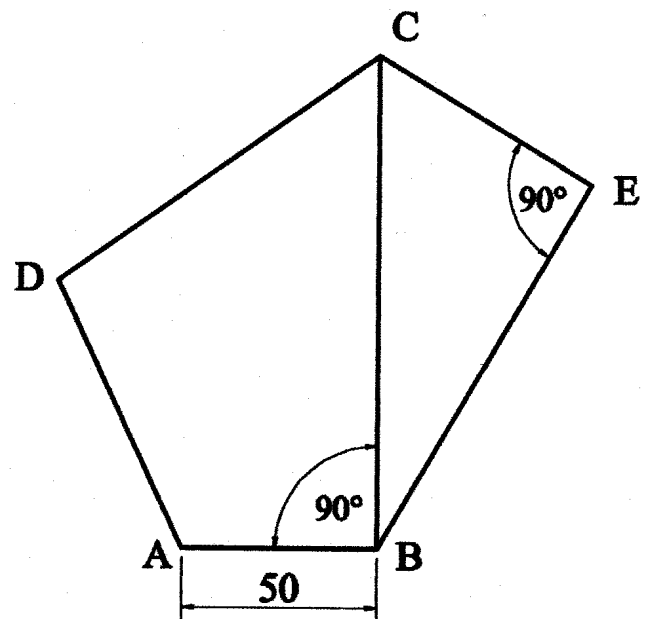   **(b)** Draw a square which shall have the same area as the figure ABCDE.

Fig. 2

3. Fig. 3 shows the plan and elevation of a sphere with a point P on its surface. The elevation of a cone which is in contact with the sphere is also shown.

  (a) Draw the plan and elevation of both solids and show the position of the point P in the plan.

  (b) Draw the plan and elevation of another sphere, having a diameter of 40mm, which shall be in contact with the given sphere at point P.
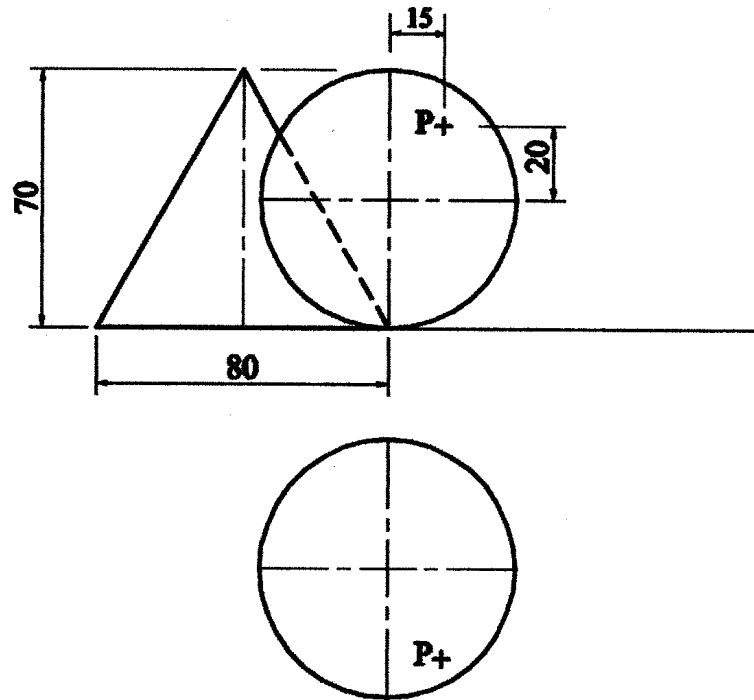
15

70

P+

20

80

P+

Fig. 3

4. Fig. 4 shows the plan and elevation of a cylinder. A label which is to be wrapped around the cylinder is also shown in the views.

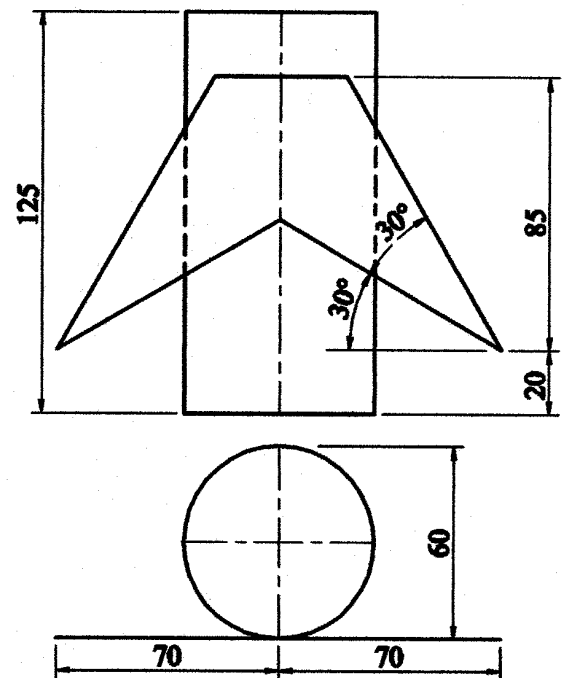Draw the given views and compete the elevation showing the wrapped label in position.

125

30°

30°

85

20

60

70

70

Fig. 4

5. The elevation and plan of a square based solid cut by an 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.
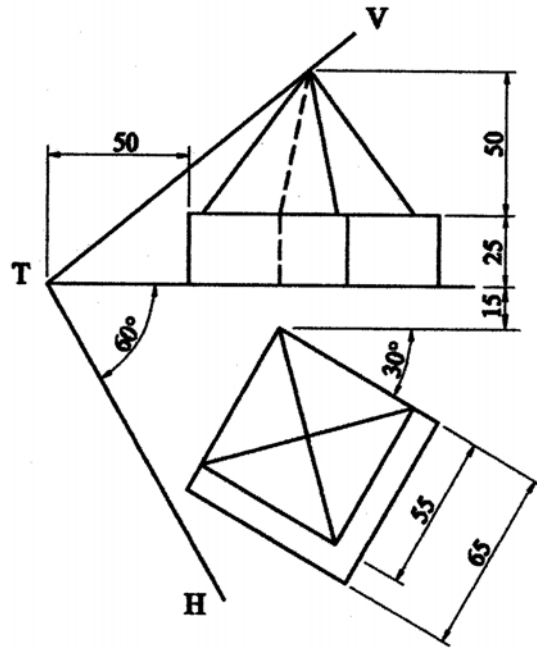
Fig. 5

6. **(a)** Draw a rectangle ABCD, the sides of which are 130mm long and 90 wide. Inscribe a parabola in the rectangle, with its vertex located along the 90mm side.

    (b) Fig. 6 shows the Directrix DD_1 and two points P and Q on the curve of an ellipse. The eccentricity of the curve is 0.75. Locate the focus of the ellipse and draw a portion of the curve which passes through the points P and Q.
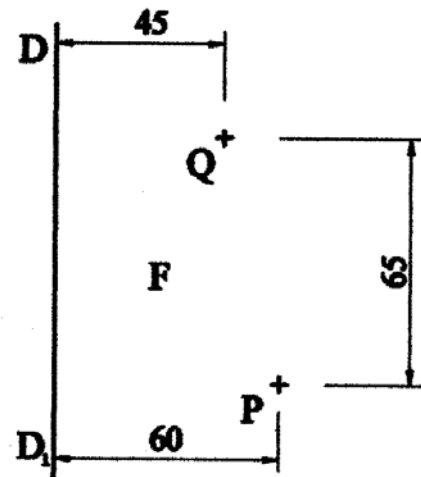
Fig. 6

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

    (a) Draw the given views.

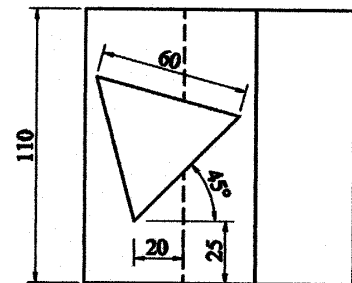   **(b)** Project an end elevation of the solid.

Fig. 7