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LEAVING CERTIFICATE EXAMINATION, 1995

TECHNICAL DRAWING - ORDINARY LEVEL - PAPER I

(Plane and Solid Geometry)

FRIDAY, 16 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. The elevation and plan of a shaped solid are shown in Fig. 1.

(a) Draw the given views and project an end view of the solid.

(b) Project a new plan of the solid which shall include the true shape of the surface A.

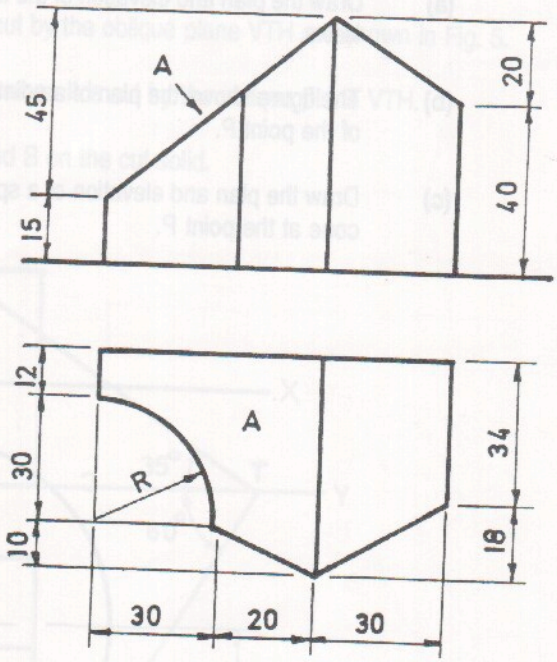

Fig. 1

OVER→

2. Fig. 2 shows a design based on three similar isosceles triangles in which the sides of the three triangles are in the ratio of 4:6:9.

(a) Reproduce this design showing clearly how the lengths of the sides of the triangles are obtained.

(b) Draw a similar design which shall have 1.5 times the area of the given design.

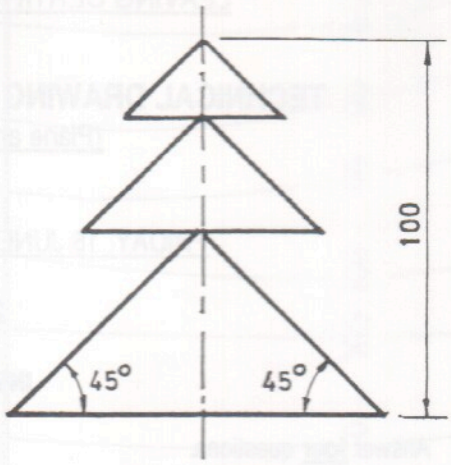

Fig. 2

3. Fig. 3 shows the plan of a cone C of diameter 80 mm and altitude 40 mm, in contact with a sphere S of diameter 40 mm. Both solids rest on the horizontal plane.

(a) Draw the plan and elevation of the cone and sphere showing clearly the point of contact in both views.

(b) The figure shows the plan of a point P on the surface of the cone. Draw the plan and elevation of the point P.

(c) Draw the plan and elevation of a sphere which shall rest on the horizontal plane and touch the cone at the point P.

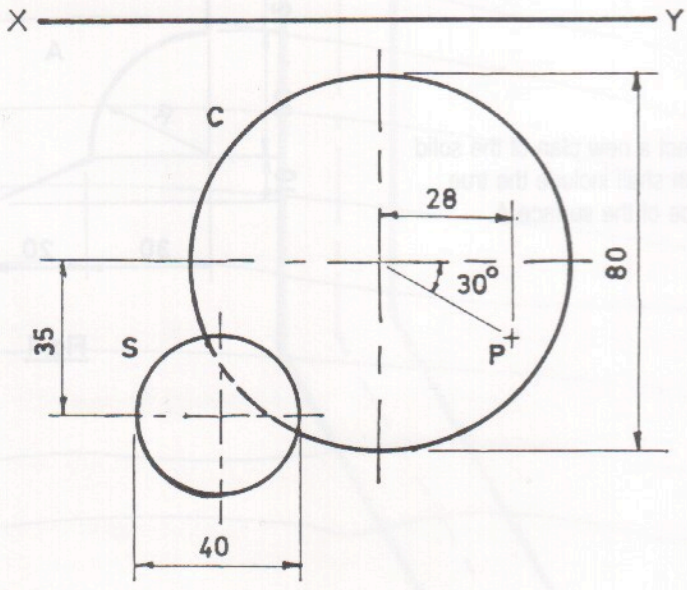

Fig. 3

4. Fig. 4 shows two circles touching the line AB. Also shown are two points, P and Q, on the circumferences of the circles. Draw the paths of the points P and Q as the circles roll clockwise along the line AB until the paths of P and Q intersect.

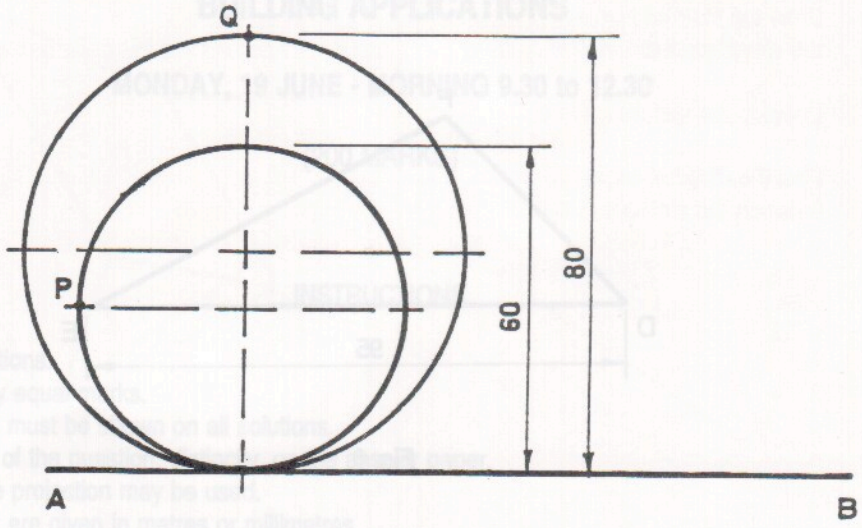

Fig. 4

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) Find the true shape of the surfaces A and B on the cut solid.

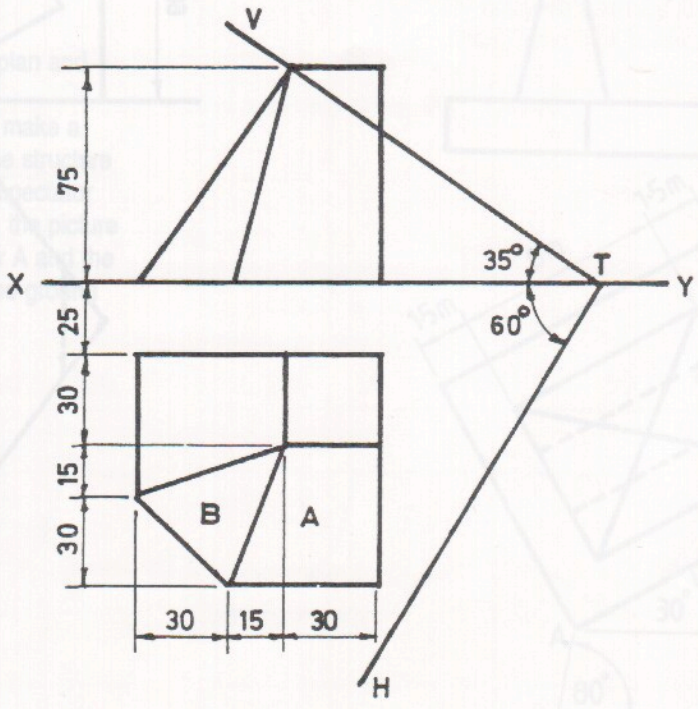

Fig. 5

OVER →

6. **(a)** In a hyperbola the focus is 40 mm from the directrix and the eccentricity is 1.25. Draw a portion of the hyperbola.

(b) Draw the triangle DEF shown in Fig. 6 in which the lengths of the sides are in the ratio of 2:3:4. Draw a parabola having F as its focus and having D and E as points on the curve.

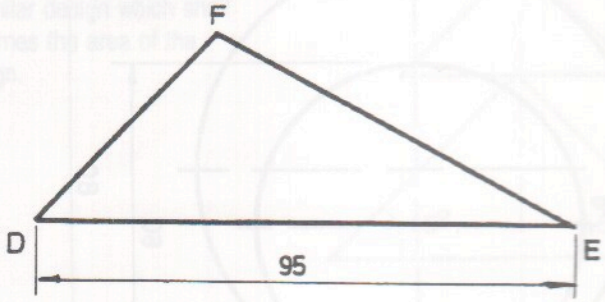

Fig. 6

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

(a) Draw the given views.

(b) Project an end view of the solid.

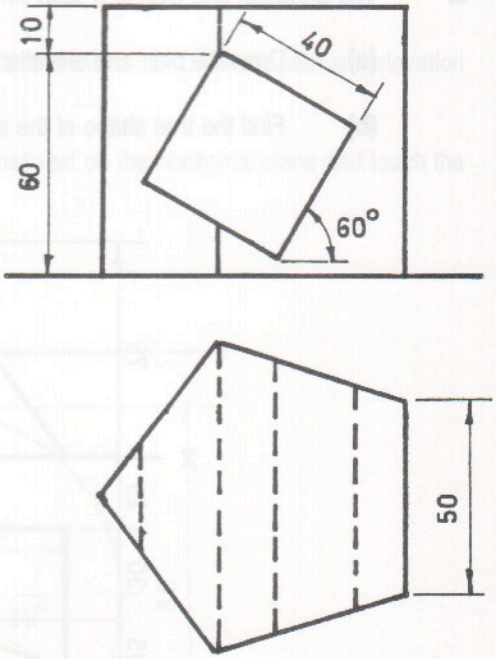

Fig. 7