Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2006

Technical Drawing

Paper 1 – Ordinary Level
(Plane and Solid Geometry)

(200 Marks)

Thursday 15 June
Morning, 9.30 - 12.30

(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) *Work on one side of the paper only.*
(f) *All dimensions on the question paper are given in metres or millimetres.*
(g) *First or third angle projection may be used.*

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 of the solid from the plan, which will show the true shape of the surface A.

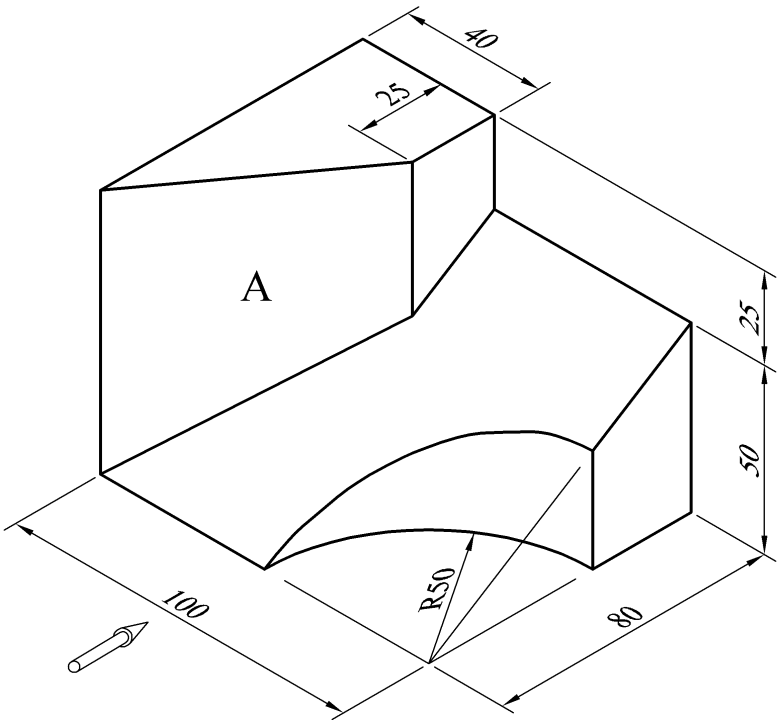

Fig. 1

2. Fig. 2 shows a quadrilateral ABCD which is divided into two triangles.

The triangle ABC has a perimeter of 320mm and the sides AC and BC are in a ratio of 4:3 respectively.

The triangle ACD is equal in area to the triangle ABC and the sides AD and CD are equal in length.

(a) Draw the given figure, showing clearly the constructions required to locate the points C and D.

(b) Draw a square, which shall have 0.75 times the area of the figure ABCD.

All constructions must be clearly shown on the sheet.

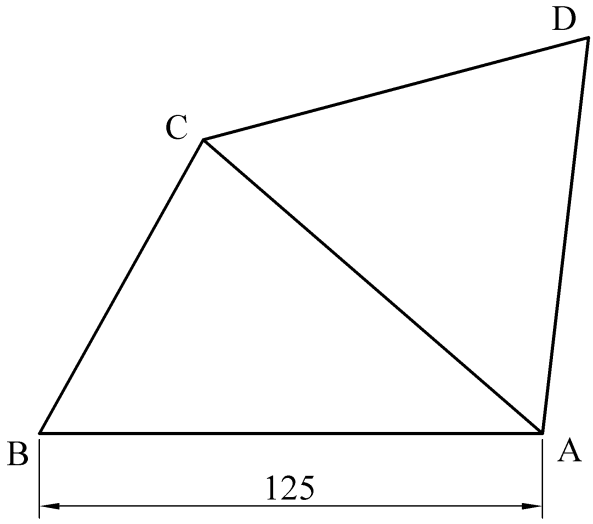

Fig. 2

3. Fig. 3 shows the elevation and plan of a cone A and a sphere B which are in contact with each other. There is a point P on the surface of the cone.

The elevation of a sphere C which is in contact with both solids is also shown.

(a) Draw the plan and elevation of the cone A and the sphere B.

Show the position of point P in elevation.

(b) Draw the plan and elevation of the sphere C.

(c) Draw the elevation and plan of another sphere, which shall be in contact with the cone at point P. The top of this sphere shall be level with the apex of the cone.

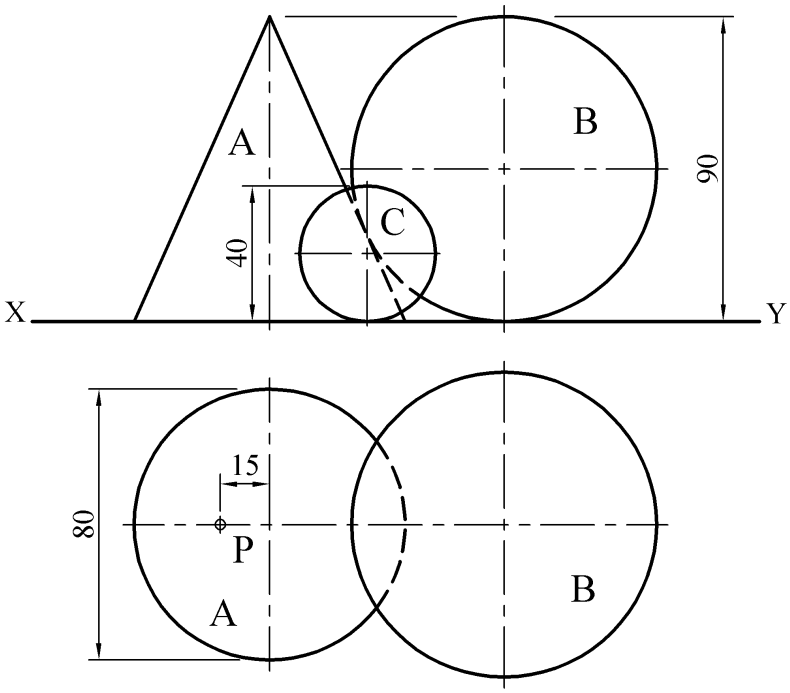

Fig. 3

4. Fig. 4 shows two circles R and S. which are in contact as shown. Also shown are two points P and Q on the circumference of the circles.

Circle R rolls clockwise along the line BA until P reaches the line BA. Plot the locus of P for this movement.

Circle S rolls anticlockwise along the line BC until Q reaches the line BC. Plot the locus of Q for this movement.

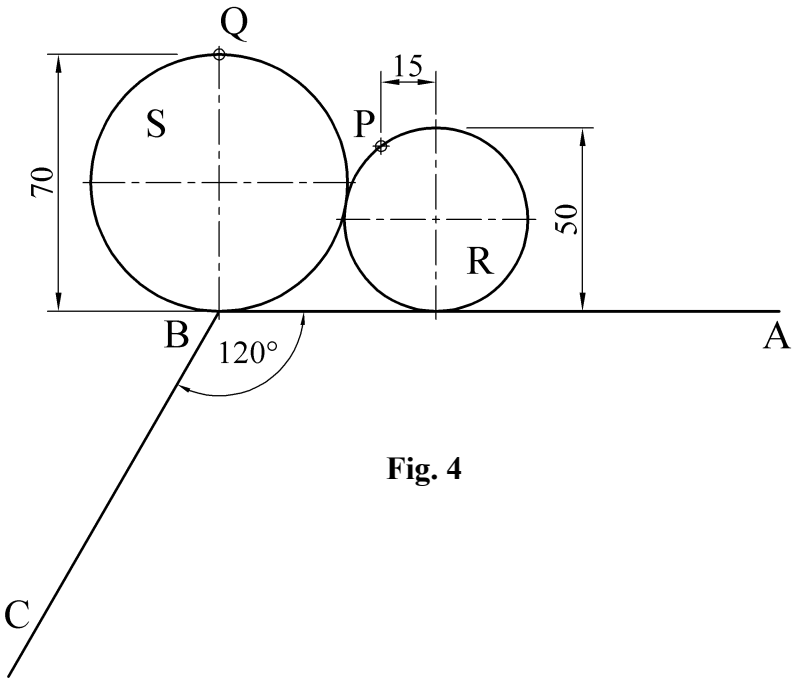

Fig. 4

5. The elevation and plan of a square-based solid, which is to be 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.

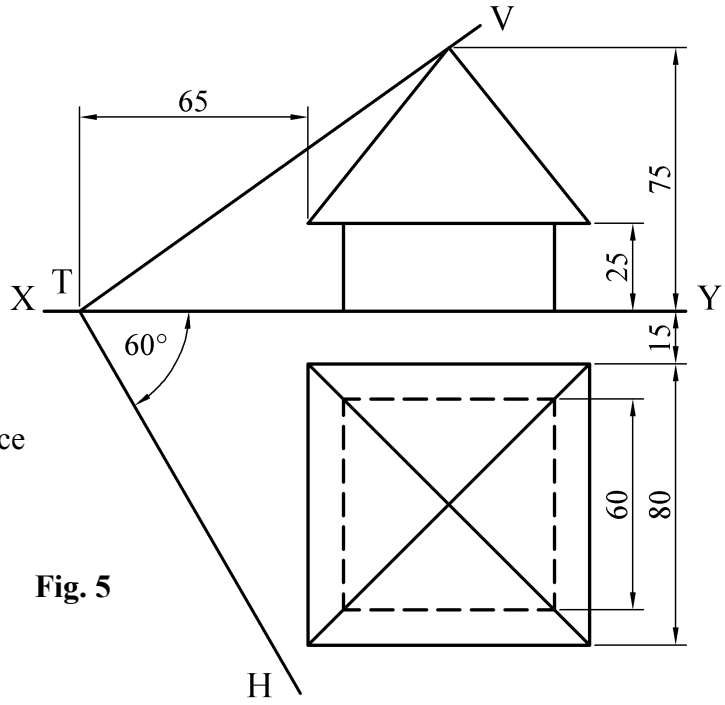

Fig. 5

6. **(a)** A parabola has 20mm between its focus and vertex. Locate the directrix and draw a portion of the curve.

(b) Fig. 6 shows the directrix DD_1 of a hyperbola. Two points, P and Q on the curve are also shown. F indicates the approximate position of the focus. The eccentricity of the curve is 1.5

Locate the focus and vertex of the hyperbola.

Draw a portion of the curve which passes through the given points P and Q.

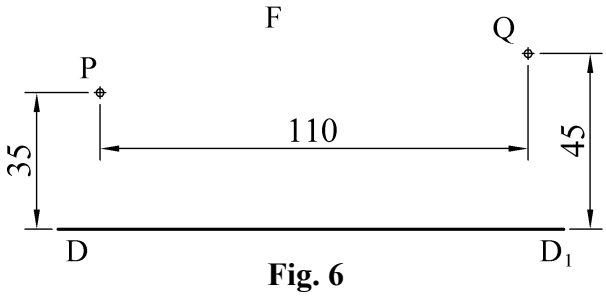

Fig. 6

7. Fig. 7 shows the plan and elevation of a solid which is formed from a hexagonal based prism. It is intersected by a triangular prism.

Draw the plan, elevation and end elevation of the solids showing all lines of interpenetration.

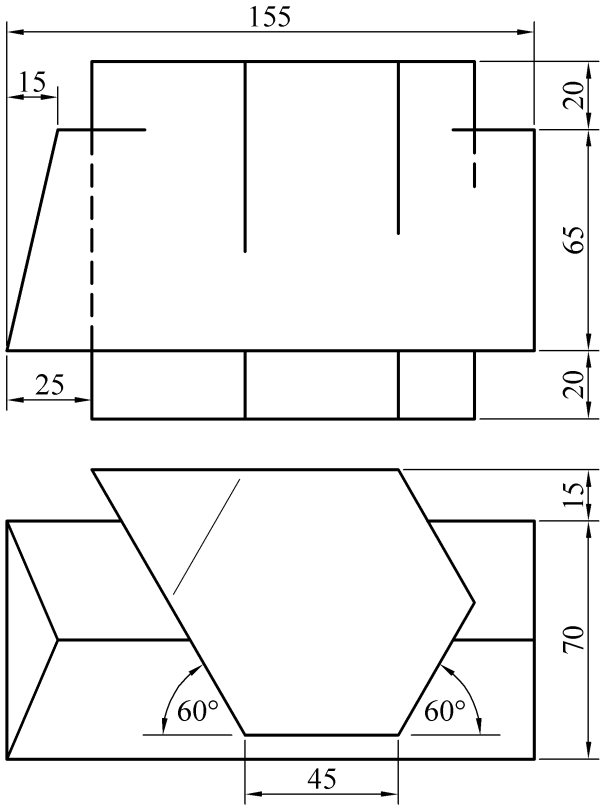

Fig. 7

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