

AN ROINN OIDEACHAIS  
INTERMEDIATE CERTIFICATE EXAMINATION, 1984

M.115

MECHANICAL DRAWING

FRIDAY, 15 JUNE - AFTERNOON, 2.00 to 5.00

400 marks

INSTRUCTIONS

- (a) Five questions to be answered; one of these must be question No. 1, Section A. Two must be selected from Section B and two must be selected from Section C.
- (b) All questions carry equal marks. A maximum of 12 marks will be awarded for draughtsmanship in respect of each question and a maximum of 20 marks will be awarded for neatness, arrangement and presentation of answer sheets.
- (c) The number of the question must be distinctly marked by the side of each question.
- (d) Work on one side of the paper only.
- (e) Examination number must be distinctly marked on each sheet of paper used.
- (f) All construction lines must be clearly shown.
- (g) All measurements are in millimetres.

SECTION A

(This question must be attempted)

1. A shaped solid is shown in fig. 1. Make a full-size drawing of this solid in orthographic projection showing:

- (a) An elevation looking in the direction of arrow A.
- (b) An end elevation looking in the direction of arrow B.
- (c) A plan projected from (a) above.

First or Third angle projection may be used.

SECTION B

(Two questions to be attempted from this section)

2. Fig. 2 shows the elevation and end-view of a shaped solid.

- (a) Draw a full-size isometric view of this solid.

OR

- (b) Using the isometric grid paper provided make a neat well-proportioned FREEHAND drawing of the solid. Insert all measurements on the sketch.

3. The elevation and incomplete plan of a cut solid are shown in Fig. 3. The solid is composed of an equilateral triangular prism surmounted by a regular pyramid.

- (a) Draw the elevation and complete the plan of the cut solid.
- (b) Project an end-view of the cut solid.

4. The elevation of a hollow cone resting on a hollow cylinder is given in Fig. 4. The cylinder is cut as shown.

Draw the development of the surfaces of the cone and the cut cylinder.

5. The elevation and plan of a solid are given in Fig. 5. The true shape of surface A is a regular hexagon.

- (a) Draw the elevation and plan of the solid.
- (b) Project an end elevation of the solid looking in the direction of the arrow.

SECTION C

(Two questions to be attempted from this section)

6. (a) Fig. 6 shows the outline of a machine part. Draw this outline, full-size, showing clearly how to find the centres and contact points for the tangential arcs.

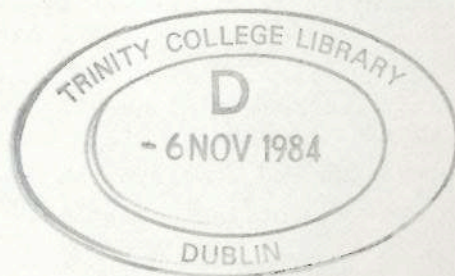
- (b) Two angles of a triangle are  $45^\circ$  and  $70^\circ$ , respectively, and the perimeter is 200 mm long. Draw the triangle.

7. In the quadrilateral ABCD shown in Fig. 7 the distances AC, BC and DC are all equal. Draw this quadrilateral showing clearly how to find point C. Construct a square which shall have twice the area of quadrilateral ABCD.

8. The design shown in Fig. 8 is based on a regular pentagon and contains two circular arcs.

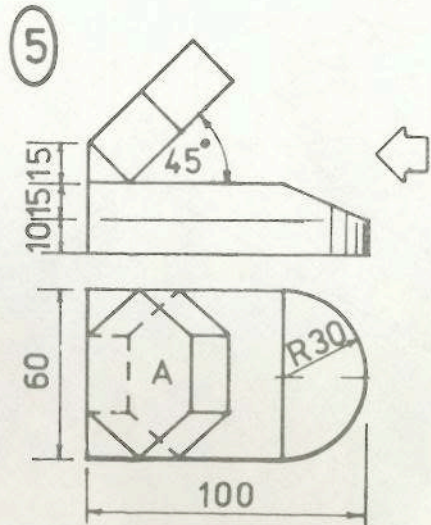
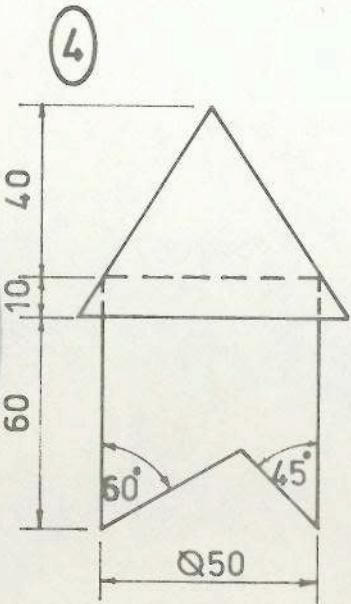
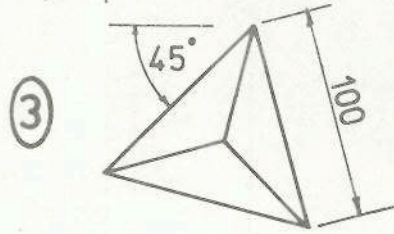
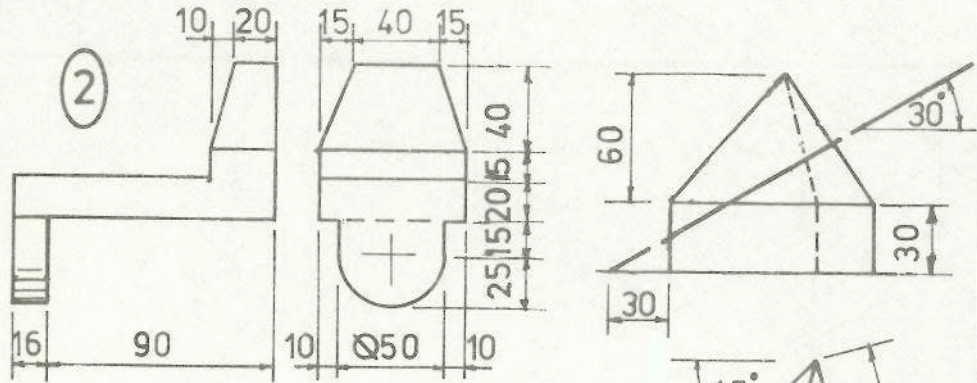
- (a) Draw the design to the given dimensions showing clearly how the centres for the arcs are located.
- (b) Construct a similar figure in which the distance AB shall be 75 mm.

9. Fig. 9 shows a shape based on an ellipse whose major axis is 120 mm and minor axis is 70 mm. Two tangents are drawn to the curve at P and Q. A portion of the elliptic curve is drawn 10 mm vertically above the ellipse as shown. Draw this shape showing all construction.

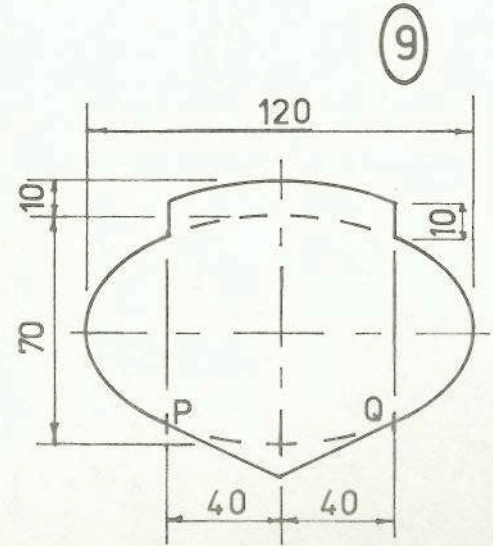
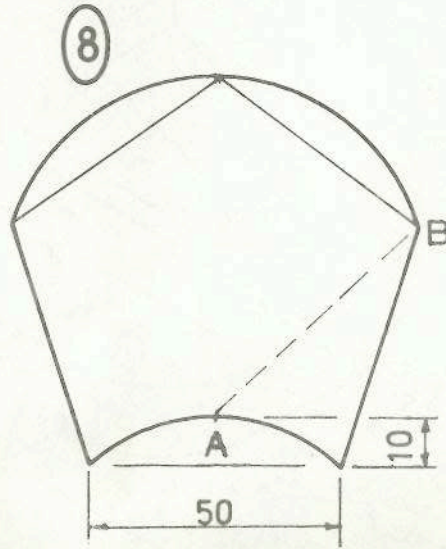
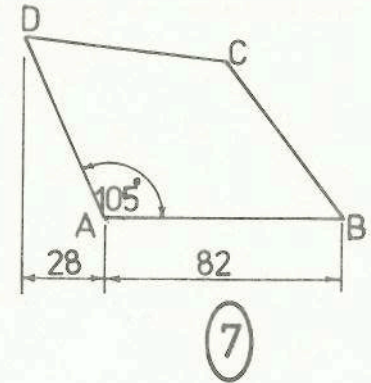
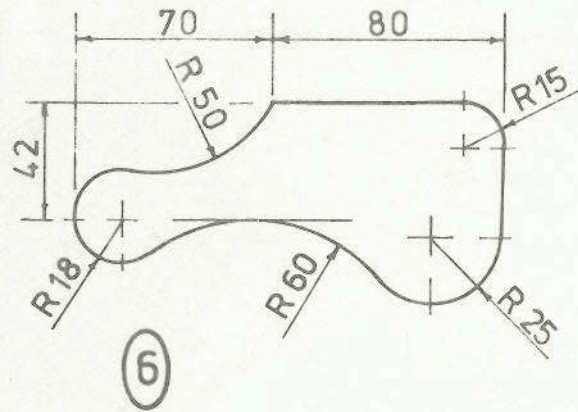




ROINN B — SECTION B



ROINN C — SECTION C



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