

MECHANICAL DRAWING

WEDNESDAY, 17 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. Two interlocking shaped solids are shown apart in Fig. 1. Make a full-size orthographic projection of these solids when they have been assembled showing:

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

N.B. All three views should show the pieces assembled.

SECTION B

(Two questions to be answered from this section)

2. Fig. 2 shows in First Angle projection the elevation and plan of a regular hexagonal prism pierced by a hexagonal hole. The prism is cut as shown.

- (i) Draw the given views and project an end view looking in the direction of the arrow.
- (ii) Draw the true shape of the shaded cut surface.

3. The elevation and end view of a shaped solid are shown in Fig. 3. The base of the solid is a square prism.

- (a) Draw an isometric view of the solid.

or

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

4. Fig. 4 shows the elevation and end view of a shaped solid. Draw the given views of this solid and project a plan.

5. Two views of a solid are shown in Fig. 5. The solid is composed of a truncated rectangular pyramid and a cut rectangular prism.

Draw a full-size development of this solid.

SECTION C

(Two questions to be answered from this section)

6. The outline of a machine part is shown in Fig. 6. Draw this outline full-size showing clearly how you locate all tangency points.

7. The pentagonal shape shown in Fig. 7 is to be cut from a piece of material 100 mm wide as shown.

- (i) Draw the pentagonal shape full-size.
- (ii) A piece of material 130 mm wide is to have a similar shape cut from it. Show how to increase the given shape proportionately so that it will fit the wider piece of material in the same way.

8. A triangle ABC is shown in Fig. 8

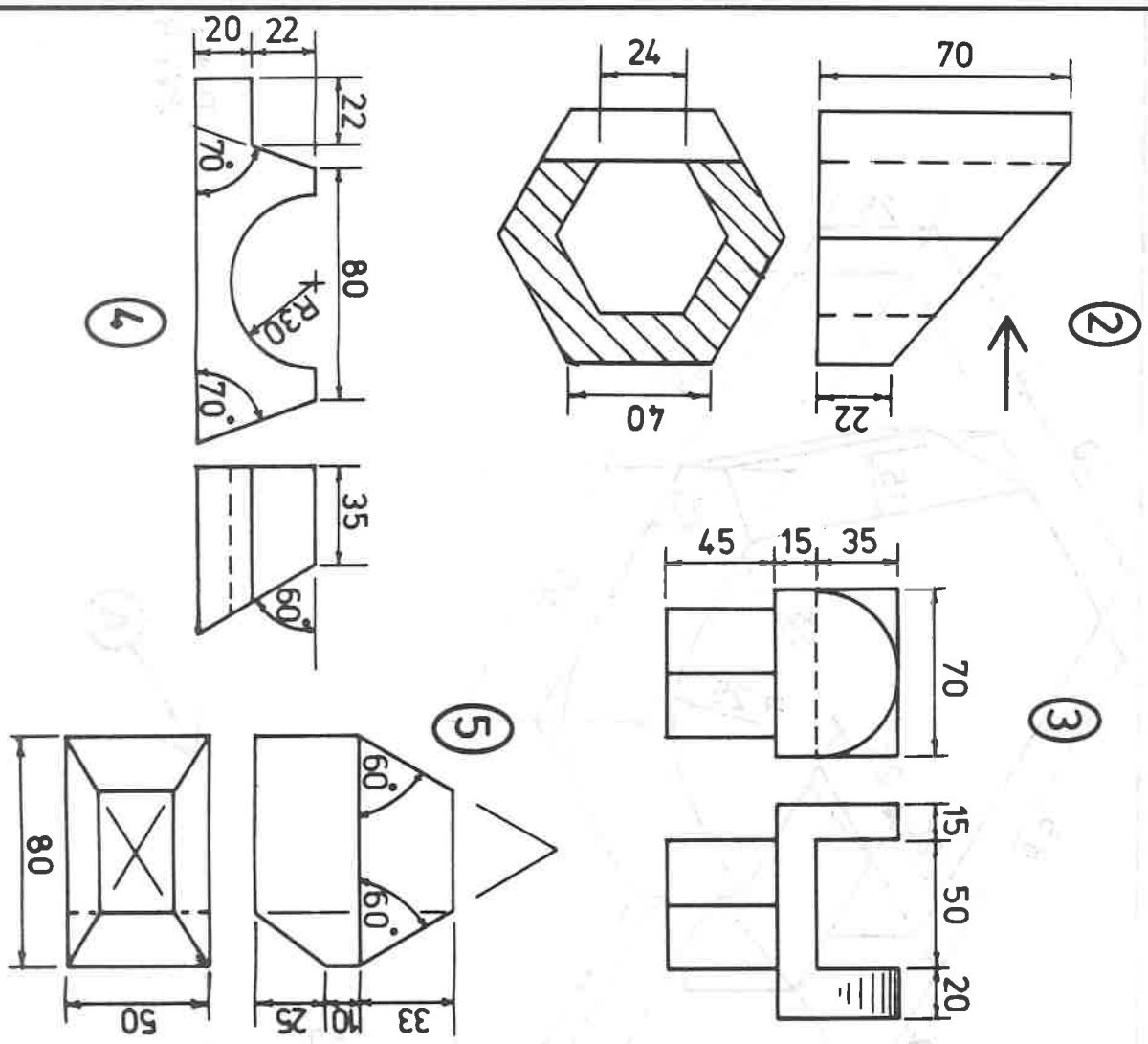
- (i) Reproduce this triangle in full size.
- (ii) Draw a semi-circle which will have its diameter on side AC of the triangle and which will touch tangentially sides AB and BC.
- (iii) Construct a square which will have an area equal to that of triangle ABC.

9. Fig. 9 shows a design based on an ellipse with a major axis of 110 mm and a minor axis of 80 mm. The same elliptical curve is used in both top and bottom of the design.

Draw this design in full-size showing clearly how you locate the points for the elliptical curve.



ROINN B — SECTION B



ROINN C — SECTION C

