INTERMEDIATE CERTIFICATE EXAMINATION, 1982

MECHANICAL DRAWING

THURSDAY, 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. 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).

First or Third Angle projection may be used.

SECTION B

(Two questions to be attempted from this section)

2. Fig. 2 shows in THIRD ANGLE PROJECTION the front-view (elevation), top-view (plan) and left-hand end view of a solid. The pentagon shown in end-view is a regular figure.

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

OR

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

3. The elevation and plan of a shaped solid are shown in fig. 3. Draw the given views. The solid is rotated about the edge BC as the arrow indicates until the surface ABCD rests on the horizontal plane. Draw the elevation and plan of the solid in the new position.

4. The elevation and incomplete plan of an equilateral triangular pyramid cut by a plane are given in fig. 4.

(a) Draw the elevation and complete the plan of the cut pyramid.
(b) Find the true shape of the cut surface of the pyramid.

5. Fig. 5 shows the development in one piece of the six vertical sides of a regular hexagonal prism which has been cut by planes.
Draw the elevation, plan and end view of the cut prism and complete the development.

SECTION C

(Two questions to be attempted from this section)

6. Reproduce the design shown in fig. 6 to the given dimensions showing clearly all construction lines for tangents, centres and touching arcs.

7. Fig. 7 shows a regular pentagon ABCDE inscribed in a circle of diameter 110 mm.

(a) Construct this pentagon and dimension the distance AD.
(b) Construct another regular pentagon which shall have a distance AD of 130 mm.

8. Fig. 8 shows two similar triangles ABC and ACD which are joined to form a quadrilateral ABCD.

(a) Construct these triangles showing clearly how to determine the lengths of sides AD and CD.

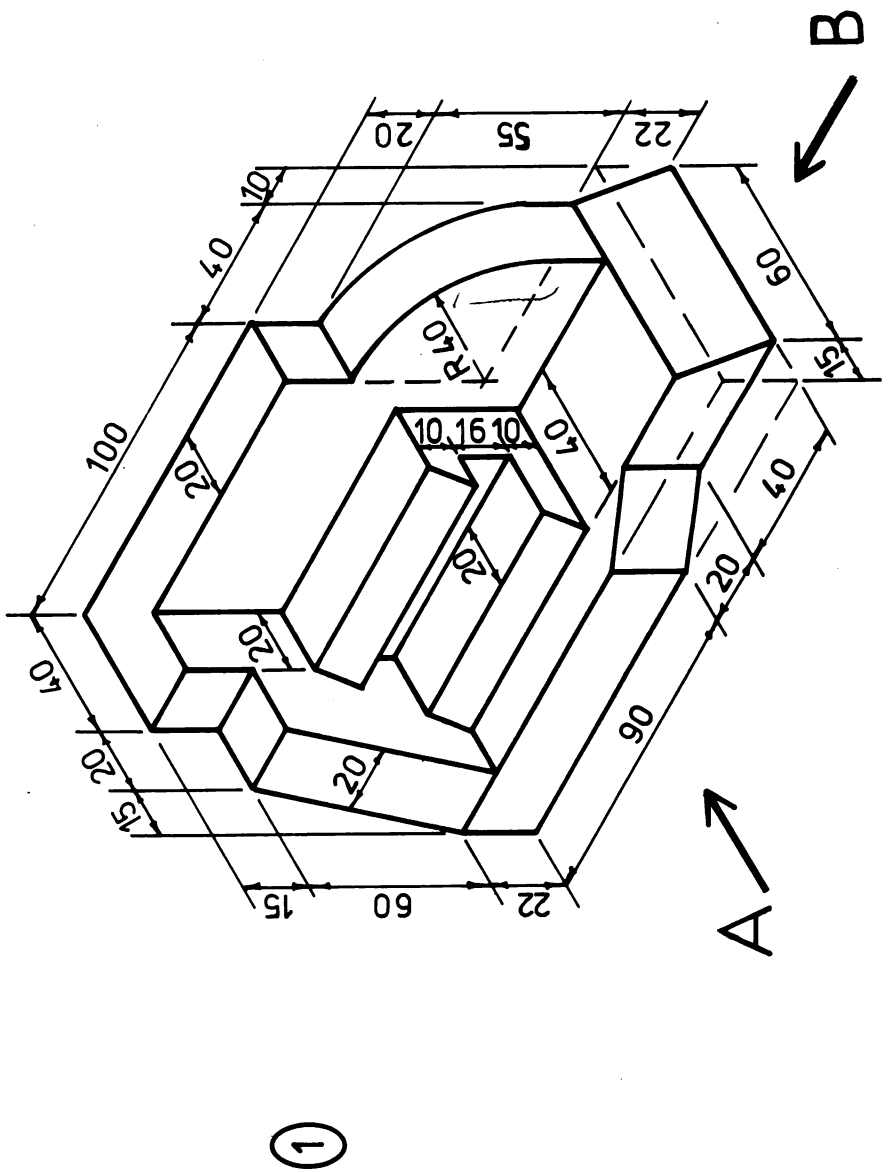
(b) Construct a square which shall be equal in area to the quadrilateral ABCD.

9. The design shown in fig. 9 is based on the given ellipse which has a minor axis of 70 mm. Tangents are drawn at two points P and Q on the curve as shown.
Reproduce this design to the given measurements showing clearly how to obtain the major axis, the direction of the tangents and the equal spacings for the stepped base.

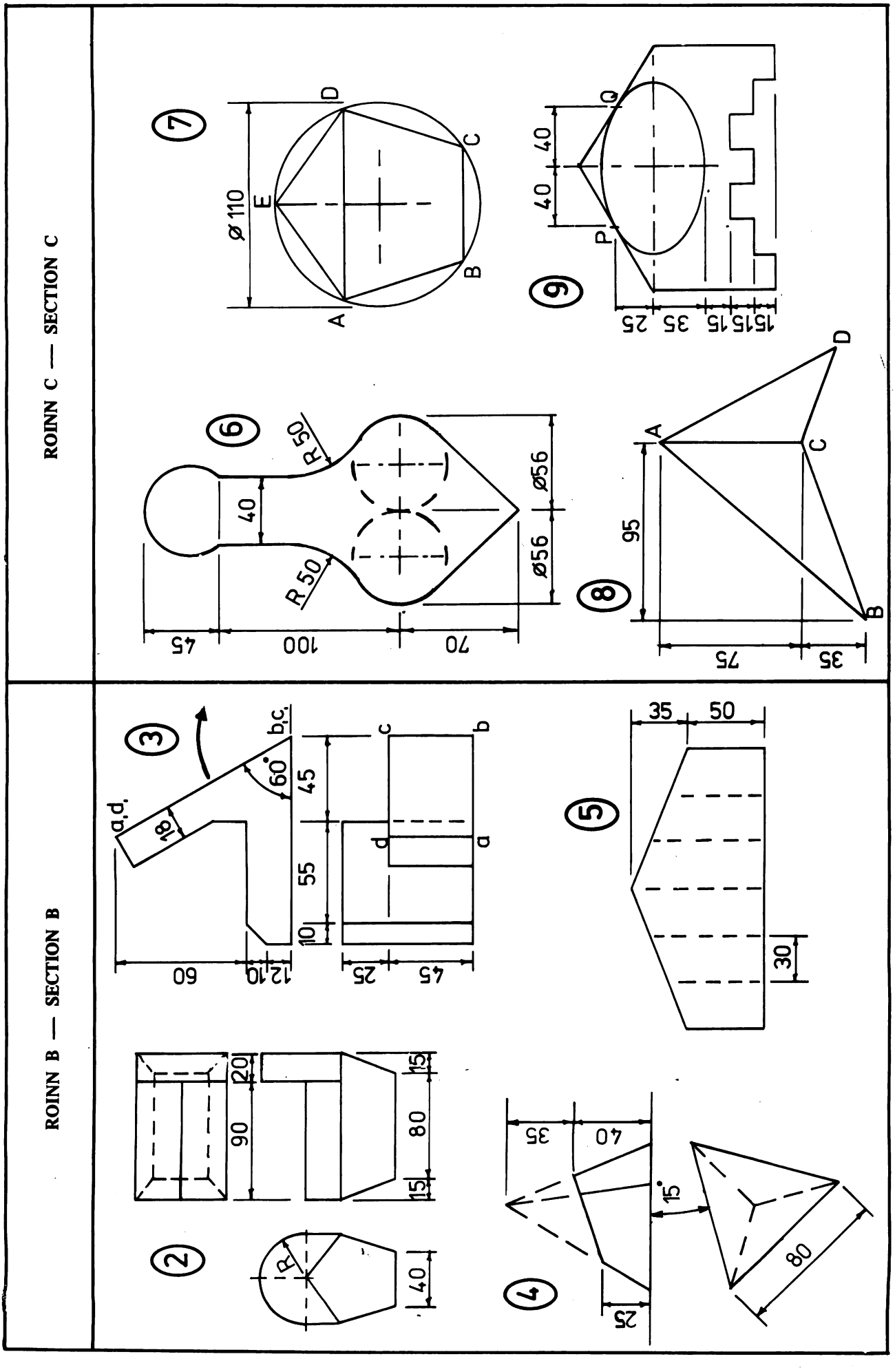
SCRÚDÚ NA MEÁNTEISTIMÉIREACHTA AN ROINN OIDEACHAIS INTERMEDIATE CERTIFICATE EXAMINATION 1982 M.115M

LÍNÍOCHT MHEICNIÚIL MECHANICAL DRAWING

ROINN A — SECTION A



(1)


ROINN C — SECTION C
ROINN B — SECTION B
7
ø 110
D
C
E
B
A
9
Q
P
40
40
15 15 35 25
6
R 50
R 50
40
ø56
ø56
45
100
70
8
A
C
D
B
95
75
35
3
b,c.
60°
18
a,d.
45
55
10
60
12 10
c
b
d
a
25
45
5
35
50
30
2
R
40
20
90
15
80
15
4
35
40
15°
25
80