

## INTERMEDIATE CERTIFICATE EXAMINATION, 1986

## MECHANICAL DRAWING

WEDNESDAY, 18 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.
- (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. The elevation and incomplete plan of a regular pentagonal pyramid are shown in Fig. 2. The pyramid is cut by a plane as indicated.

- (a) Draw the elevation and complete the plan of the cut solid.
- (b) Project an end elevation of the cut pyramid.
- (c) Show the true shape of the cut surface.

3. The elevation and plan of a shaped solid are shown in Fig. 3.

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

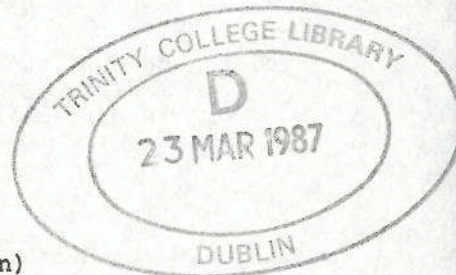
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- (b) Using the isometric grid-paper provided make a neat well-proportioned FREEHAND sketch of the solid. Insert all measurements on the sketch.

4. Fig. 4 shows the plan of a cone A, base diameter 80 mm and altitude 50 mm, and a cylinder B, diameter 54 mm and length 110 mm. Both solids rest on the horizontal plane and are in contact.

- (a) Draw the elevation and plan of the cone and cylinder in the given position.
- (b) A sphere of diameter 36 mm rests on the horizontal plane in position S so that it is in contact with both cylinder and cone. Draw the sphere in plan and elevation.

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5. (a) A right pyramid has a rectangular base measuring 50 mm by 30 mm and has an altitude of 60 mm.  
Draw the plan and elevation of the pyramid and show the development of all the surfaces.
- (b) Each of the six sloping surfaces of a truncated hexagonal pyramid has the shape shown in Fig. 5. Each edge of the base of the pyramid is 50 mm.  
Draw the plan and elevation of the truncated pyramid.

SECTION C

(Two questions to be attempted from this section)

6. In Fig. 6 the triangles ABC and ACD are equal in area.
- (a) Draw the quadrilateral ABCD showing all construction.
- (b) Construct a square which shall be equal in area to the quadrilateral ABCD.
- (c) On a separate diagram construct another square which shall have three times the area of the square in (b).
7. The diagram in Fig. 7 represents two similar pieces of cardboard joined together. The curves are semi-circles.
- (a) Draw the given diagram.
- (b) Draw another piece, reduced in size, joined to the left hand side of the dimensioned piece and similar in shape to the pieces shown.
8. (a) Draw the design shown in Fig. 8 to the given dimensions and showing all construction lines.
- (b) An angle of  $30^\circ$  is formed by two lines AB and AC. A point P within the angle is 10 mm from AB and 40 mm from AC.  
Draw a circle which shall be tangential to AB and AC and shall pass through the point P.
9. (a) Draw the design shown in Fig. 9. The curve ABC is a semi-ellipse and the curve DE is a quarter ellipse.
- (b) Draw a triangle ABC in which AB = 90 mm, BC = 75 mm and AC = 45 mm. The points A and B are the focal points of an ellipse and C is a point on the curve.  
Find the major and minor axes and draw one quarter of the curve.

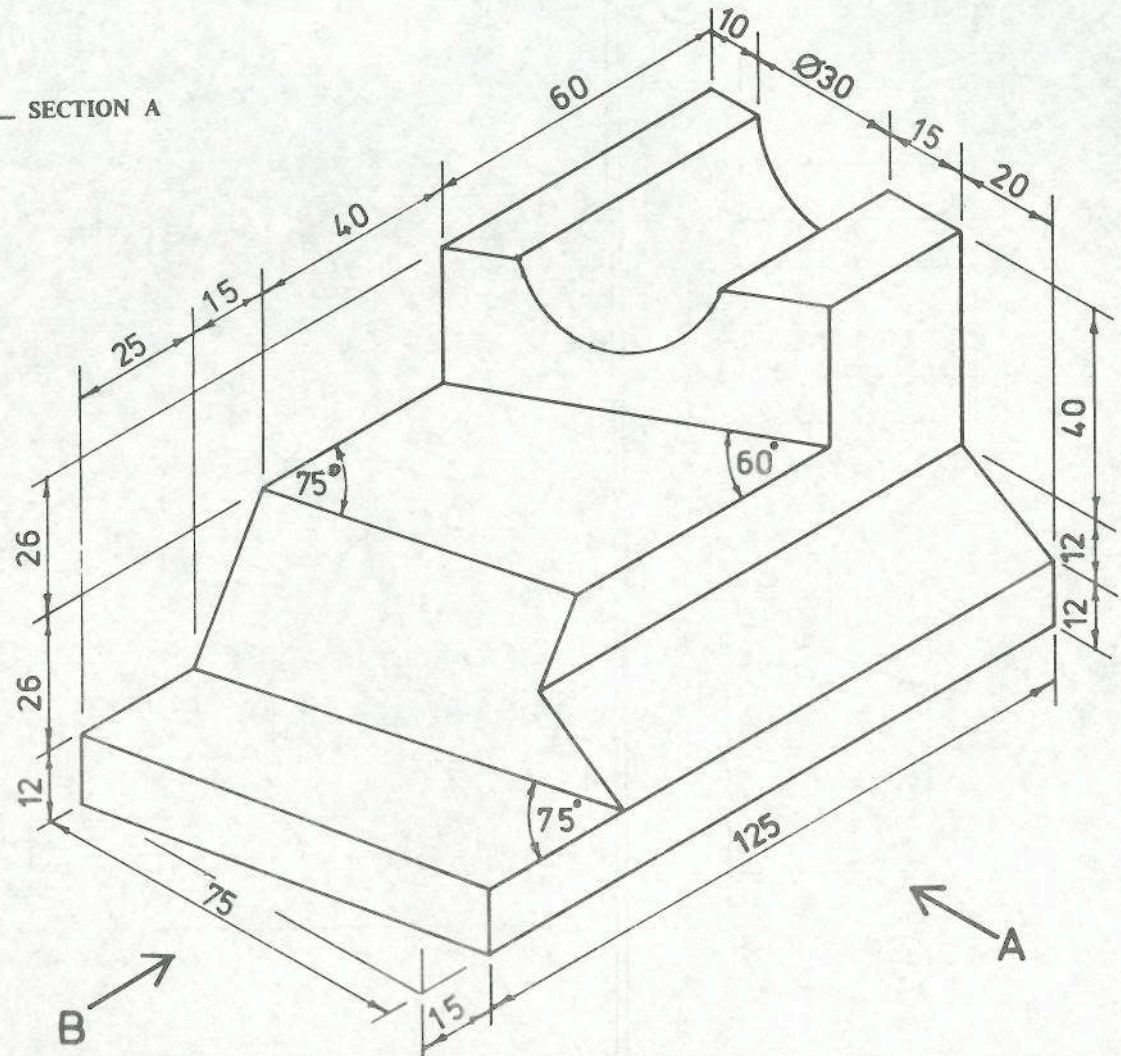
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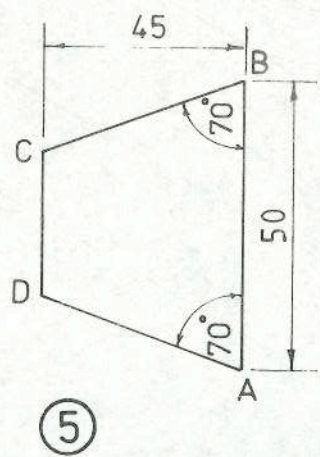
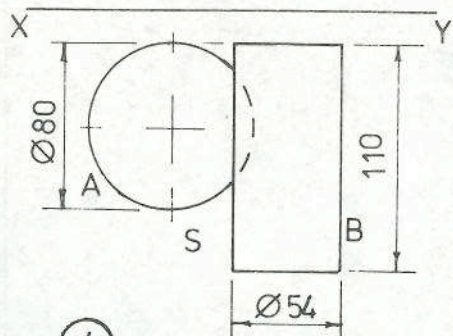
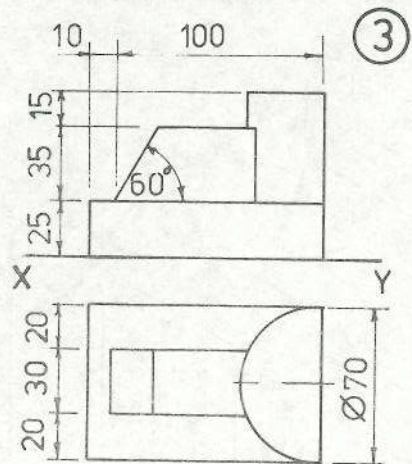
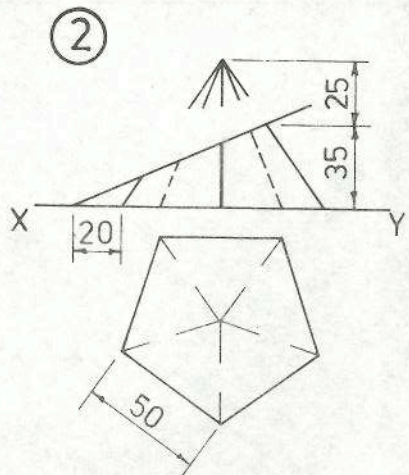
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INTERMEDIATE CERTIFICATE EXAMINATION  
MECHANICAL DRAWING

ROINN A — SECTION A



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ROINN B — SECTION B



ROINN C — SECTION C

