

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. A maximum of 12 marks will be awarded for draughts-  
manship 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.  
Work on one side of the paper only.
- (d) Examination number must be distinctly marked on each sheet of paper used.
- (e) All construction lines must be clearly shown.
- (f) All measurements are in millimetres.
- (g)

SECTION A

(This question must be attempted)

1. A shaped solid is shown in Fig. 1.  
Make a full-size drawing in orthographic projection of this solid 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 right-hand 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  
sketch of this solid. Insert all necessary dimensions on the sketch.
3. Fig. 3 shows the plan of a regular pentagonal prism of side 55 mm resting on the  
horizontal plane.  
Draw the plan of the prism in this position and project the elevation.
4. The elevation and incomplete plan of a cut square based pyramid are shown in Fig. 4.
  - (a) Draw the elevation and complete the plan of the cut pyramid.
  - (b) Project a new elevation of the cut pyramid looking in the direction of the arrow.
5. The elevation and end elevation of a shaped solid are shown in Fig. 5. The solid is  
made up of two prisms joined together.
  - (a) Draw the given views and project a plan.
  - (b) Find the true shape of the two surfaces marked A and B.

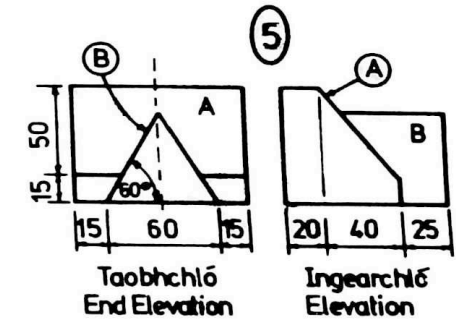
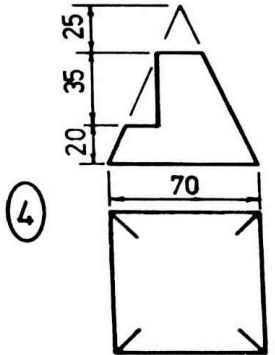
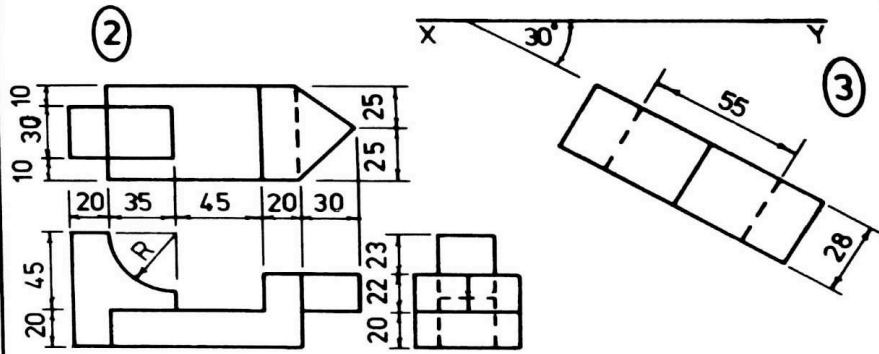
SECTION C

(Two questions to be attempted from this section)

6. Fig. 6 shows a shaped metal plate which contains five equally spaced holes of diameter  
14 mm and three rectangular slots of equal width.  
Draw this shape showing clearly the geometrical constructions used to locate the  
centres for the holes and to determine the width of the slots.
7. A shaped metal pivot is shown in Fig. 7.
  - (a) Draw this pivot.
  - (b) The pivot is to be rotated about point P so that the edge PQ becomes vertical.  
Draw the pivot in its new position.
8. The triangle ABC shown in Fig. 8 has its sides in the ratio of 2:3:4.
  - (a) Draw this triangle showing clearly the constructions used to determine the lengths  
of AB and AC.
  - (b) Inscribe a circle D in the triangle ABC which will be tangential to each side of  
the triangle.
  - (c) Inscribe another circle in angle ACB which will be tangential to circle D.
9. (a) Inscribe an ellipse in a rectangle measuring 130 mm by 90 mm. The ellipse should  
touch the mid-point of each side.
  - (b) Line MN in Fig. 9 is the major axis of an ellipse and P is a point on the curve.
    - (i) Determine the length of the minor axis and draw the semi-ellipse.
    - (ii) Construct a tangent to the curve at P.

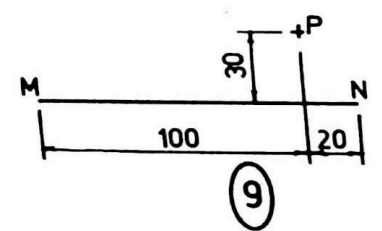
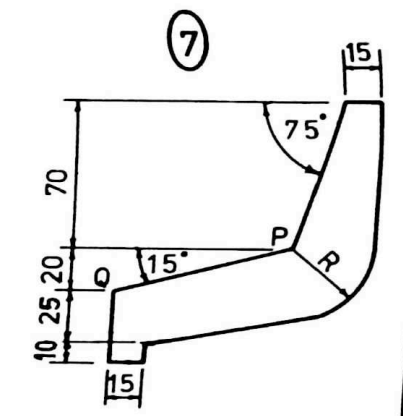
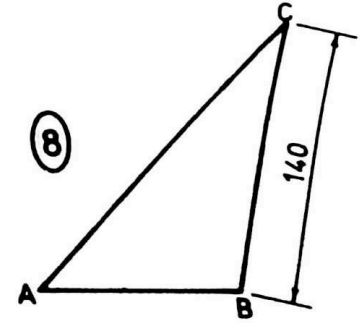
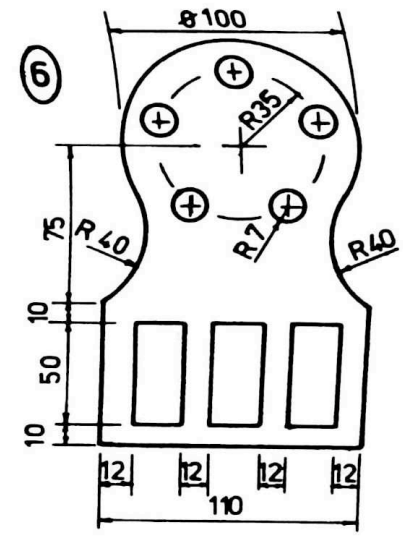
ROINN B

SECTION B



ROINN C

SECTION C

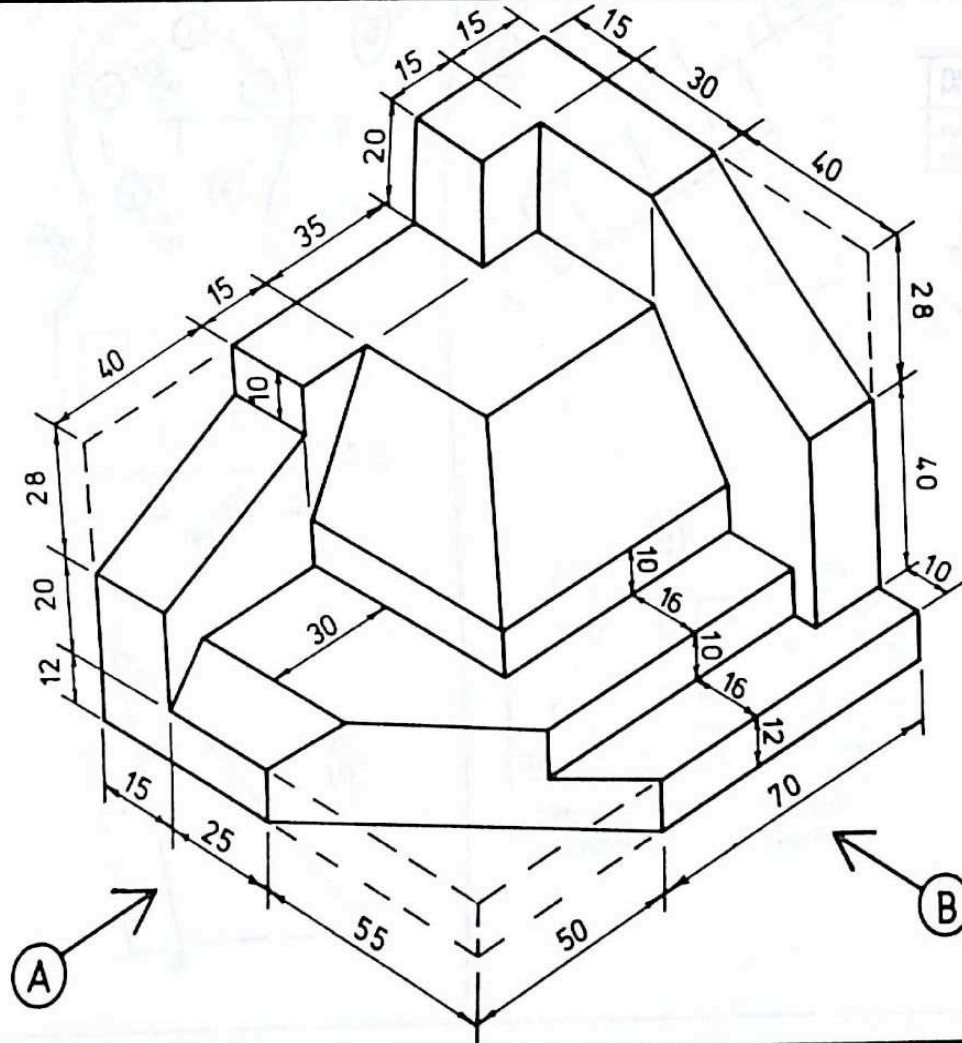


15585

ROINN A

SECTION A

①



Ⓐ

Ⓑ

THALL OVER →