

MECHANICAL DRAWING - HIGHER LEVEL

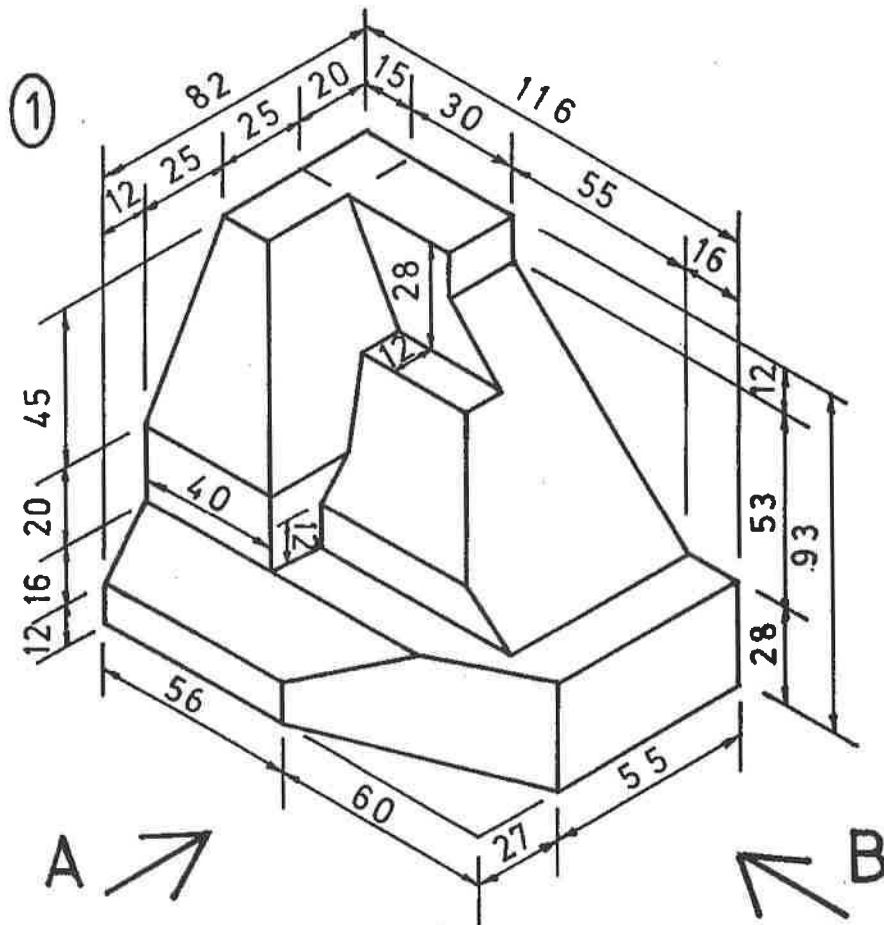
THURSDAY, 18 JUNE - AFTERNOON, 2.00 to 5.00

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:-
- (i) An elevation looking in the direction of arrow A.
 - (ii) An end-view looking in the direction of arrow B.
 - (iii) A plan projected from (i) above.

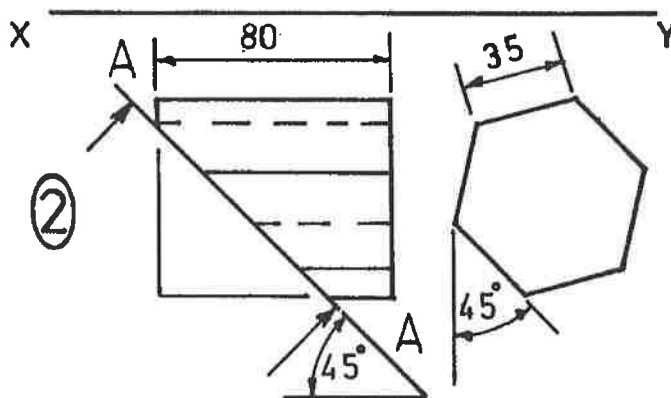
First or third angle projection may be used.

OVER->

SECTION B
(Two questions to be attempted from this section)

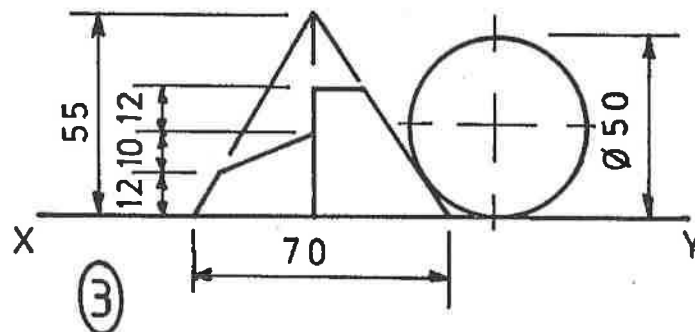
2. Fig. 2 shows the plan of a regular hexagonal prism which is cut by the plane A-A. The cross-section of the prism is also given.

- (i) Draw the plan as given.
- (ii) Project the elevation of the cut prism.
- (iii) Project the true shape of the section of the solid when viewed in the direction of the arrows.



3. The elevation of a sphere in contact with a right square pyramid is given in Fig. 3. The pyramid is cut as shown.

- (i) Draw the elevation as given showing clearly how to find the centre for the sphere.
- (ii) Project a plan of the solids.
- (iii) Project an end-view of the solids.

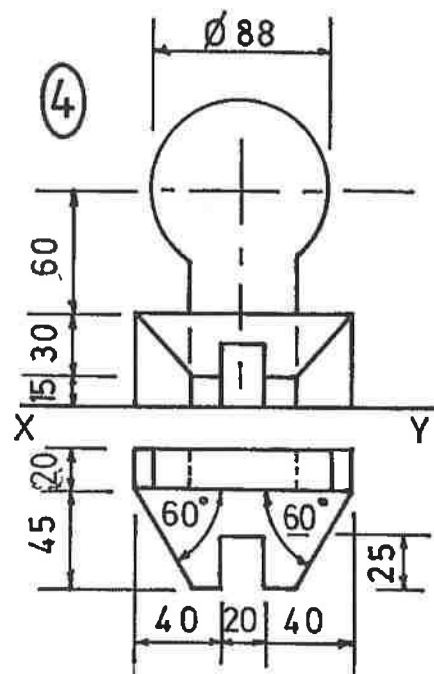


4. Fig. 4 shows the elevation and plan of a shaped solid.

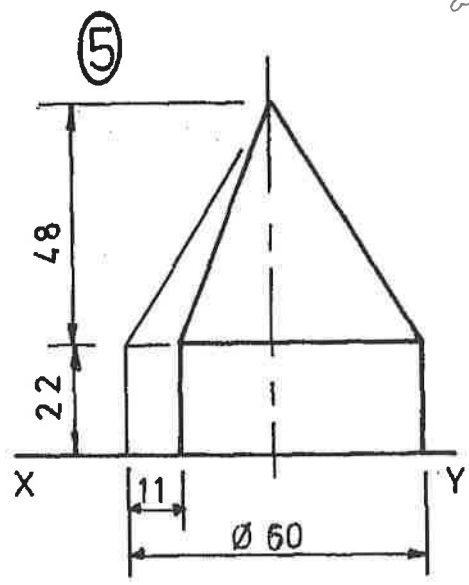
- (a) Make a full-size isometric drawing of this solid.

OR

- (b) Using the isometric grid-paper provided make a neat well-proportioned freehand drawing of the solid shown in Fig. 4.

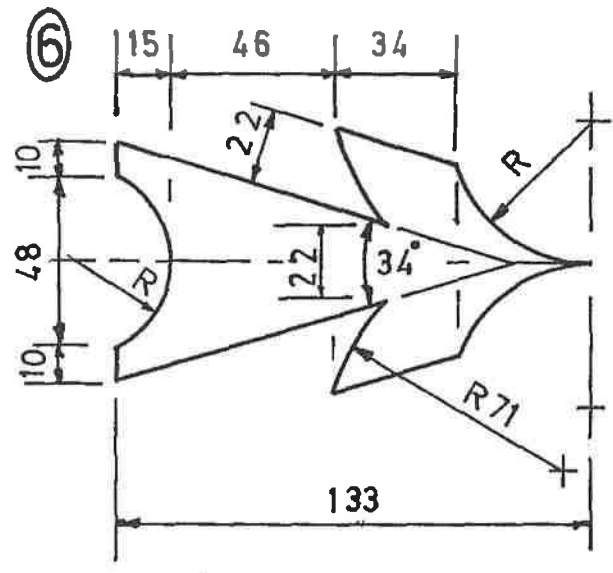


5. The solid shown in elevation in Fig. 5 consists of a cylinder and a right cone. The solid is cut as shown.
- (i) Draw the elevation and plan of this solid.
 - (ii) Draw the development of all the surfaces of this solid.

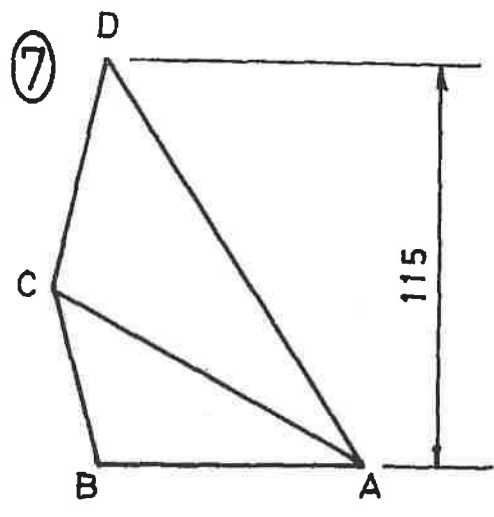


SECTION C
(Two questions to be attempted from this section)

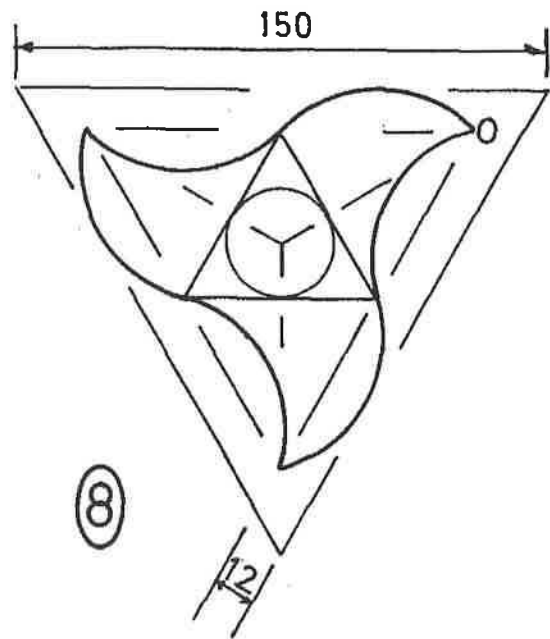
6. The outline of an arrow is shown in Fig. 6. Draw this outline to the given dimensions showing clearly how the arcs are obtained.



7. In Fig. 7 two similar triangles ABC and ACD are joined to form a quadrilateral. The triangles have sides in the ratio of 2:3:4.
- (i) Draw this figure showing clearly how to obtain the lengths for the sides.
 - (ii) Construct a square which will have an area 1.5 times the area of quadrilateral ABCD.



8. (a) The angles of a triangle DEF are in the ratio of 3:4:5 and its perimeter is 190 mm. Draw the triangle and construct a circle to pass through D, E and F.
- (b) The curved design shown in Fig. 8 is based on an equilateral triangle and arcs of equal radius.
- (i) Draw the design showing clearly how to find the centres for the arcs.
- (ii) The curved design is rotated clockwise about point O through an angle of 60° . Draw the design in its new position.



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9. (a) In the design shown in Fig. 9 the curve ABC is a semi-ellipse and the curve DEF is also portion of the same elliptical curve. Draw the design showing clearly how to find the points on the curve.
- (b) Draw a triangle PQR in which $PQ = 75$ mm, $PR = 66$ mm and $QR = 44$ mm. In this triangle P and Q are the focal points of an ellipse and R is a point on the curve. Find the major and minor axes for this ellipse and draw half the curve.

