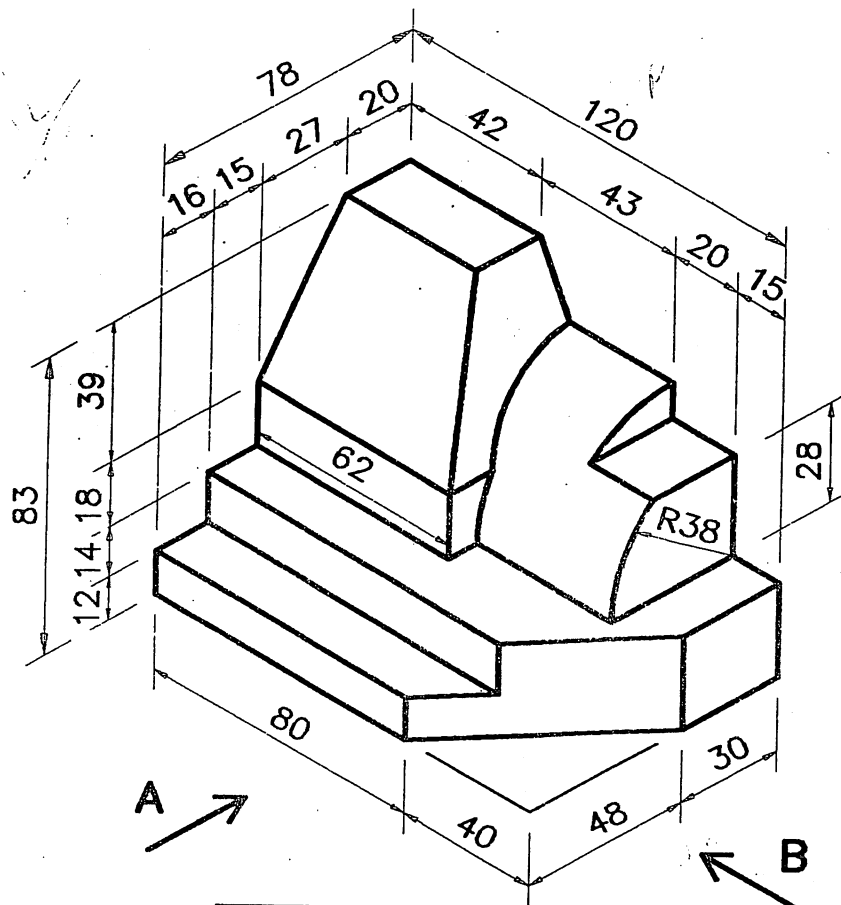


INSTRUCTIONS

- (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)

**Fig.1**

1. A shaped solid is shown in Fig. 1. Make a full-size drawing of this solid in orthographic projection showing:
- An elevation looking in the direction of arrow A.
 - An end-view looking in the direction of arrow B.
 - 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 solid which is cut by the plane A-A. The cross-section of the solid is also given.

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

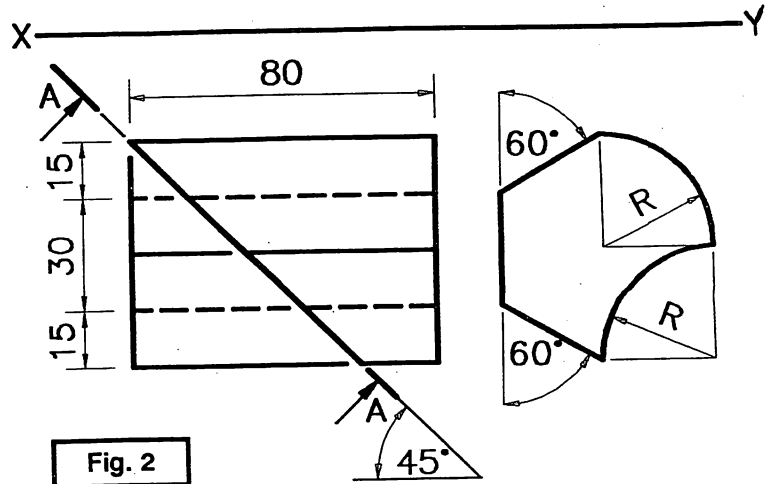


Fig. 2

3. The plan of a rectangular based pyramid in contact with two spheres is shown in Fig. 3. All the solids rest on the horizontal plane. The altitude of the pyramid is 80mm and its apex is indicated by point e in the plan.

- (i) Draw the plan and elevation of the solids.
- (ii) Show all contact points in both views.

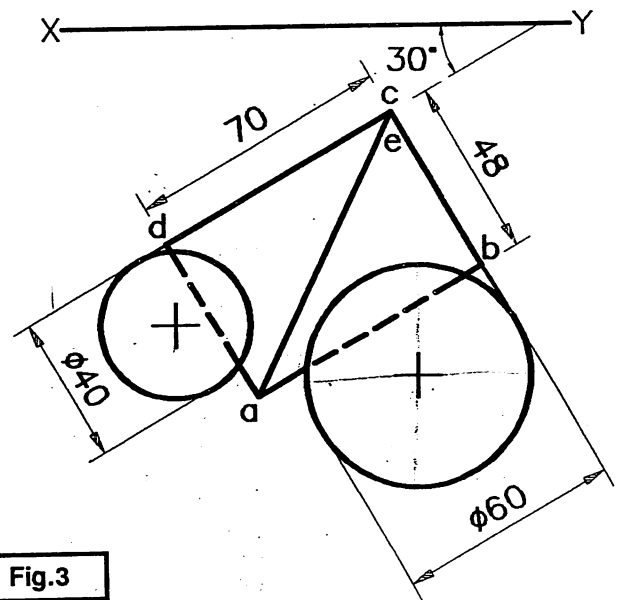


Fig. 3

4. A pictorial sketch of a solid is given in Fig. 4.

- (i) Draw the elevation, plan and end-view of the solid.
- (ii) Draw the development of all surfaces of this solid.
- (iii) Show in plan and elevation the shortest route from P to Q on the surface of the solid.

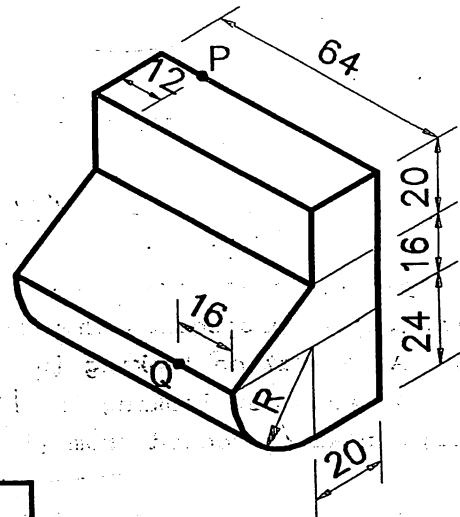


Fig. 4

5. A shaped solid is shown in elevation and plan in Fig. 5.

(a) Make a full size isometric drawing of the given solid.

OR

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

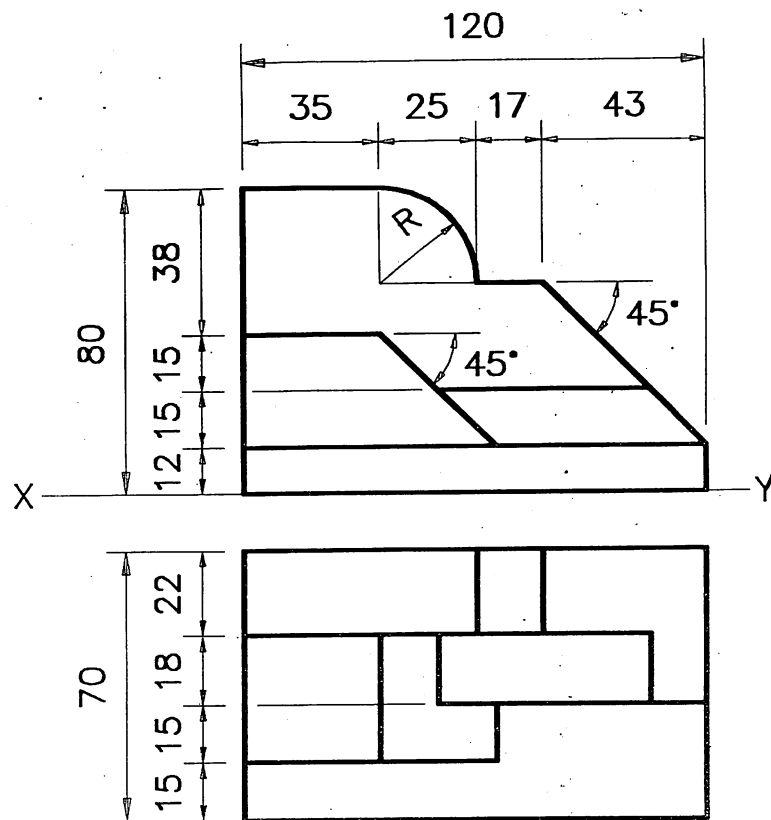


Fig.5

SECTION C

(Two questions to be attempted from this section)

6. (i) Draw the outline shown in Fig. 6 showing clearly how the centres for the arcs and tangency points are obtained
(ii) The outline is rotated clockwise about P through an angle of 45° . Draw the outline in its new position.

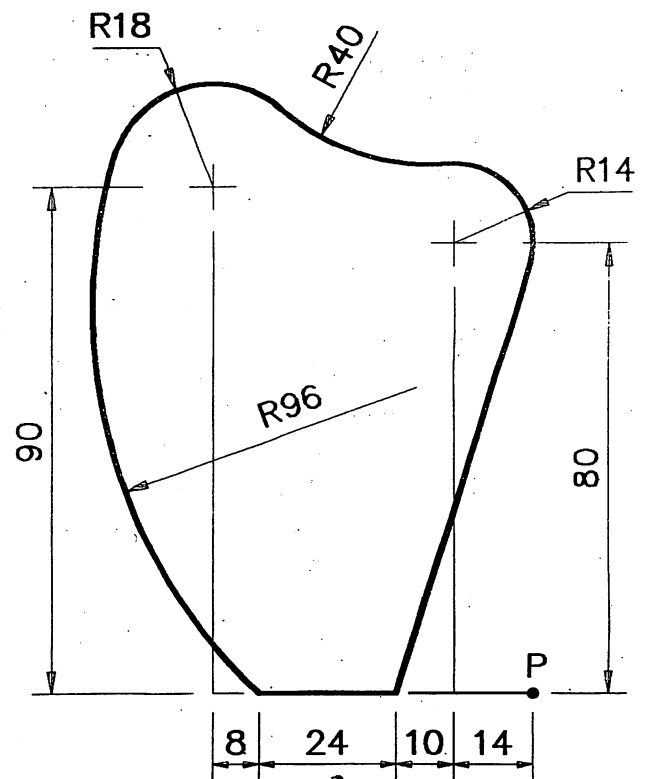


Fig.6

OVER

7. Fig. 7 shows a series of three similar triangles in which the sides of successive triangles decrease in the ratio 1:2.

- (i) Draw the three triangles, showing clearly how the lengths of the sides are obtained.
- (ii) Draw a square equal in area to the sum of the two shaded triangles.

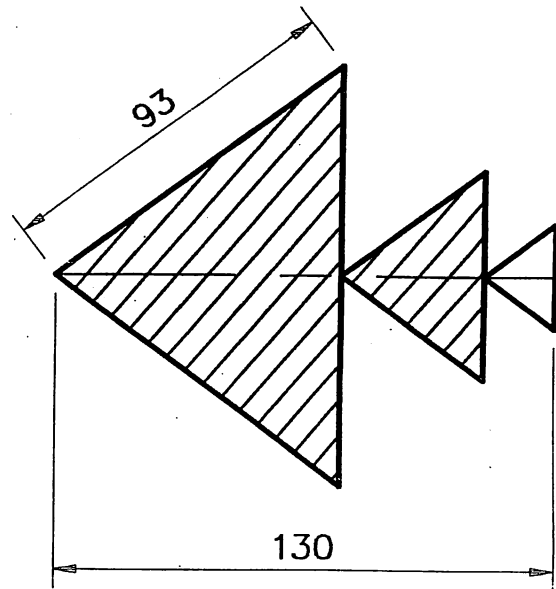


Fig.7

8. A square inscribed in a regular semi-octagon is shown in Fig. 8.

- (i) Draw the given figure.
- (ii) Draw a line from P which will divide the area of quadrilateral PQRS into two equal areas.

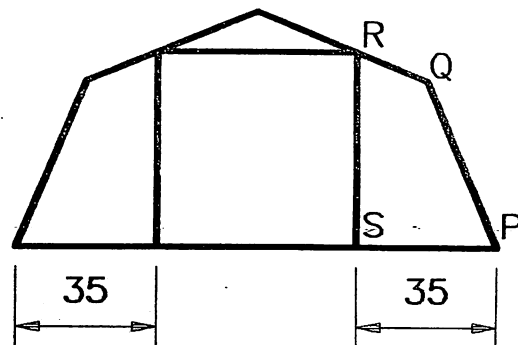


Fig.8

9. (a) Draw a triangle PQR in which the angle RPQ is 15° , PQ = 105mm and PR = 95mm. In this triangle PQ is the major axis of an ellipse and R is a point on the curve.

Draw half the curve and construct a tangent at R.

- (b) Portions of an ellipse and a circle are shown in Fig. 9. The curves are tangential at points A and B.

- (i) Determine the minor axis for the ellipse and draw the curve.
- (ii) Show how to locate the centre for the circle and complete the design.

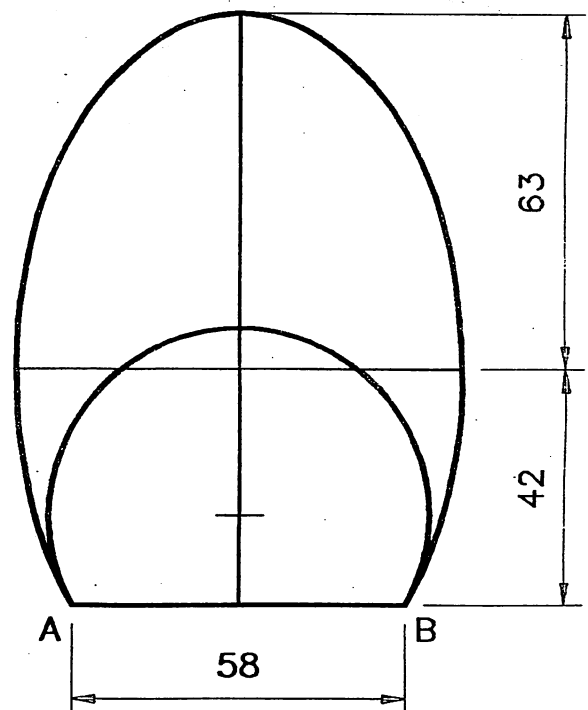


Fig.9