LEAVING CERTIFICATE EXAMINATION, 1991

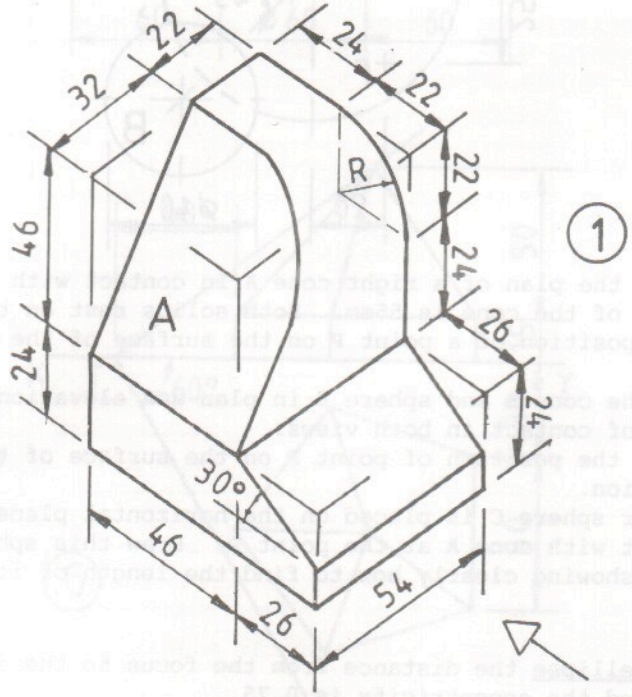
TECHNICAL DRAWING - ORDINARY LEVEL - PAPER I
(Plane and Solid Geometry)

WEDNESDAY, 19 JUNE - AFTERNOON 2.00 - 5.00

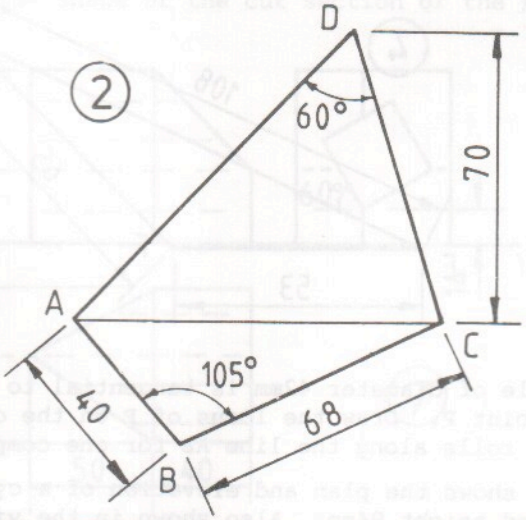
200 marks

INSTRUCTIONS

(a) Answer four questions
(b) All questions carry equal marks.
(c) Construction lines must be shown on all solutions.
(d) Write the number of the question distinctly on the answer paper.
(e) All dimensions on the question paper are given in millimetres.
(f) First or third angle projection may be used.



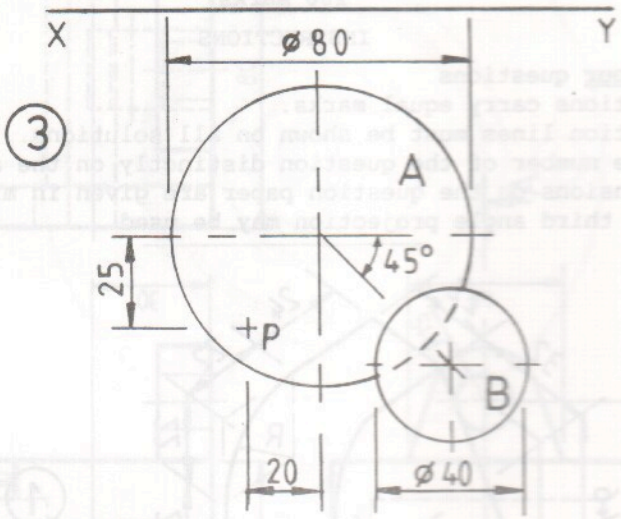
1. A pictorial view of a shaped solid is shown in Fig. 1.
   (a) Looking in the direction of the arrow project an elevation of the solid.
   (b) Project a plan from the elevation.
   (c) Project a new plan of the solid which shall include the true shape of surface A.



2. The quadrilateral ABCD shown in Fig. 2 is made up of two triangles, ABC and ACD.
   (a) Draw the triangle ABC from the measurements given and complete the quadrilateral showing clearly how point D is located.

(b) From C draw a line which shall divide the area of the quadrilateral ABCD into two equal areas.

(c) On a separate drawing construct a triangle PQR similar to the triangle ABC and which shall be inscribed in a circle of diameter 120mm.



3. Fig. 3 shows the plan of a right cone A in contact with a sphere B. The altitude of the cone is 55mm. Both solids rest on the horizontal plane. The position of a point P on the surface of the cone is also given.

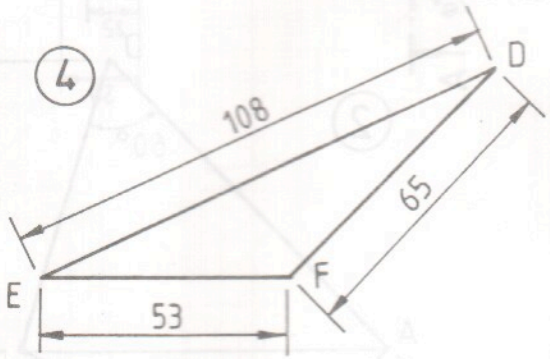
(a) Draw the cone A and sphere B in plan and elevation showing the point of contact in both views.

(b) Locate the position of point P on the surface of the cone in elevation.

(c) Another sphere C is placed on the horizontal plane and is in contact with cone A at the point P. Draw this sphere C in both views showing clearly how to find the length of its radius.

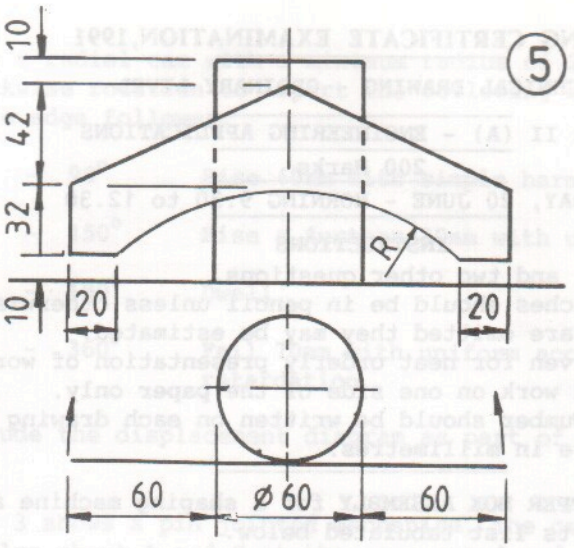
4. (a) In an ellipse the distance from the focus to the directrix is 40mm and the eccentricity is 0.75.
Draw the ellipse and construct a tangent to the curve at a point 50mm from the directrix.

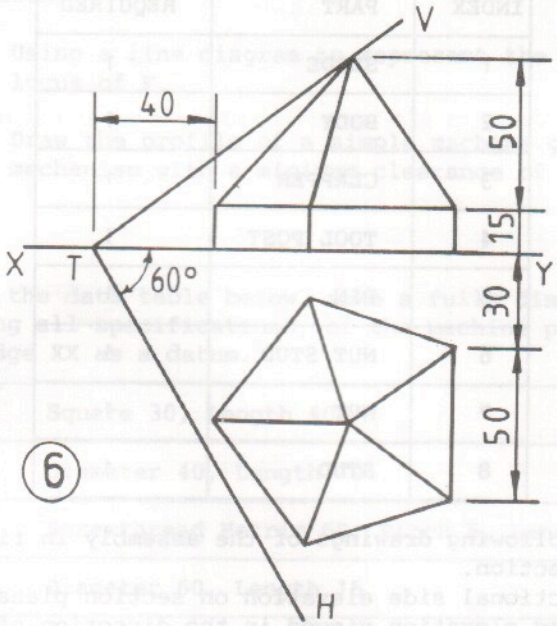
(b) Draw the triangle DEF shown in Fig. 4. Draw a parabola having F as its focus and having D and E as points on the curve. Construct a tangent to the curve at the point D.



5. (a) A circle of diameter 42mm is tangential to a horizontal line AB at a point P. Draw the locus of P on the circumference as the circle rolls along the line AB for one complete revolution.

(b) Fig. 5 shows the plan and elevation of a cylinder of diameter 60mm and height 94mm. Also shown in the views is a label which is to be wrapped around the cylinder as indicated.
Draw the elevation of the cylinder and show the wrapped label in position.

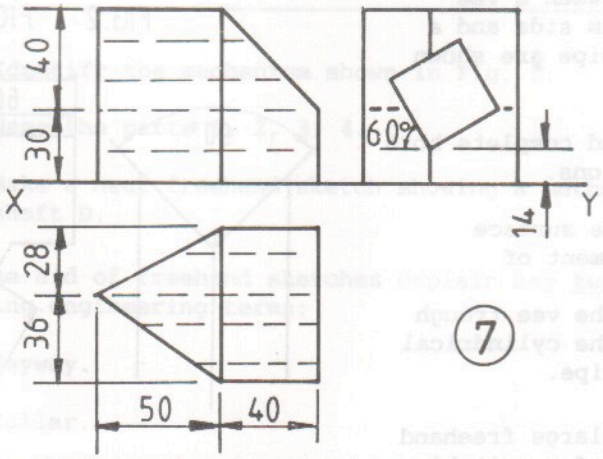




6. The solid shown in elevation and plan in Fig. 6 is composed of a regular pentagonal pyramid and regular pentagonal prism. This solid is to be cut by the oblique plane VTH.

(a) Draw the elevation and plan of the solid when it is cut by the oblique plane VTH.

(b) Show the true shape of the cut section of the solid.



7. Fig. 7 shows the incomplete projections of a shaped solid with a square hole through it.
Draw the views as given and complete the elevation and plan.