

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

FRIDAY, 15 JUNE - AFTERNOON 2 to 4.30

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) Draw a hyperbola whose eccentricity is 1.5 and the distance from the focus to the directrix is 50 mm.  
(b) Fig. 1 shows the directrix and the vertex of a hyperbola whose eccentricity is 1.3. Draw the curve. Scale 1:1
  
2. Fig. 2 shows the incomplete plan of a regular pentagonal prism of 36 mm side which penetrates a rectangular pyramid whose height is 100 mm. Both solids rest on the horizontal plane. Draw the plan and elevation of these solids showing all lines of interpenetration. Scale 1:1
  
3. Fig. 3 shows a triangle in which is contained a rectangular pentagon.  
(a) Draw the given figure.  
(b) Draw a square having the same area as the shaded portion of Fig. 3. Scale 1:1
  
4. Fig. 4 shows the elevation and plan of an oblique square pyramid which is cut by the oblique plane VTH.  
(a) Draw the elevation and plan of the cut pyramid.  
(b) Determine the horizontal and vertical traces of another plane  $V_1T_1H_1$  which shall contain the surface A of the pyramid. Show the line of intersection between the plane VTH and the plane  $V_1T_1H_1$ . Scale 1:1
  
5. Draw an isometric view of the solid shown in elevation and end view in Fig. 5. Hidden lines need not be shown. Scale 1:1
  
6. (a) A cylinder of diameter 60 mm and height 110 mm rests with its base on the horizontal plane. Draw the elevation of the cylinder showing a helix which starts at the bottom of the cylinder and reaches the top in  $1\frac{1}{2}$  revolutions.  
(b) Fig. 6 shows the plan of a cylinder and a line which passes through it. The line is inclined at  $30^\circ$  to the horizontal plane. The point A is on the horizontal plane and B and C are the points of intersection of the line and the cylinder.  
Draw the elevation of the cylinder showing the helix which passes through the points B and C. Scale 1:1
  
7. Fig. 7 shows a disc which rolls without slipping along the line TS. The rod PQ is attached to the disc and is pivoted at B and P. The rod AB rotates about A. Draw the locus of the point Q for the full movement of the disc. Show the maximum angle through which the rod AB swings. Scale 1:1



