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LEAVING CERTIFICATE EXAMINATION, 1975
TECHNICAL DRAWING - COMMON LEVEL - PAPER I
(Plane and Solid Geometry)
MONDAY, 16 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. The plan and elevation of a casting are shown in Fig. 1. Draw the given plan and elevation and make an isometric drawing of the casting. Scale 1 : 1.

2. (a) The elevation of a cylinder is shown in Fig. 2. Draw the elevation of the cylinder showing a helix which moves from the point A to the top of the cylinder in one complete revolution.
   (b) Show, also, another helix which moves from the bottom to the top of the cylinder in two complete revolutions and which passes through the point B. Scale 1 : 1.

3. Fig. 3 shows the plan and elevation of a solid which is cut by the oblique plane VPH. Draw the plan and elevation of the intersection of the solid and the oblique plane. Also show the true shape of the section of the solid by the oblique plane. Scale 1 : 1.

4. Fig. 4 shows the incomplete plan of a regular pentagonal prism of 35 mm side which penetrates a right cone whose height is 100 mm. Both solids rest on the horizontal plane. Draw the plan and elevation of these solids showing the lines of interpenetration. Scale 1 : 1.

5. Fig. 5 shows a quadrilateral ABCD in which is contained a regular hexagon.
   (a) Draw the given figure.
   (b) Construct a rectangle having one side 150 mm long equal in area to the quadrilateral.
   (c) From the point B draw a line which shall divide the area of the quadrilateral into two equal parts. Scale 1 : 1.

6. (a) A cam rotating in a clockwise direction operates a knife edge follower to give it the following motion:
   
   0° - 60° dwell
   60° - 180° lift 40 mm with uniform velocity
   180° - 240° dwell
   240° - 360° fall 40 mm with uniform velocity.

   The nearest approach of the follower to the cam centre is 50 mm.

   Draw the profile of the cam. Scale 1 : 1.

   (b) The profile of a cam which operates a knife edge follower is shown in Fig. 6.

6. Determine the displacement diagram (cam graph) for the follower, using a scale of 10 mm to 30°.

7. (a) Draw a hyperbola whose eccentricity is 1.25 when the distance between the focus and the directrix is 50 mm.
   (b) Draw a straight line ABF where AF = 40 mm and FB = 50 mm. If A and B be two points on the curve of a hyperbola those focus is F and whose eccentricity is 1.2, draw the curve. Scale 1 : 1.