

AN ROINN OIDEACHAIS
LEAVING CERTIFICATE EXAMINATION, 1984

M.132

TECHNICAL DRAWING - HIGHER LEVEL
PAPER II (A) - ENGINEERING APPLICATIONS

200 marks

TUESDAY, 26 JUNE, MORNING 9.30 to 12.30

INSTRUCTIONS

- (a) Answer four questions.
(b) All questions carry equal marks.
(c) Drawings and sketches should be in pencil unless otherwise stated.
(d) Where dimensions are omitted they may be estimated.
(e) Credit will be given for neat orderly presentation of work.
(f) Candidates should work on one side of the paper only.
(g) The Examination Number should be written on each drawing sheet used.
(h) All dimensions are in millimetres.

1. Figure 1 shows the parts of a right angle stop valve in third angle projection.

PARTS LIST	
INDEX	PART
1	Body
2	Valve
3	Gland
4	Packing

- (i) Draw a sectional elevation of the parts assembled when viewed in the direction of the arrows B - B. The view should be drawn in orthographic projection and arranged to show the valve in the closed position.

(ii) Title the drawing: STOP VALVE ASSEMBLY.

(iii) Draw and dimension the stud suitable for securing the gland to the body.

2. In the mechanism shown in Fig. 2 the crank OA rotates clockwise at uniform speed about O. The rod BC oscillates about the fixed point B. Crank end A is fixed in a block which slides along BC and the end D of the connecting rod CD slides along the line X-X.

- (i) Trace the locus of the mid-point of CD and draw the displacement diagram of point D for one revolution of the crank AO.
(ii) State, on the drawing, a practical application for this type of mechanism.

3. A transition piece for a ventilation system is shown in Fig. 3. The ends of the transition piece are joined with an internal grooved joint.

- (i) Draw the surface development of the piece with the seam at S-S.
(ii) Sketch freehand and in pictorial projection this type of joint.
(iii) Using a separate drawing, show the seam allowance that would have to be added to each end of the pattern to make the joint.

4. (i) Draw to a scale 1 : 2 and in orthographic projection a direct loading stanchion with welded base connection given the following specification:

Stanchion: 200 mm x 150 mm universal column,
10 mm web and 15 mm flange.

Base: 300 mm x 250 mm x 20 mm slab with 4 holes 20 mm
diameter at 250 mm centres and 200 mm centres.

Connection: Fillet weld, 10 mm leg length, outside of flanges to base.
Fillet weld, 6 mm leg length; 100 mm run both sides of the
web to base.

- (ii) Fully dimension the solution.

OVER→

5. (a) Draw the cam profile and displacement diagram for a cam rotating with uniform velocity in a clockwise direction. The cam, with minimum radius of 50 mm, imparts the following motion to a 24 mm diameter roller follower.

Rise of 38 mm with uniform acceleration and retardation for 120° of cam rotation.

Fall to the initial position with simple harmonic motion for 150° of cam rotation.

Dwell for the remainder of cam rotation.

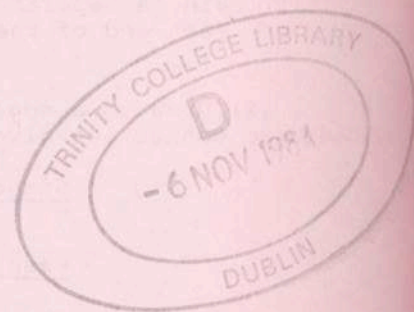
- (b) (i) Draw two teeth of a standard rack with a pressure angle of 20° and a module of 15 mm.

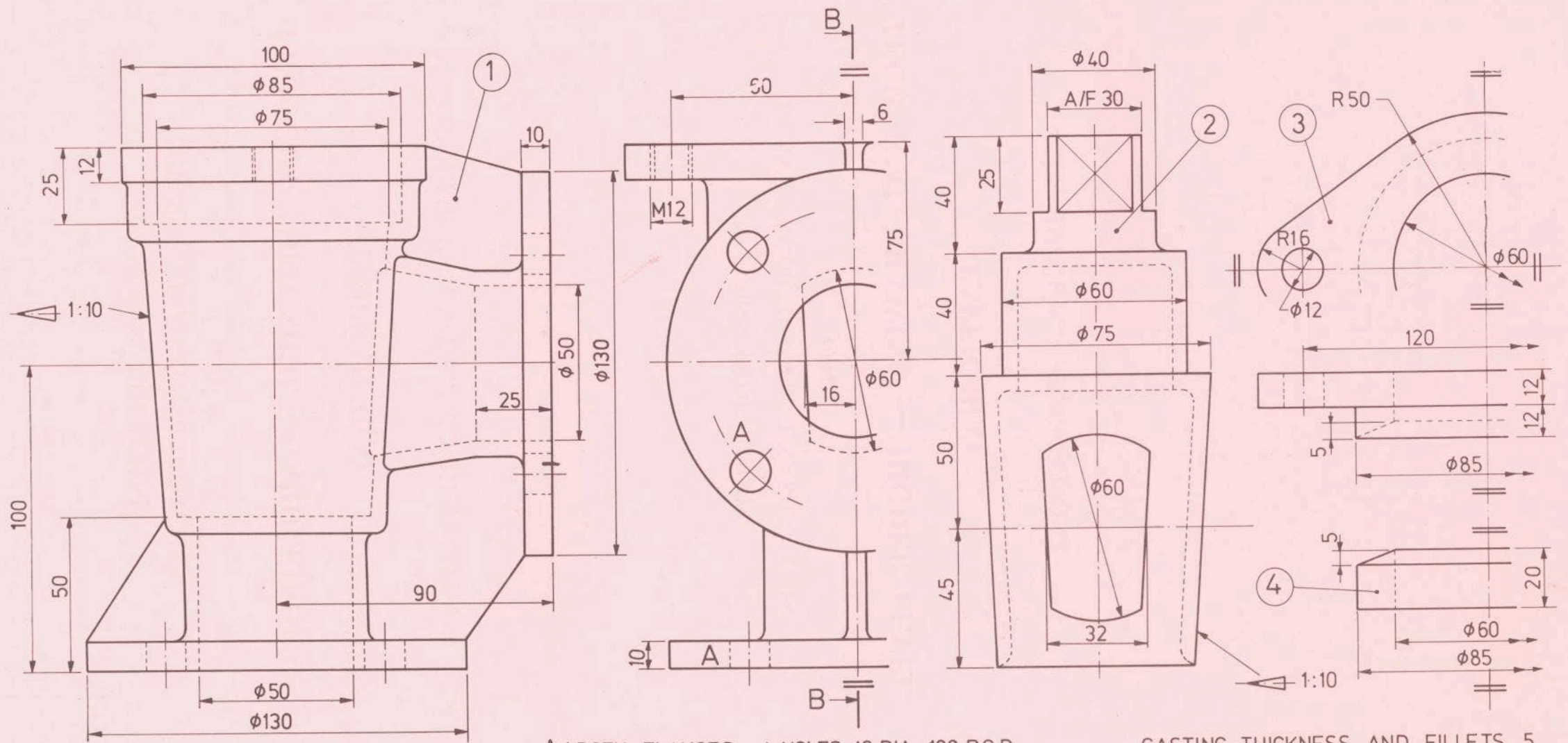
- (ii) Insert the principal gear terms on the drawing.

6. Figure 4 shows two views of a transmission component.

Draw a sectional view in isometric projection when viewed in the direction of the arrow B. The removed quarter, section AAA, should pass along the longitudinal axis of the component.

DATE	BY





A : BOTH FLANGES 4 HOLES 12 DIA. 100 P.C.D.
 A : AN DÁ FHEIRE 4 POLL TRASTOMHAS 12 TRASTOMHAS CÉIMCHIORCAIL 100.

CASTING THICKNESS AND FILLETS 5.
 TIÚS TEILGIN AGUS FILLÉID 5.

Fig. 1.

Fíor 1.

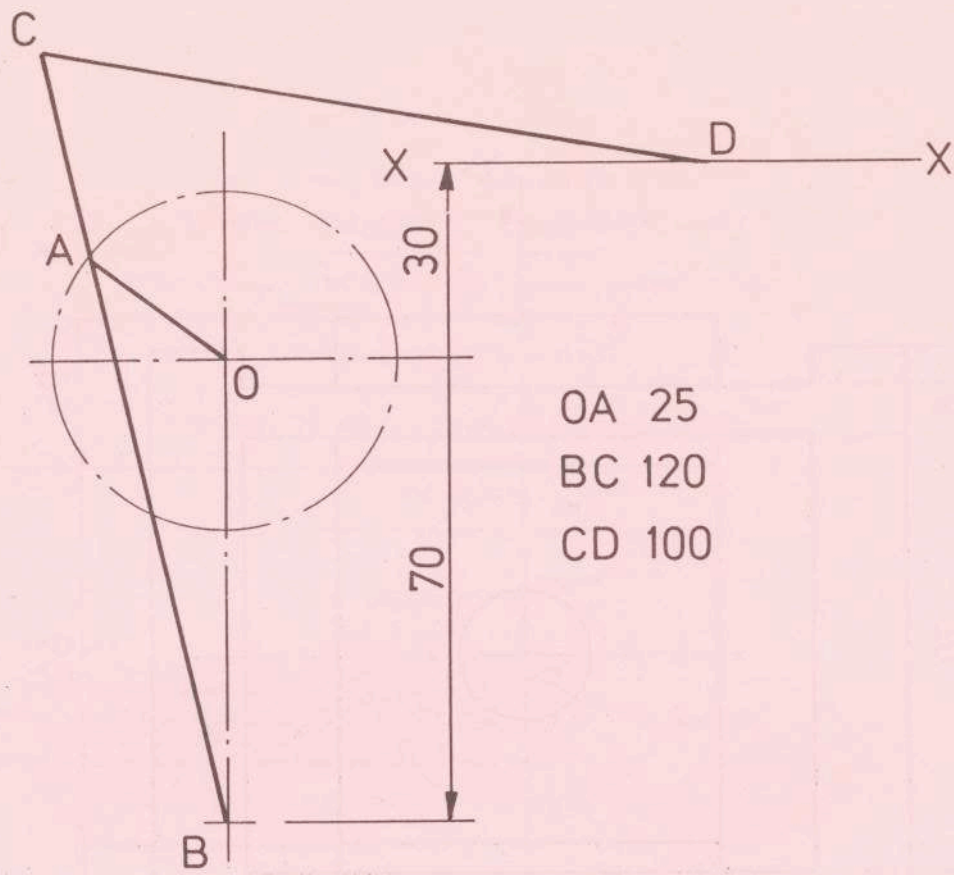


Fig. 2. Fíor 2.

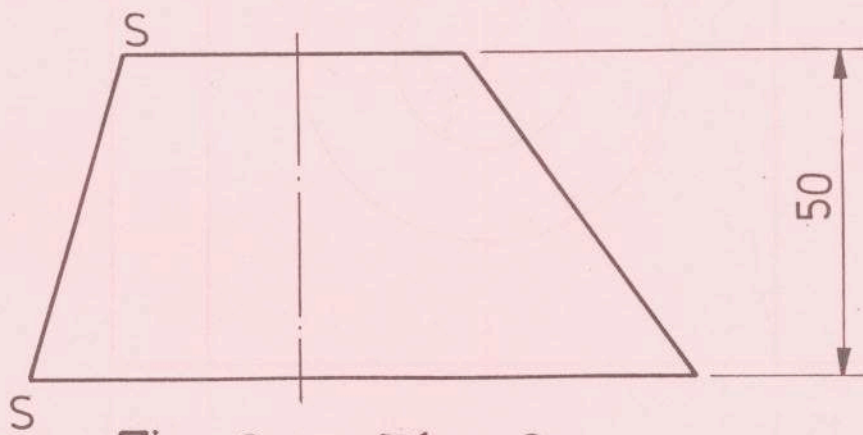
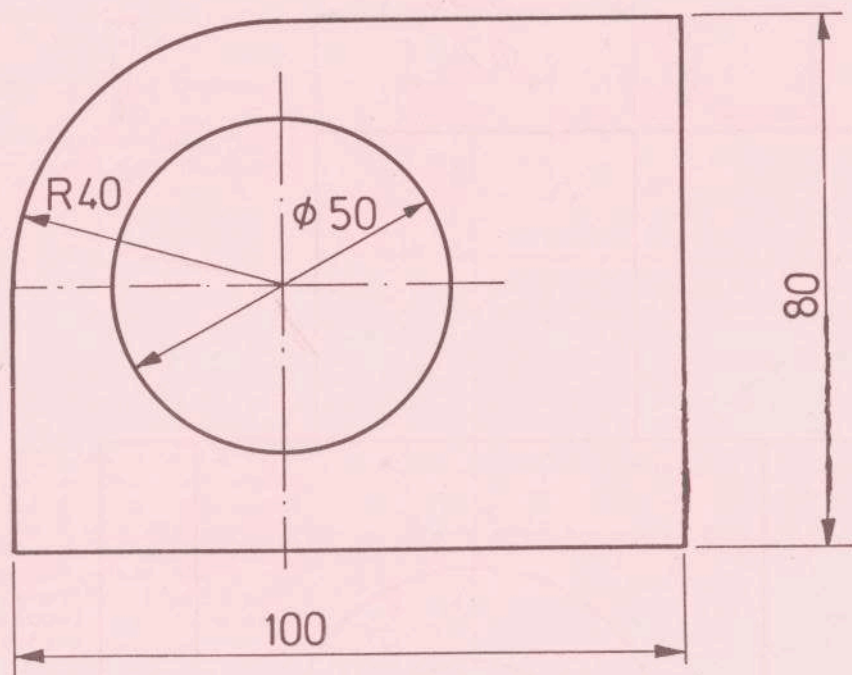


Fig. 3 Fíor 3.

PROJECTION
TEILGEAN


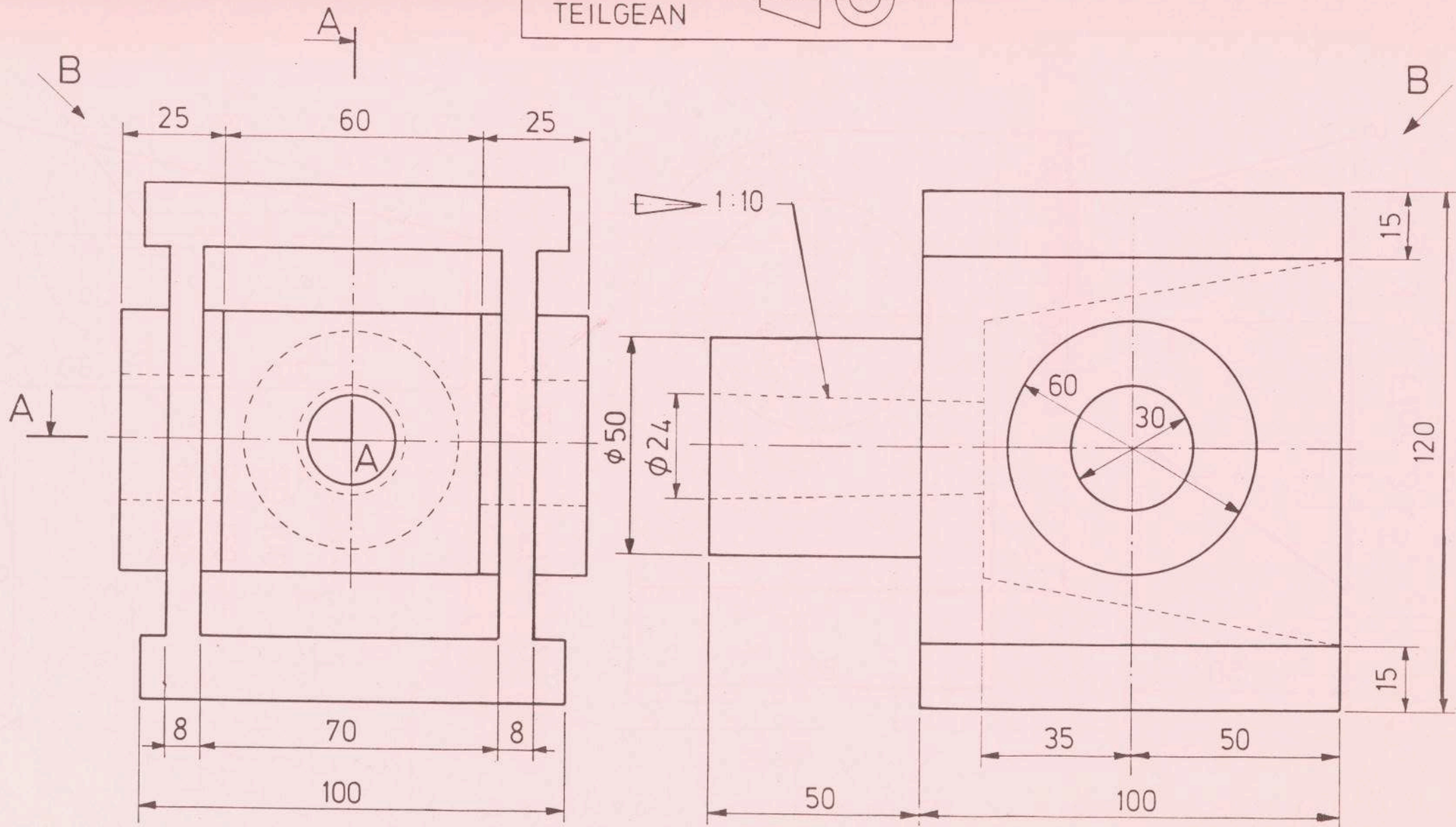



Fig. 4. Fíor 4.