

AN ROINN OIDEACHAIS
LEAVING CERTIFICATE EXAMINATION, 1984

M.130

TECHNICAL DRAWING - ORDINARY LEVEL

PAPER II (A) - ENGINEERING APPLICATIONS

200 Marks

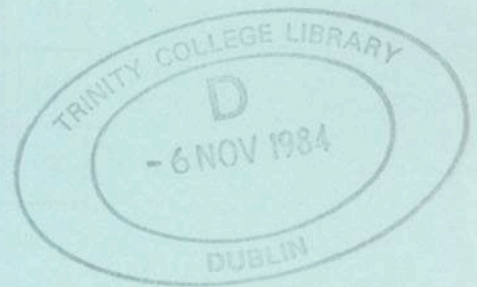
TUESDAY, 26 JUNE - MORNING 9.30 to 12.30

INSTRUCTIONS

- (a) Answer question 1 and two other questions.
- (b) Drawings and sketches should be in pencil unless otherwise stated.
- (c) Where dimensions are omitted they may be estimated.
- (d) Credit will be given for neat orderly presentation of work.
- (e) Candidates should work on one side of the paper only.
- (f) The Examination Number should be written on each drawing sheet used.
- (g) All dimensions are in millimetres.

1. Details of a Clamping Device assembly are given in Figure 1 with parts list tabulated below.

| Index | Part | Required |
|-------|-------------|----------|
| 1 | Base | 1 |
| 2 | Bridge | 1 |
| 3 | Sliding Jaw | 1 |
| 4 | Cam Lever | 1 |
| 5 | Pin | 1 |
| 6 | Bolt | 2 |



- (a) Make the following drawings of the assembled parts in first or third angle projection:
 - (i) A sectional front elevation on section plane A-A.
 - (ii) A half plan projected from the front elevation (i).
 - (b) Insert the following on the drawing:
 - (i) Title : CLAMPING DEVICE.
 - (ii) ISO projection symbol.
 - (iii) Four leading dimensions.

(100 marks)
2. Figure 2 show two elevations of a sheetmetal transition piece with the joint at C-C.
- (a) Draw the surface development of the transition piece.
 - (b) The joint used is an 8 mm knocked-up joint.
 - (i) Make a large sketch of a knocked-up joint.
 - (ii) Show the joint allowance on the pattern.

(50 marks)
3. (a) Draw a radial cam with minimum radius of 50 mm to give the following motion to an in-line knife edge follower.
- Rise of 40 mm with uniform velocity for 90° of cam rotation.
Dwell for 90° of cam rotation.
Fall to initial position with uniform acceleration and retardation for remainder of cam rotation.
- (b) Figure 3 shows a view of a door stay on a tool locker. Using a line drawing to represent the door and stay, trace the locus of end P of the stay, from the fully open position to the fully closed position of the door.


(50 marks)

OVER→

4. (a) Using data table shown below, make a fully dimensioned drawing of the shaft shown at Figure 4.

| | |
|---|--|
| 1 | Diameter 60, length 20. Chamfer: 2 x 2. Finish : Straight knurl. |
| 2 | Diameter 40, length 60. Hole: Diameter 20, depth 100. |
| 3 | Taper : Maximum diameter 60, minimum diameter 40, length 70. Keyway: 50 x 10 x 5. |
| 4 | Undercut 5 x 3. |
| 5 | Screwthread : Metric 30, pitch 3.5, length 40. |

- (b) (i) Identify the clutch type in Figure 5.
(ii) Name the parts 1, 2, 3, 4, 5.
(iii) Make a freehand sketch showing a method used to lock the nuts and bolts which secure the flywheel A to the crankshaft B.
- (c) State the type and illustrate the symbol for each of the weld joints shown in Figure 6.
Answer to be presented in tabular form shown below.

| Joint | Type | Symbol |
|---|------|--------|
| (A)  | | |
| (B) | | |
| (C) | | |

(50 marks)

5. (a) Draw two revolutions of a right hand, V-form single start screwthread to the following specification:

Outside diameter : 140 mm.
Root diameter : 90 mm.
Pitch : 30 mm.

All construction lines must be clearly shown.

(b) Using standard convention, make sketches of the following:

- (i) Roller Bearing on Shaft.
(ii) Tension Spring.
(iii) Serrated Shaft.

(50 marks)

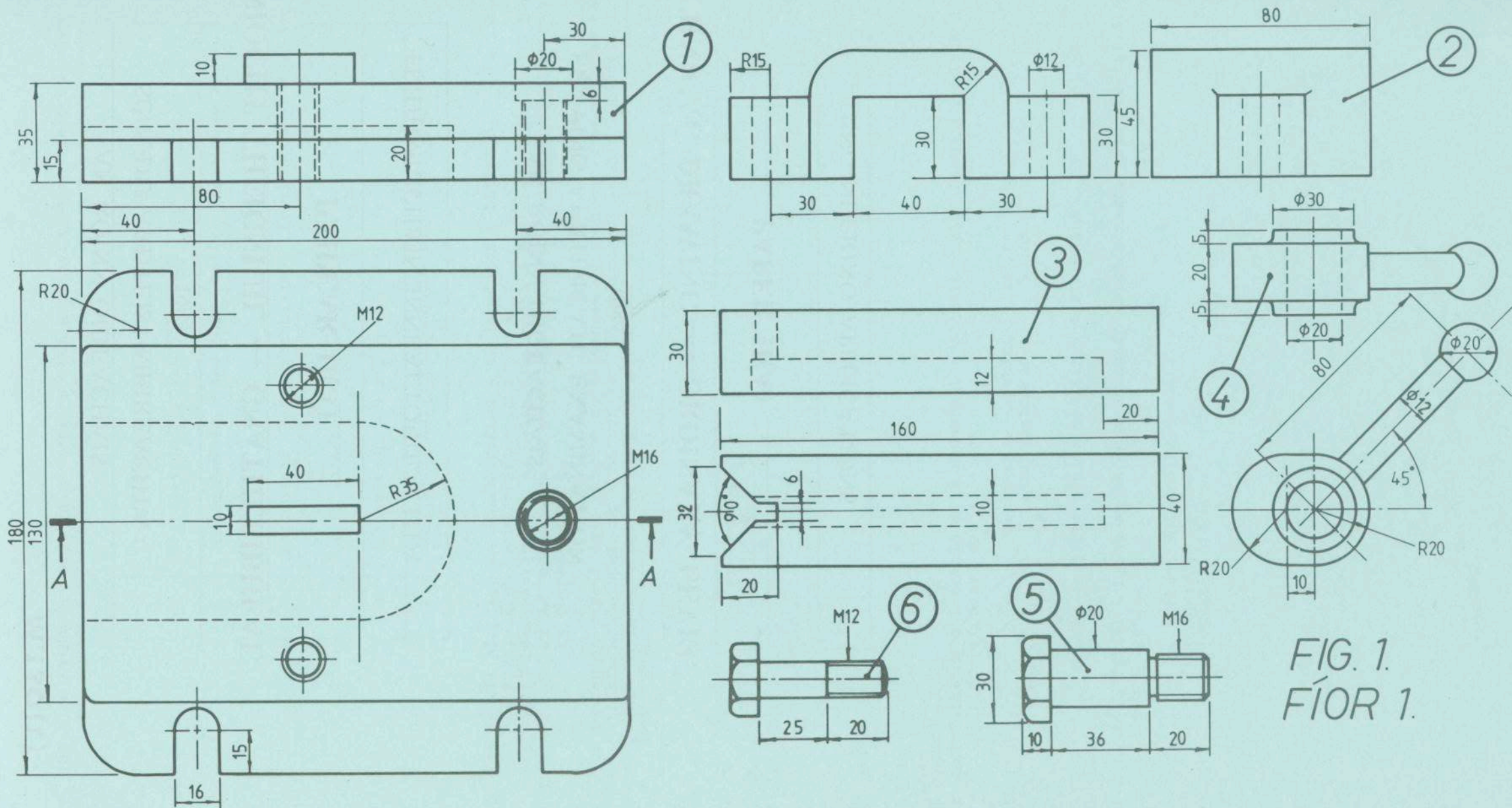


FIG. 1.
FÍOR 1.

STRECO

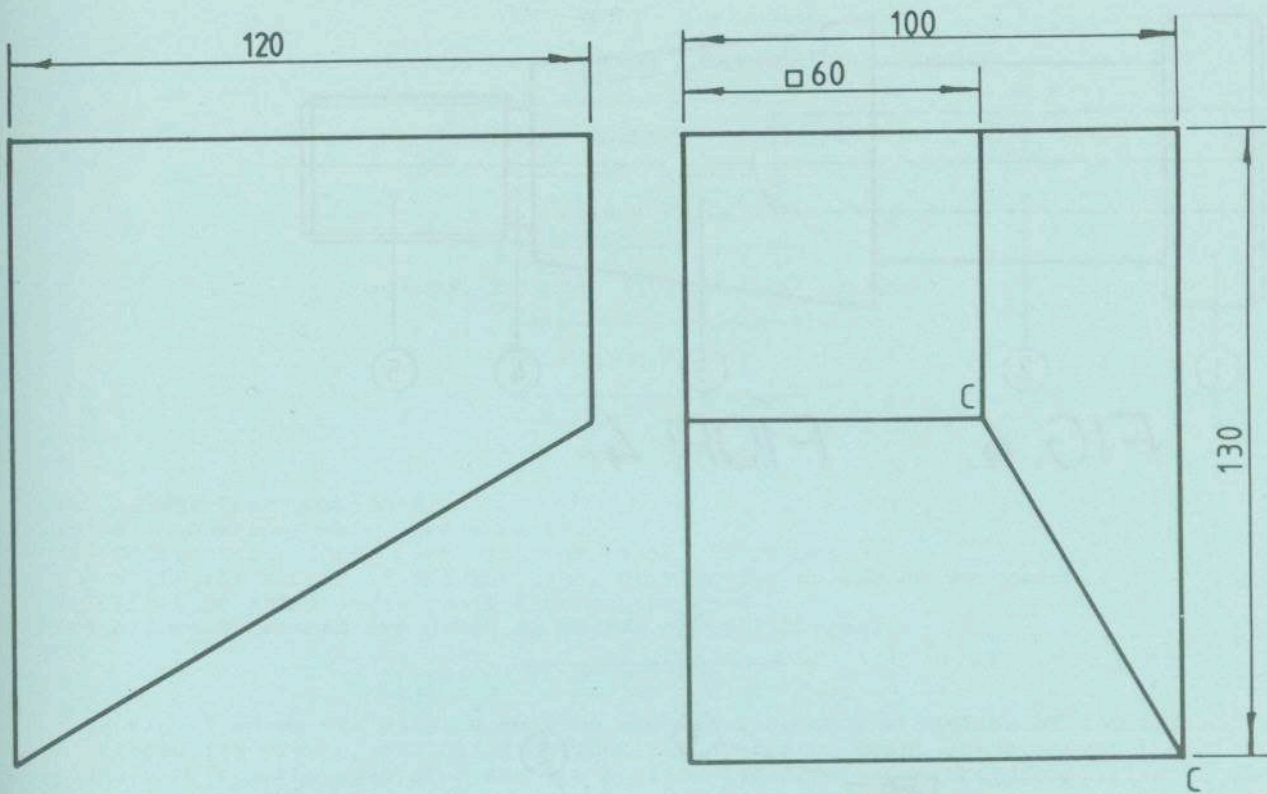


FIG. 2.
FÍOR 2.

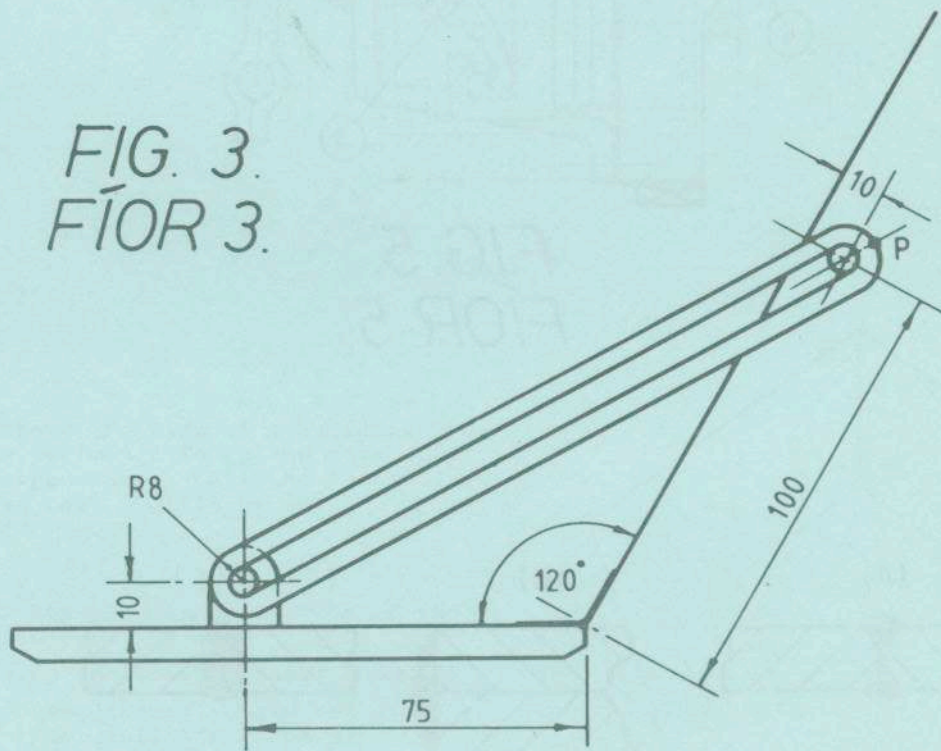


FIG. 3.
FÍOR 3.

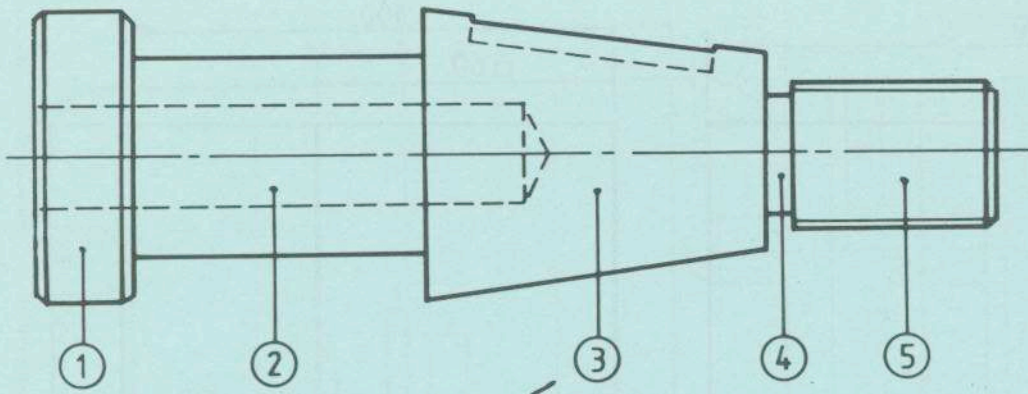


FIG. 4. FÍOR 4.

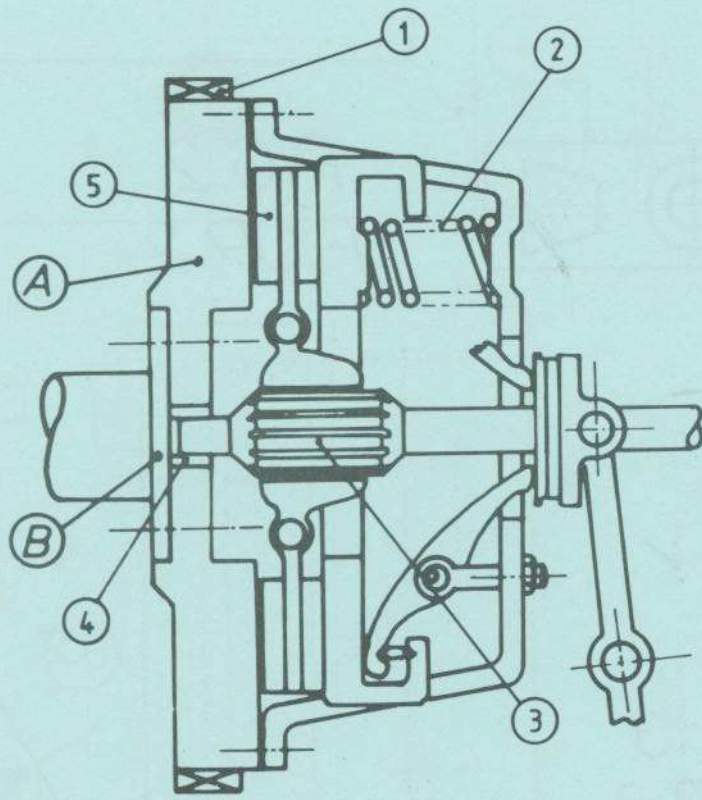


FIG. 5. FÍOR 5.

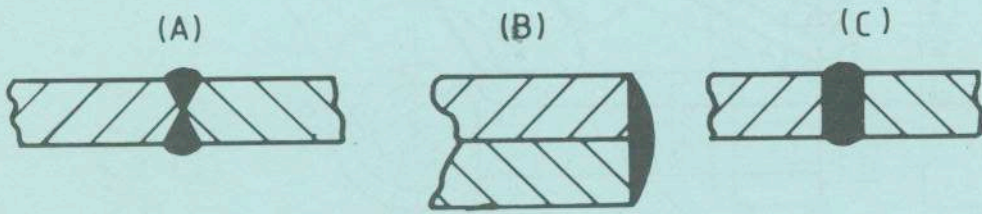


FIG. 6. FÍOR 6.