

AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA
LEAVING CERTIFICATE EXAMINATION 2002

TECHNICAL DRAWING - ORDINARY LEVEL PAPER II (A) – ENGINEERING APPLICATIONS

200 marks

FRIDAY, 14 JUNE - AFTERNOON 2.00 p.m. – 5.00 p.m.

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.

OVER →

1. Details of an Anti-Vibration Device are given in Fig. 1 with a parts list tabulated below.

PART	NAME	REQUIRED
1	Bracket	1
2	Anchor	1
3	Rubber Bush	2
4	Nut	1
5	Washer	1
6	Bolt	1

- (a) Assemble the parts and draw full-size, in first or third angle projection, the following views:

- (i) Sectional elevation on section plane AA;
- (ii) A plan projected from view (i).

- (b) Insert the following on your drawing:

- (i) Title:- Anti-Vibration Device;
- (ii) ISO projection symbol;
- (iii) Four leading dimensions.

(100 marks)

2. The incomplete elevation and plan of two intersecting pipes are shown in Fig. 2.

- (a) Draw both views as given and complete the plan and elevation;
- (b) Draw the surface development of pipe B with the joint on C-C;
- (c) Draw the true shape of the hole in pipe D.

(50 marks)

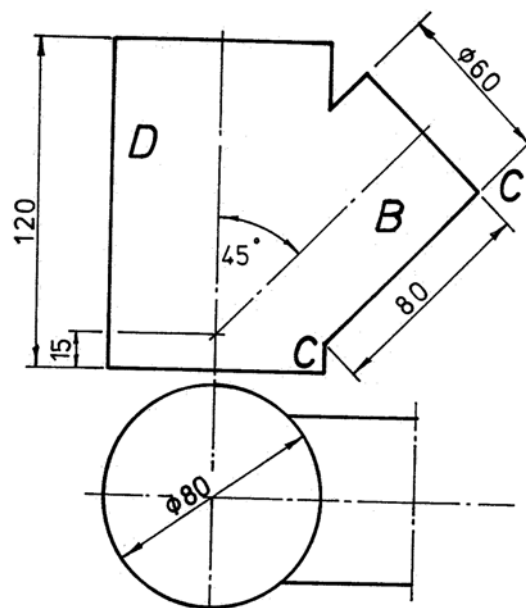


FIG. 2

3. (a) Draw a radial plate cam with a minimum radius of 30mm and a clockwise rotation to impart the following motion to an in-line follower. Camshaft diameter 20mm.

0° to 180° Rise 60mm with uniform acceleration and retardation.

180° to 270° Dwell.

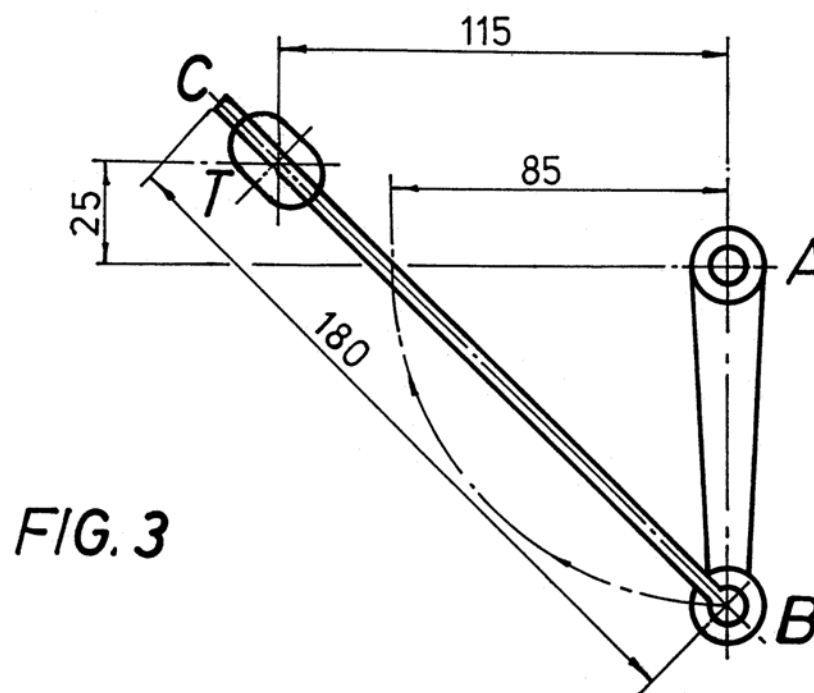
270° to 360° Return to initial position with simple harmonic motion.

Include the displacement diagram as part of the solution.

- (b) Fig. 3 shows a pin jointed mechanism. The rod BC moves through the trunnion T while the link AB moves through 90° to the horizontal position.

- (i) Using a line diagram to represent the linkage, plot the locus of point C for the movement through 90°;
- (ii) Draw a profile of a simple machine guard about the mechanism with a minimum clearance of 15mm.

(50 marks)



OVER →

4. (a) Using the data table below, make a fully dimensioned drawing, showing all specifications, of the adjusting screw in Fig. 4.

1	Screwthread: Metric 30, Pitch 3.5, Length 40
2	Undercut: Depth 5, Length 10
3	Taper: Maximum diameter 50, Minimum diameter 30, Length 50, Square keyway depth 8 mid-length
4	Length 30, Diameter 50
5	Length 30, Diameter 70, Chamfer 10 x 45°

- (b) (i) Identify the mechanism shown in Fig. 5.

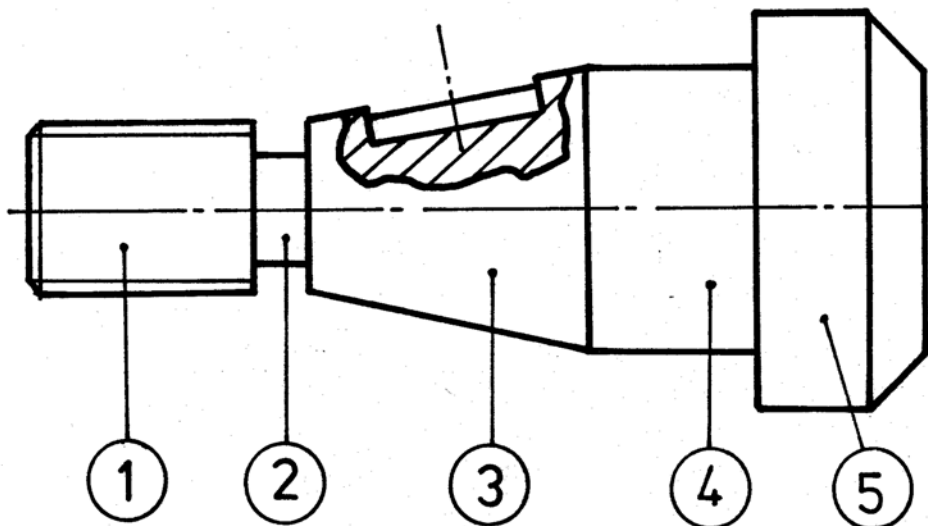
- (ii) Name the parts 1, 2, 3 and 4.

- (c) By means of large freehand sketches distinguish between the following:

- (i) Square key;
(ii) Woodruff key;
(iii) Gib-head key.

(50 marks)

FIG.4



5.

Answer SECTION A **or** SECTION B but not both.

SECTION A

- (a) Fig. 6 shows the plan and elevation of a machine part. Draw an isometric view of the part, sectioned on the plane XX, viewed in the direction of arrow Y.
- (b) By means of large freehand sketches illustrate:
 - (i) An internal circlip;
 - (ii) An external circlip;
 - (ii) The locating grooves for both.

OR

SECTION B

- (a) List a selection of six drawing commands necessary to produce the drawing in Fig. 6.1.
- (b) Name three types of input device used in Computer Aided Design.
- (c) Which of the following produces the best quality hard copy:
 - (i) Plotter; (ii) Dot Matrix Printer; (iii) Inkjet Printer.
- (d) Which of the following would be the most suitable snap resolution for the drawing shown in Fig. 6.2:
 - (i) 32; (ii) 1.6; (iii) 8; (iv) 4; (v) 2.4.
- (e) By means of freehand sketches and a short note, explain the purpose of the following commands:
 - (i) Zoom;
 - (ii) Fillets;
 - (iii) Rotation.

(50 marks)

AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA
SCRÚDÚ NA hARDTEISTIMÉIREACHTA, 2002

LÍNÍOCHT THEICNIÚIL - GNÁTHLEIBHÉAL
PÁIPÉAR II(A)

FEIDHMIÚCHÁIN INNEALTÓIREACHTA

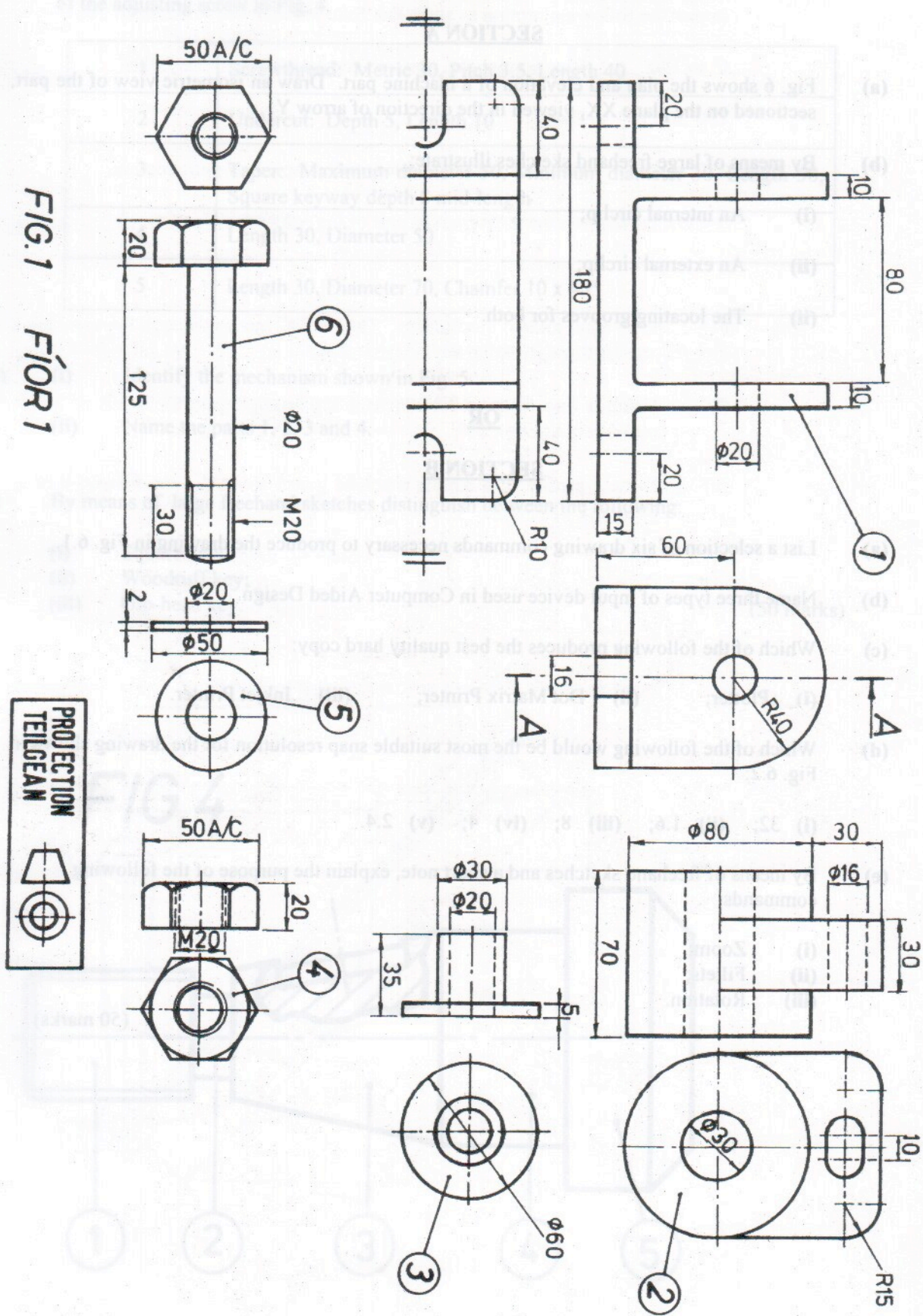
Dé hAoine, 14 Meitheamh, Trathnóna 2.00 – 5.00 p.m.

AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA
LEAVING CERTIFICATE EXAMINATION, 2002

TECHNICAL DRAWING - ORDINARY LEVEL
PAPER II(A)

ENGINEERING APPLICATIONS

Friday, 14 June, Afternoon 2.00 – 5.00 p.m.



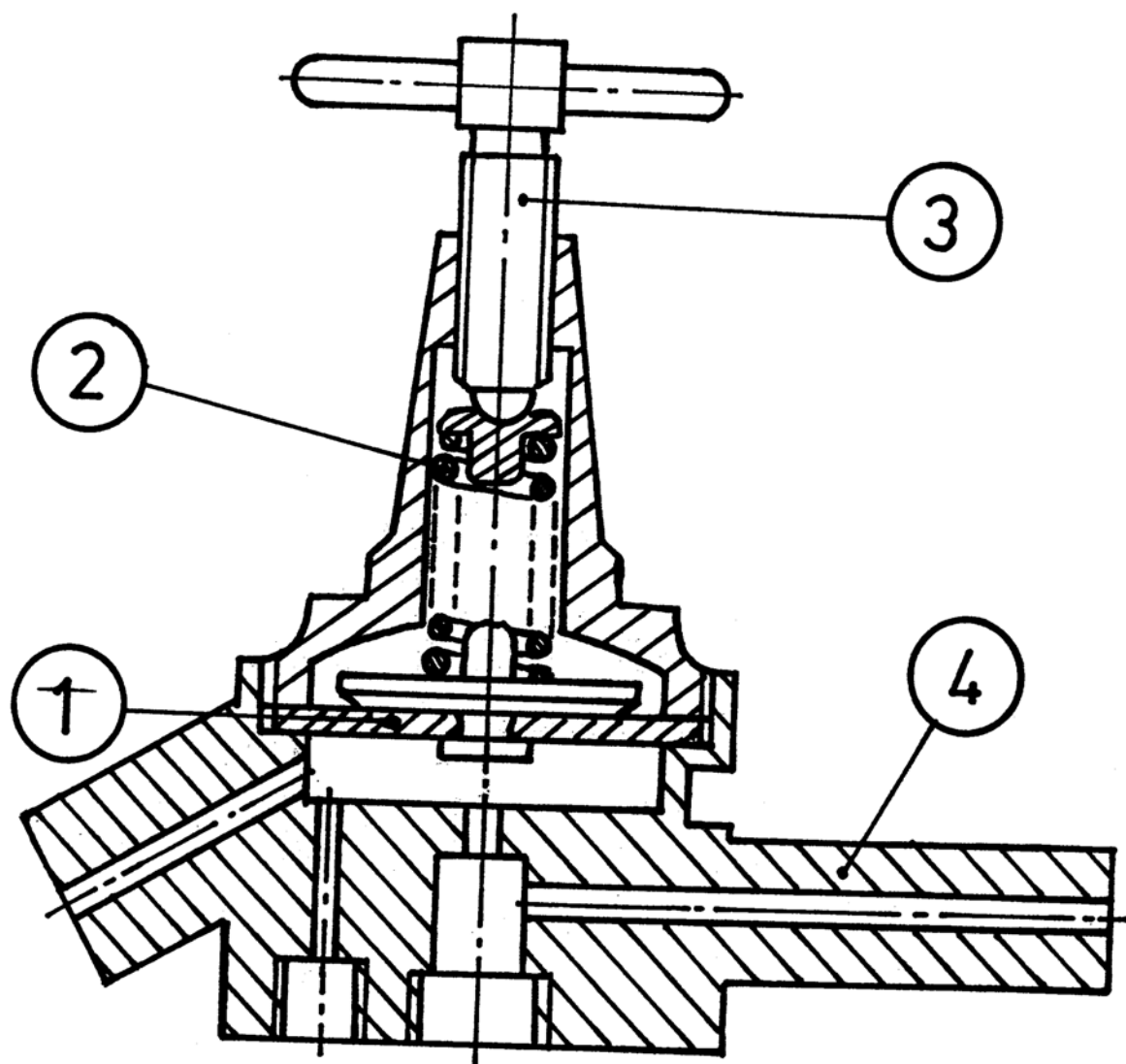


FIG.5

FÍOR 5

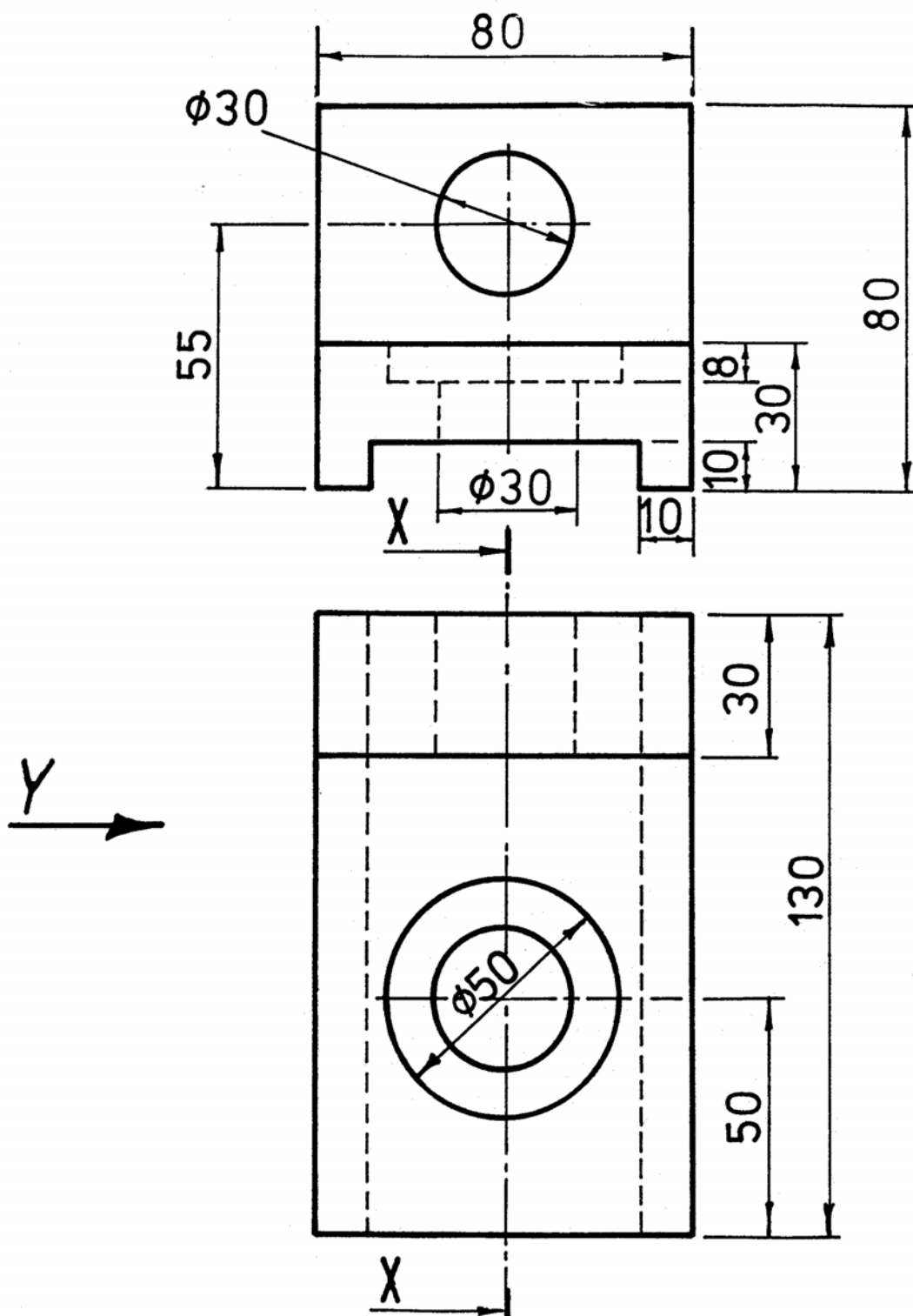


FIG. 6
FÍOR 6

FIG.6.1 FÍOR 6.1

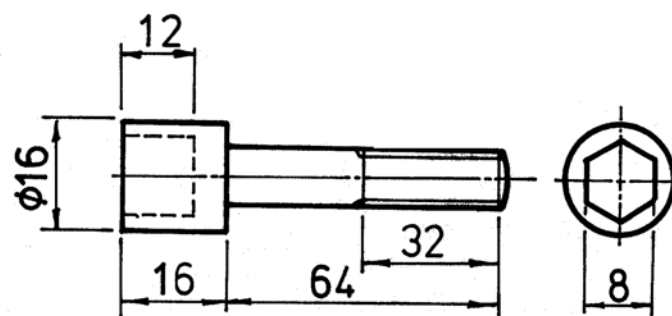
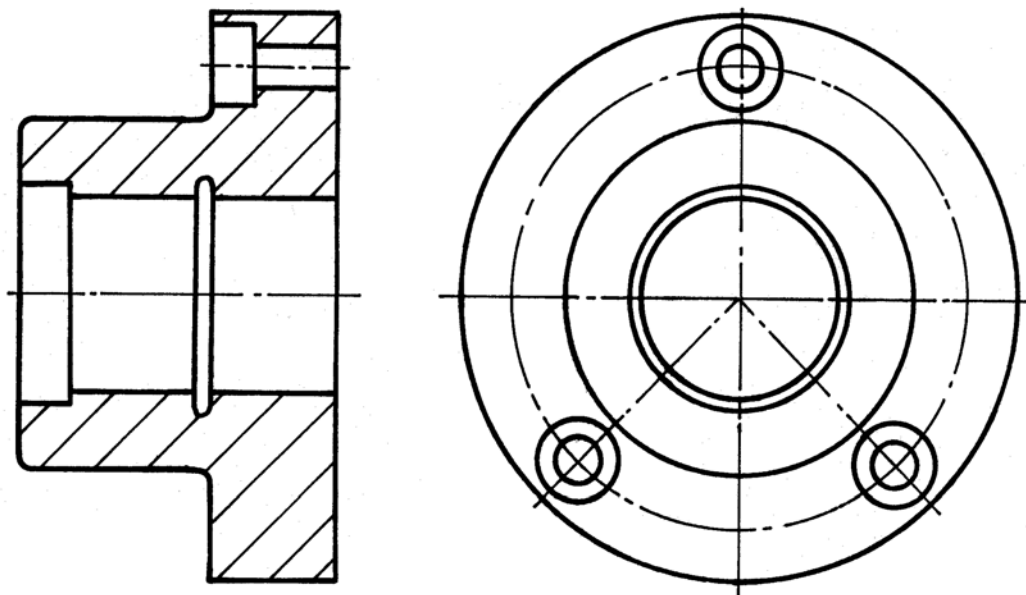


FIG.6.2 FÍOR 6.2