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

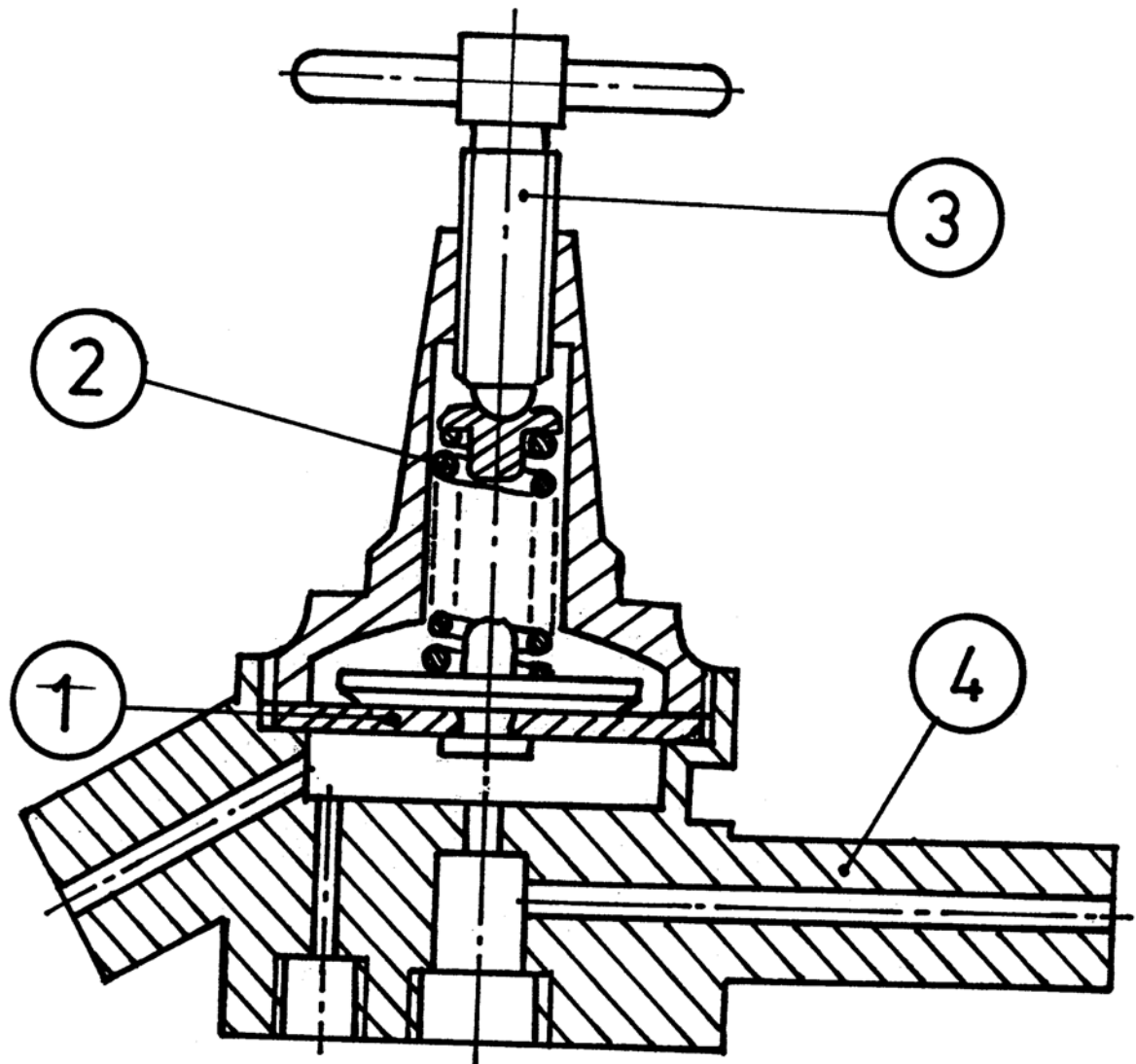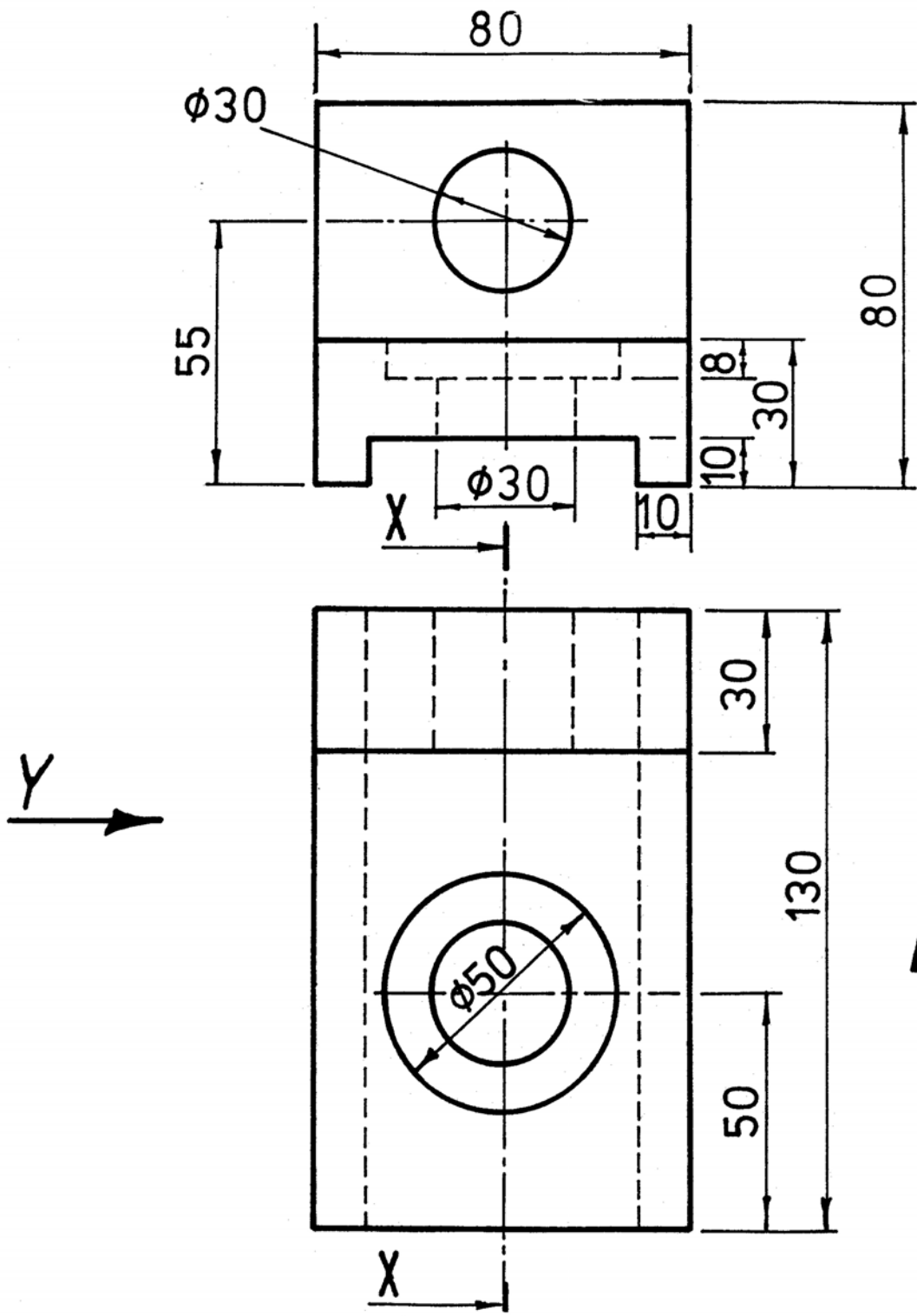Friday, 14 June, Afternoon 2.00 – 5.00 p.m.

FIG.5   FÍOR 5

FIG.6
FÍOR 6

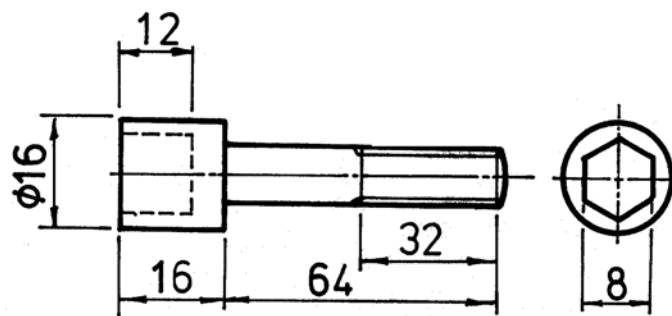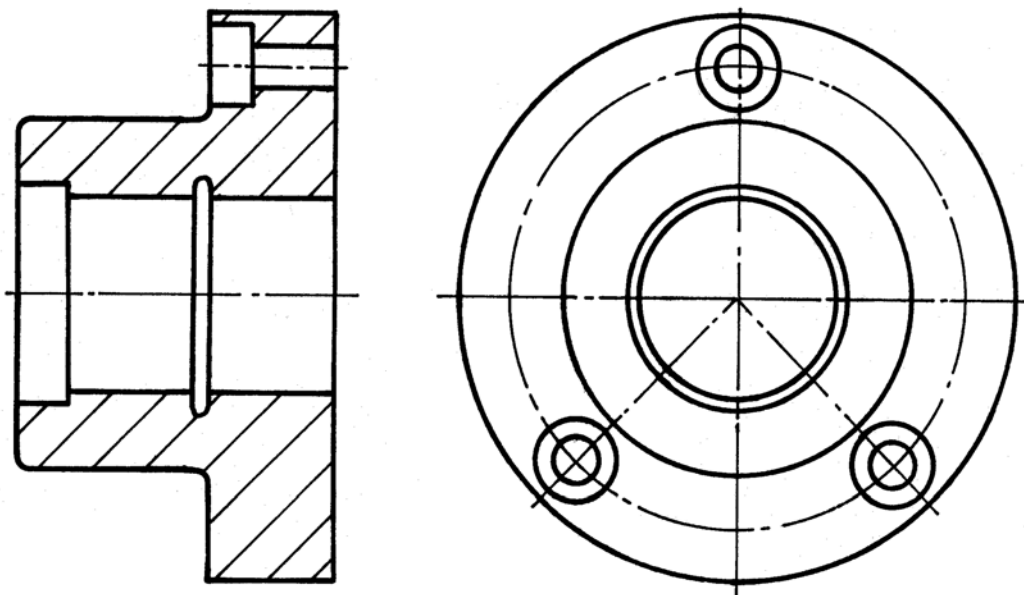# FIG.6.1   FÍOR 6.1

12

Ø16

16   64   32   8

FIG.6.2   FIOR 6.2

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.

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;

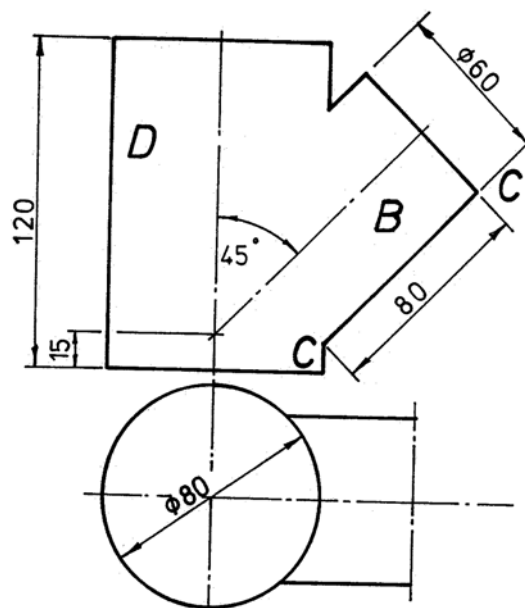**(c)** Draw the true shape of the hole in pipe D.

(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.

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

180º to 270º   Dwell.

270º to 360º   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 90º to the horizontal position.

(i) Using a line diagram to represent the linkage, plot the locus of point C for the movement through 90º;

(ii) Draw a profile of a simple machine guard about the mechanism with a minimum clearance of 15mm.

(50 marks)

FIG. 3
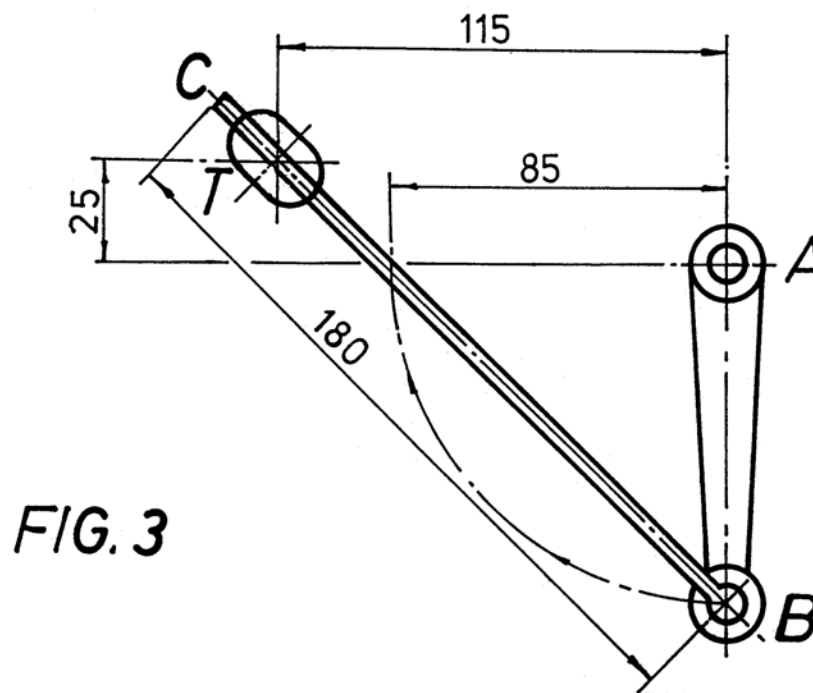
4. **(a)** Using the data table below, make a fully dimensioned drawing, showing all specifications, of the adjusting screw in Fig. 4.

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°

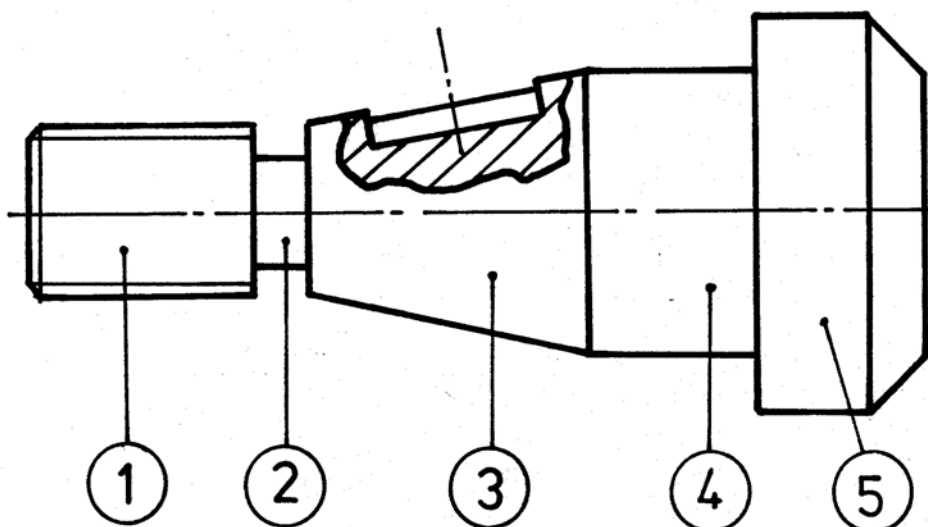**(b)** **(i)** Identify the mechanism shown in Fig. 5.

(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)