

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**GEOMETRICAL AND MECHANICAL DRAWING**

**7040/02**

Paper 2

May/June 2004

Additional Materials: A2 Drawing Paper (1 sheet)  
Standard drawing equipment

**2 hours 40 minutes**

**READ THESE INSTRUCTIONS FIRST**

Print your Centre number, candidate number and name at the bottom right-hand corner of your Drawing Paper.

Use both sides of the paper.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **both** questions.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [ ] at the end of each question or part question.

The insert contains Fig. 2 for Section 2.

You should spend 10 minutes reading carefully the text of Section 2 before answering the questions.

Arcs of circles less than 5 mm radius may be drawn freehand.

All dimensions are in millimetres unless otherwise stated.

This document consists of 4 printed pages and an insert.



**Section 1**

Candidates are advised to spend not more than 20 minutes on this section.

- 1 Fig. 1 shows, in first angle orthographic projection, a fork lever. Make a well proportioned freehand pictorial sketch, approximately full size with point **C** being in the foreground.

**The use of instruments when constructing the sketch, or when lining in, will be severely penalised.**

Faint construction lines and points used in preparing the sketch should not be erased. [16]

3

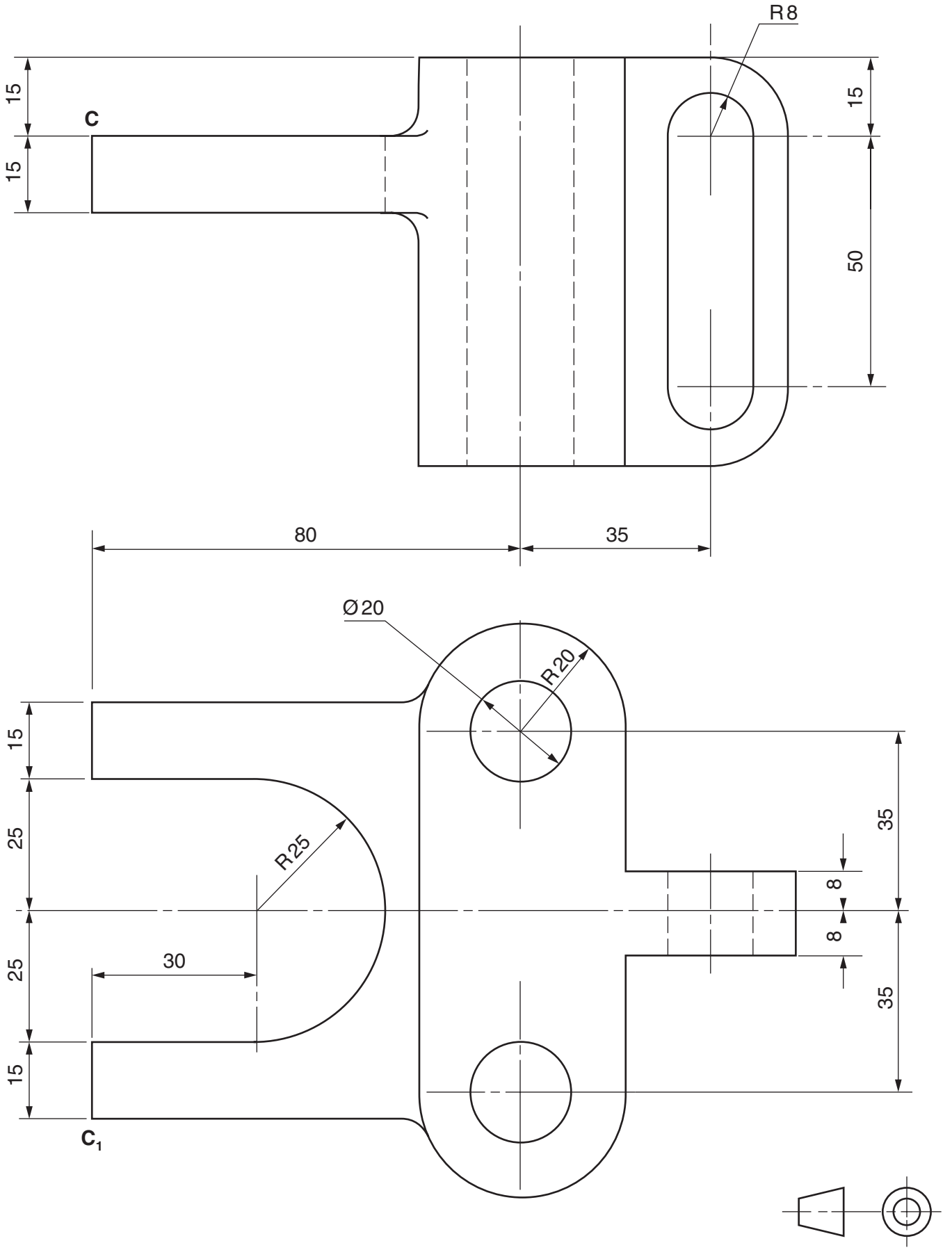


Fig.1

## Section 2

2 Fig. 2, on the insert, shows details of the component parts of a Stop Valve.

The components are assembled as follows:

The Valve Seat ② is fitted into the 40 mm diameter by 10 mm recess in the Valve Body ①, with the large diameter of the taper facing upwards.

The Valve Stem ③ is screwed fully into the M20×1 threaded hole in the Valve Cover ④, with the 16 mm diameter of the Valve Stem protruding out of the top of the Valve Cover.

The Valve Cover is fitted into the M60×2 threaded hole in the Valve Body, and screwed down until the lower face of hexagonal part is in contact with the 80 mm diameter portion of the Valve Body.

The Gland Nut ⑤ is fitted over the top of the Valve Stem and fully tightened onto the M40×1.5 thread on the Valve Cover.

The Handwheel ⑥ is fitted on to the 10 mm square on the top of the Valve Stem, and secured in position by the Washer ⑦ and the Screw ⑧, which are fitted into the M4×0.7 threaded hole in the top of the Valve Stem.

The Valve is closed by turning the Handwheel clockwise, until the tapered end of the Valve Stem is in contact with the Valve Seat.

Draw full size, in either first or third angle projection a fully assembled:

- (a) sectional elevation, showing the Valve in the closed position. The plane of the section and the direction to be viewed to be on the centre line of the Valve Body as indicated by the line X—X; [49]
- (b) an end elevation, looking in the direction of arrow E; [18]
- (c) a plan view in projection from part (a). [6]

**Suitable dimensions should be estimated where not provided. Hidden detail is not required in any view.**

(d) Insert the following dimensions in accordance with BS308/PP7308 recommendation:

a horizontal dimension;

a vertical dimension;

a diameter;

the size of a screw thread.

[4]

(e) On the same side of your drawing showing these views, draw a title block.

Print in this title block: the title 'Stop Valve Assembly'; the scale used on your drawing; and indicate, in accordance with BS308/PP7308, the symbol for the method of projection you have used. [6]