BOARD OF STUDIES
NEW SOUTH WALES

STUDENT NUMBER

CENTRE NUMBER

HIGHER SCHOOL CERTIFICATE EXAMINATION

1998

INDUSTRIAL TECHNOLOGY

2 UNIT

SECTION III—INDUSTRIAL DRAWING

Total time allowed for Sections I, II and III—One hour and a half
(Plus 5 minutes reading time)

DIRECTIONS TO CANDIDATES

- Write your Student Number and Centre Number at the top right-hand corner of this page.
- Where appropriate, show working for solutions neatly and clearly.
- You may use Board-approved drawing instruments and calculators.

Section III—Industrial Drawing (15 marks)

- Attempt ALL questions.
- Answer the questions in the spaces provided in this paper.

MARKER'S USE ONLY

Question		
13		
14		
15		

QUESTION 13. (5 marks)

MARKER'S USE ONLY

Shown below in Figure 1 is a cam fitted on a shaft. A size description of the cam/shaft assembly is provided in Figures 1 and 2.

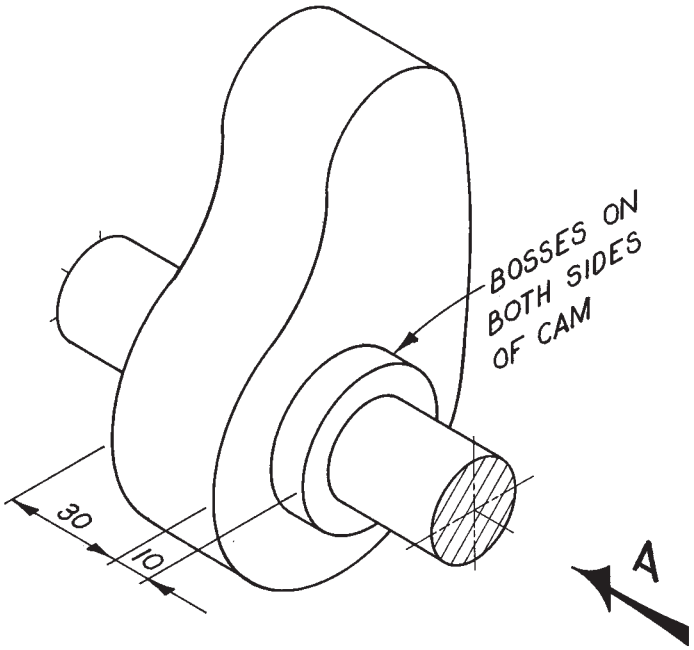


FIG. 1. PICTORIAL DRAWING OF CAM/SHAFT ASSEMBLY (NOT TO SCALE)

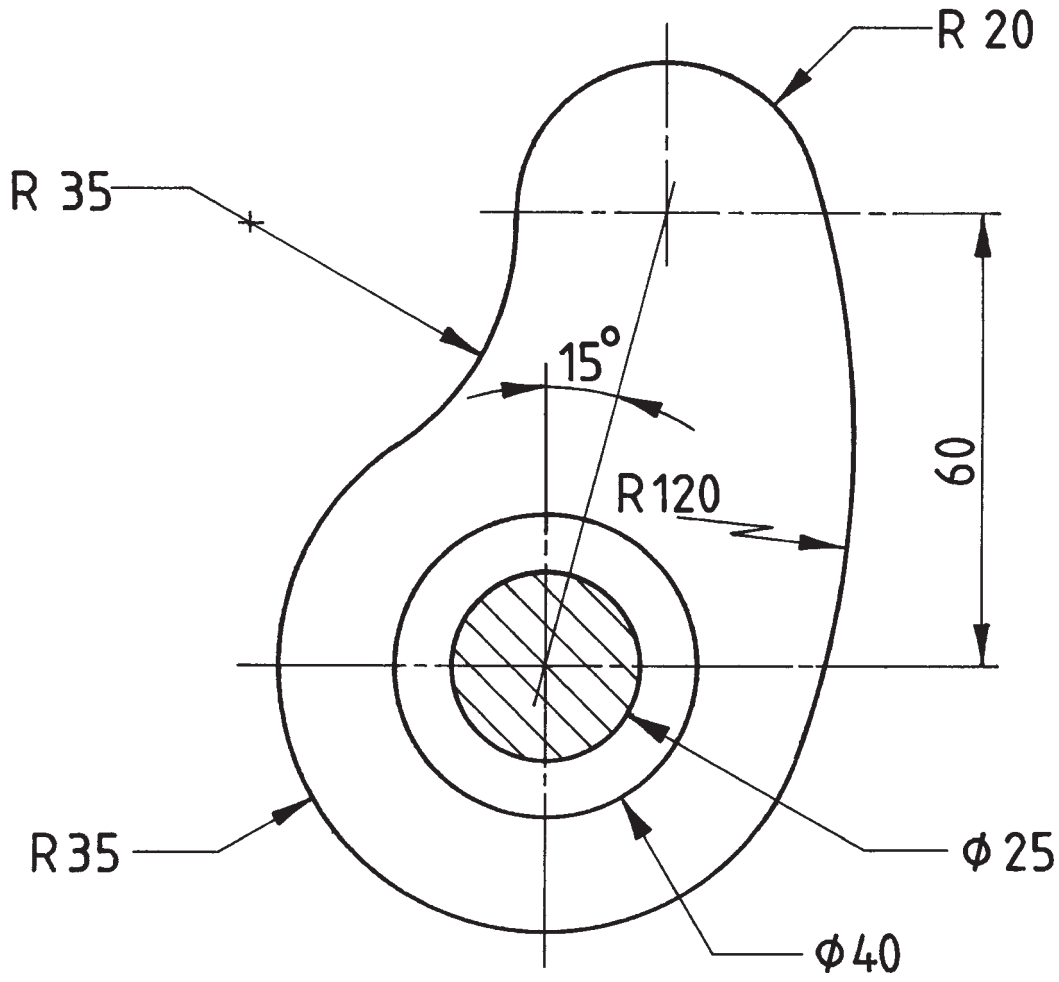


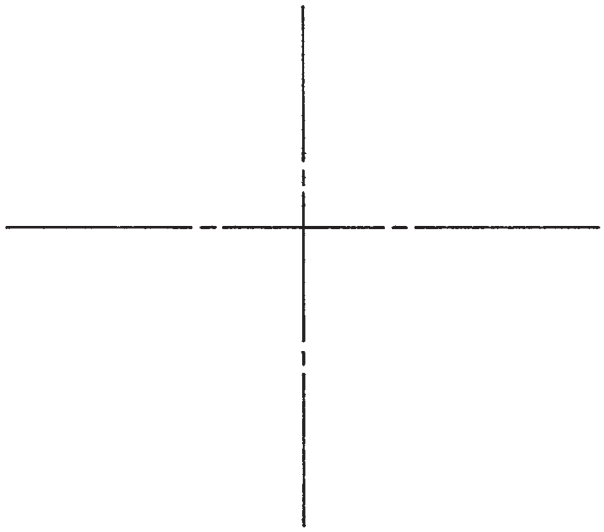
FIG. 2. FRONT VIEW OF CAM/SHAFT ASSEMBLY FROM 'A'

QUESTION 13. (Continued)

MARKER'S USE ONLY

(a) Draw a front view of the cam/shaft assembly to a scale 1 : 1 when viewed from direction 'A'.

The centre line for the shaft is provided.



Question 13 continues on page 4

QUESTION 13. (Continued)

MARKER'S USE ONLY

(b) Complete the sectioned drawing shown in Figure 3 below to show how the cam can be secured to the shaft to prevent rotation. The cam must be able to be removed from the shaft. Label your drawing.

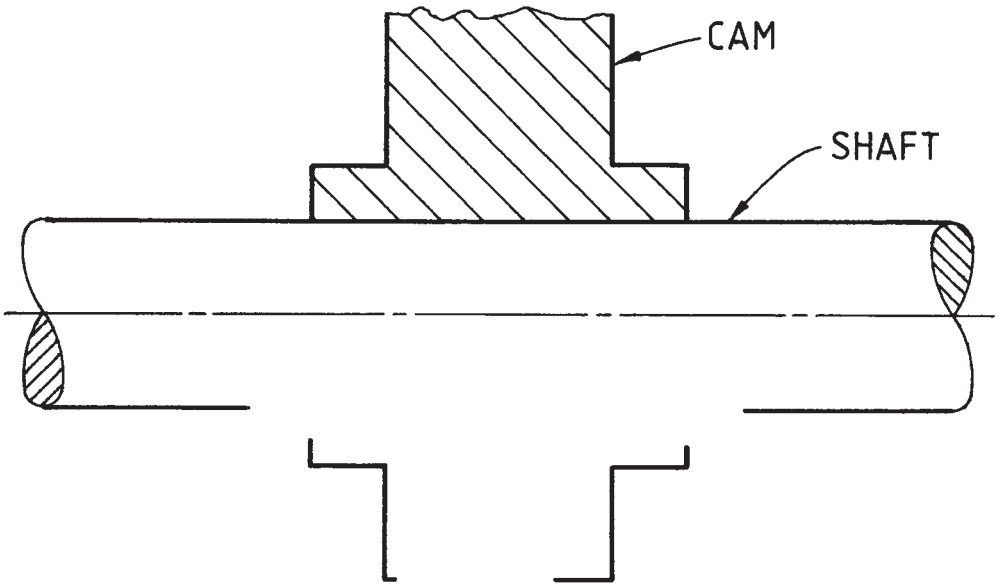
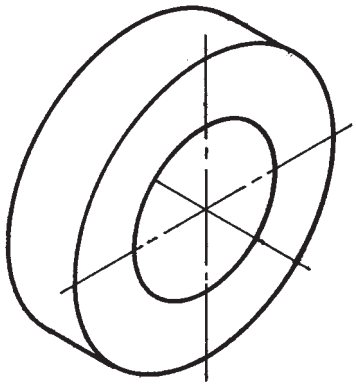


FIG. 3

QUESTION 13. (Continued)

MARKER'S USE ONLY

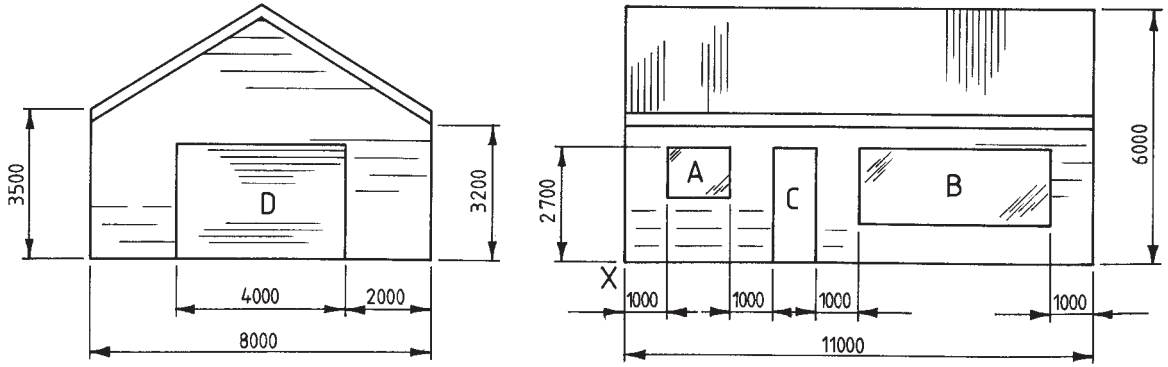
(c) Complete the isometric drawing of the cam below. The shaft has been removed. Use the starting position given.



QUESTION 14. (5 marks)

MARKER'S USE ONLY

A local company manufactures a range of timber-framed sheds. A left side and a front view of one of their sheds are shown below in Figure 4. Details of windows and door sizes are provided.



LEFT SIDE VIEW FRONT VIEW

FIG. 4

(NOTE. All dimensions are in millimetres.)

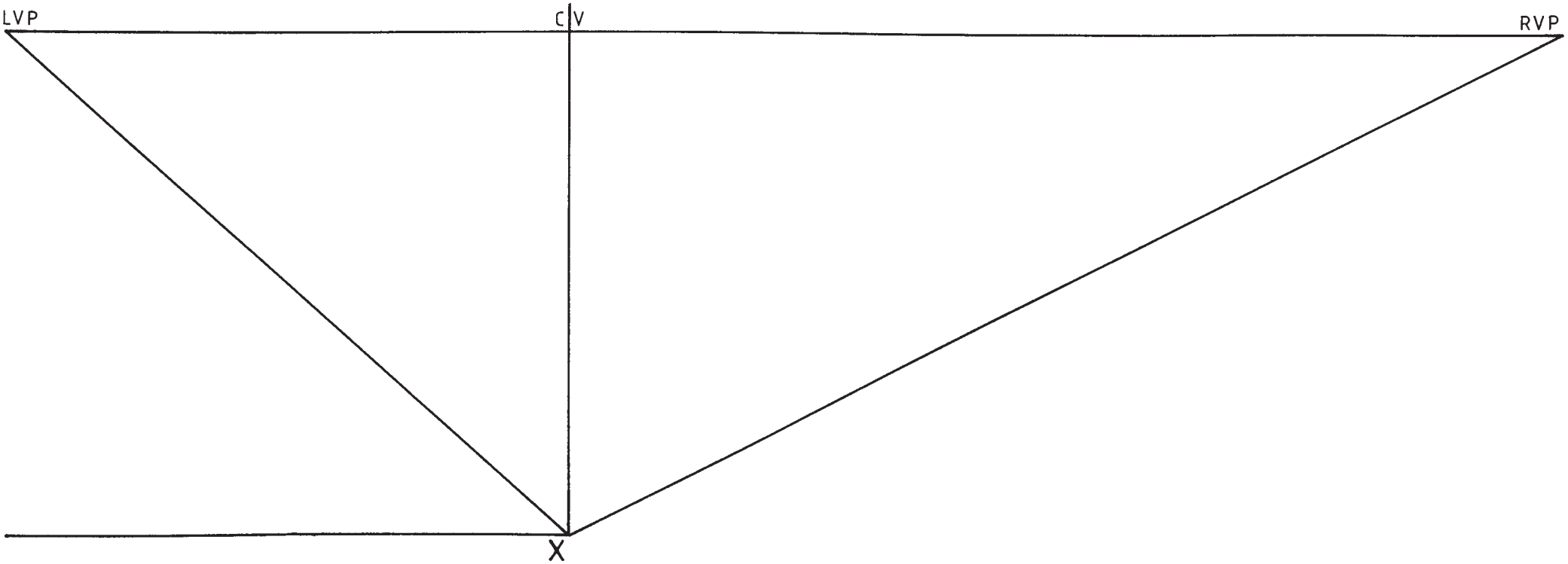
- Window A = 1500 mm wide × 1200 mm high
- Window B = 4500 mm wide × 1800 mm high
- Door C = 1000 mm wide × 2700 mm high
- Roller door D = 4000 mm wide × 2700 mm high

QUESTION 14. (Continued)

MARKER'S USE ONLY

(a) Using measurements from the orthogonal drawings of the shed, draw in the space provided below, to a scale of 1 : 100, a perspective drawing of the shed. Commence your perspective drawing from point X.

(b) Render your perspective drawing below to indicate appropriate construction materials.



Question 14 continues on page 8

QUESTION 14. (Continued)

MARKER'S USE ONLY

A pictorial drawing showing the timber framing of a corner of the shed is shown below in Figure 5.

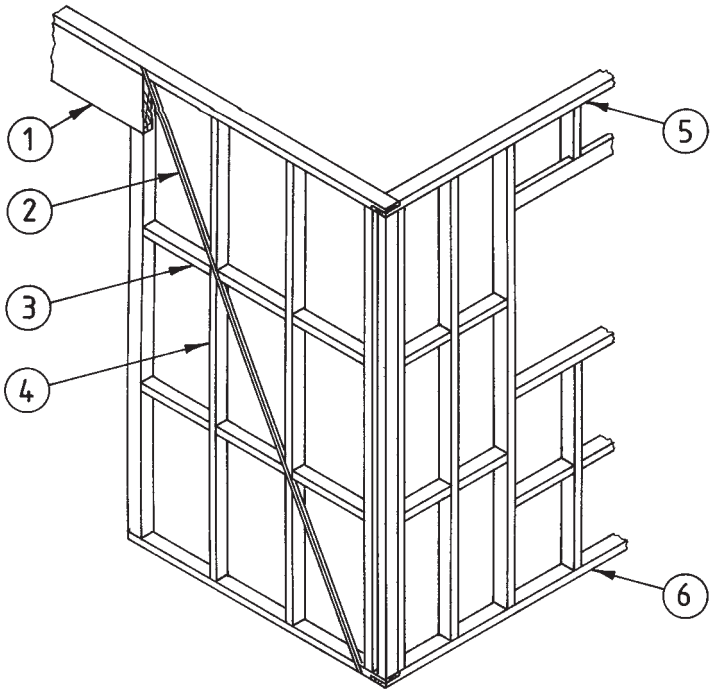


FIG. 5

(c) Name the framing components labelled ①–⑥ in the pictorial drawing.

Component ① .....

Component ② .....

Component ③ .....

Component ④ .....

Component ⑤ .....

Component ⑥ .....

QUESTION 14. (Continued)

MARKER'S USE ONLY

(d) The timber-framed shed is to be positioned on a reinforced concrete slab at ground level. In the space below, sketch and label a sectional view to show the reinforced concrete slab. Part of the timber framing is shown.

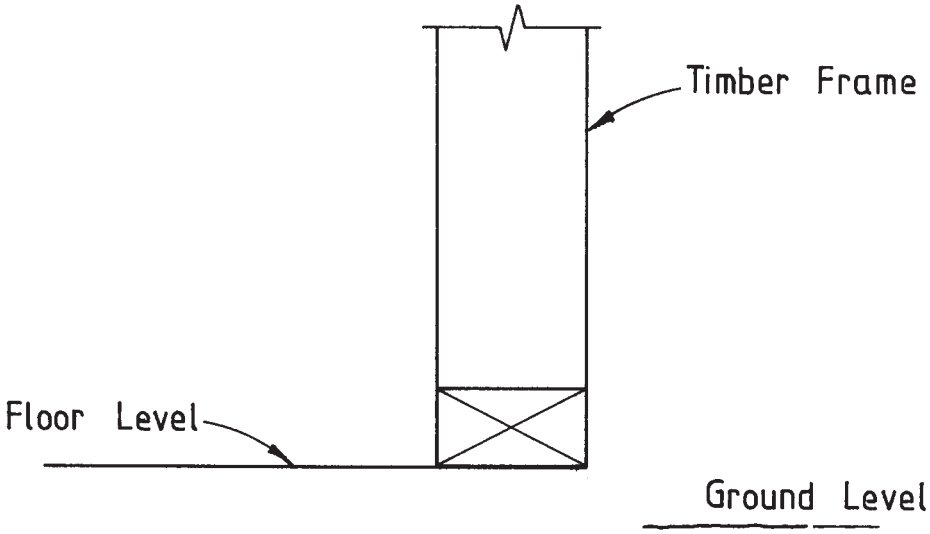


FIG. 6

QUESTION 15. (5 marks)

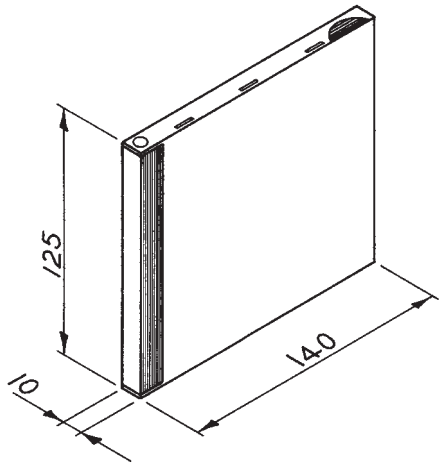
MARKER'S USE ONLY

The school librarian has asked you to design a storage unit for the library's collection of CD-ROMs.

Design specifications for the storage unit include:

- provision for 10 (ten) CD-ROM cases;
- CD-ROM cases to be visible and easily accessible for removal and replacement in the storage unit;
- able to be mounted on a desk next to the CD player.

Each CD-ROM case has the following dimensions:



All dimensions in mm

FIG. 7

Materials available for the design and construction of the CD-ROM storage unit are:

- 140 mm (wide) × 12 mm (thick) radiata pine;
- 3 mm thick clear acrylic sheet;
- 10 mm (wide) × 10 mm (thick) radiata pine;
- Glue, nails, screws as required by your design.

(a) (i) List THREE (3) necessary considerations when designing the CD-ROM storage unit to allow the removal/replacement of the CD-ROMs.

1. .....

2. .....

3. .....

QUESTION 15. (Continued)

MARKER'S USE ONLY

(b) In the space provided below, make a pictorial freehand sketch of your CD-ROM storage unit. Your sketch must show:

(i) how the CD-ROMs are held in position;

(ii) method(s) of constructing the unit;

(iii) features of your design;

(iv) overall dimensions (length, depth, height) of the storage unit.

Question 15 continues on page 12

QUESTION 15. (Continued)

MARKER'S USE ONLY

(c) In the space provided below:

(i) Draw accurately, to an appropriate scale, TWO orthogonal views of the CD-ROM storage unit design. ONE of the views must show details of how the CD-ROM cases are held in place.

(ii) Label the views drawn.

(iii) State the scale used.

(iv) Using AS1100 drawing standards, show FOUR (4) functional dimensions of your CD-ROM storage unit.

End of paper