

Candidate Name _____

**International General Certificate of Secondary Education
CAMBRIDGE INTERNATIONAL EXAMINATIONS**

DESIGN AND TECHNOLOGY

0445/3

PAPER 3 Realisation

OCTOBER/NOVEMBER SESSION 2002

1 hour

Candidates answer on the question paper.
No additional materials are required.

TIME 1 hour

To be taken together with Paper 1 in one session of 2 hours 45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces at the top of this page.

Answer any **two** questions.

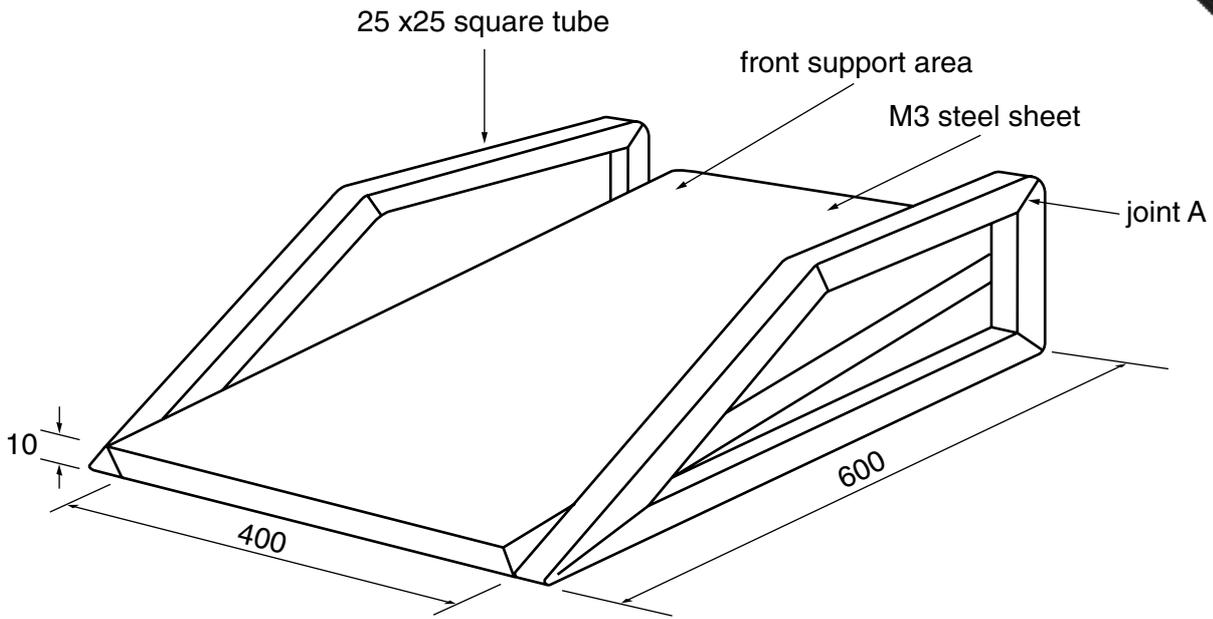
Write your answers in the spaces provided on the question paper.

INFORMATION FOR CANDIDATES

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

FOR EXAMINER'S USE	
1	
2	
3	
4	
TOTAL	

1 The outline design for a metal footrest is shown below.



(a) Give **two** reasons why mild steel tube would be suitable for the side frames of the footrest.

(i)

(ii)[2]

(b) Using notes and sketches describe how the steel tube at joint A could be:

(i) cleaned ready for joining;

[4]

(ii) made ready for brazing;

[4]

(iii) brazed.

[4]

(c) The foot support area is to be made from mild steel sheet which has been folded to shape.

Using notes and sketches show:

(i) the development of the sheet metal prior to bending;

[4]

(ii) how the sheet would be folded to the shape;

[4]

(iii) how the corners of the folded support would be joined.

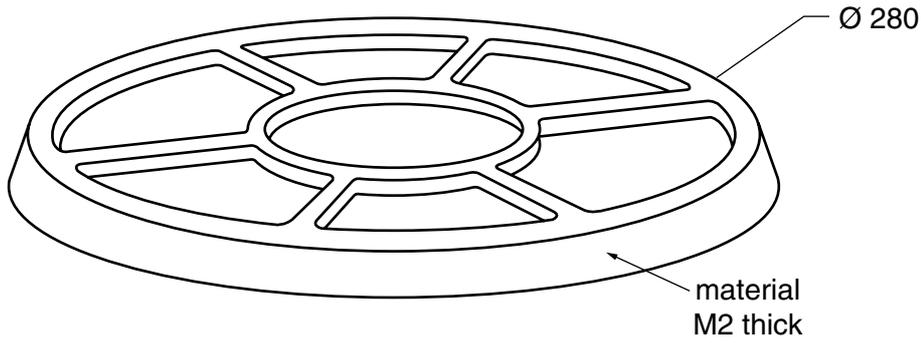
[4]

(d) The foot support needs to be set at different angles to provide people with a range of comfortable resting positions.

Show by means of a sketch how the front of the foot support area could be made to adjust up and down.

[4]

2 The design for plastic paint holder is shown below.



(a) Name a suitable plastic for the paint holder and give two reasons for your choice.

- (i)
- (ii)
- (iii)[3]

(b) Using notes and sketches describe the following stages of making the paint holder by each of the following methods:

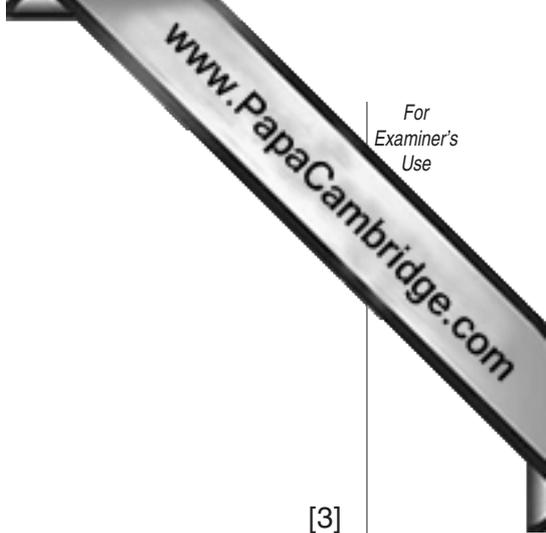
(i) Vacuum Forming.

1. the table set up and former;

[3]

2. holding the plastic;

[3]



3. heating the plastic;

[3]

4. forming the shape.

[3]

(ii) Injection Moulding.

1. machine set up and mould;

[3]

2. holding the plastic;

[3]

3. heating the plastic;

[3]

4. forming the shape.

[3]

(c) Explain how **one** of the following may cause problems when producing the plastic holder.

either

- a former with no draft or rounded corners;

or

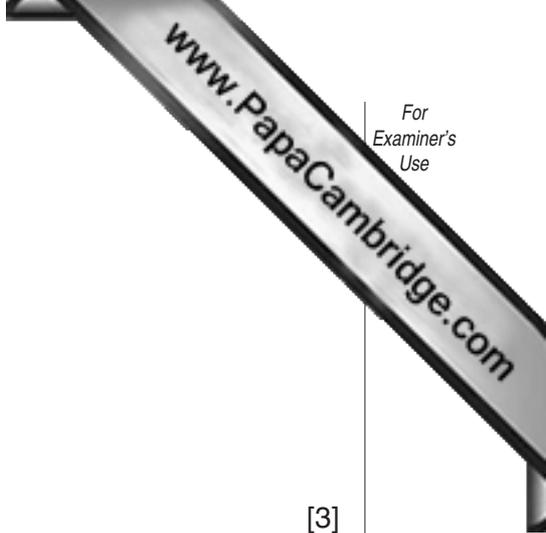
- a mould that is cold.

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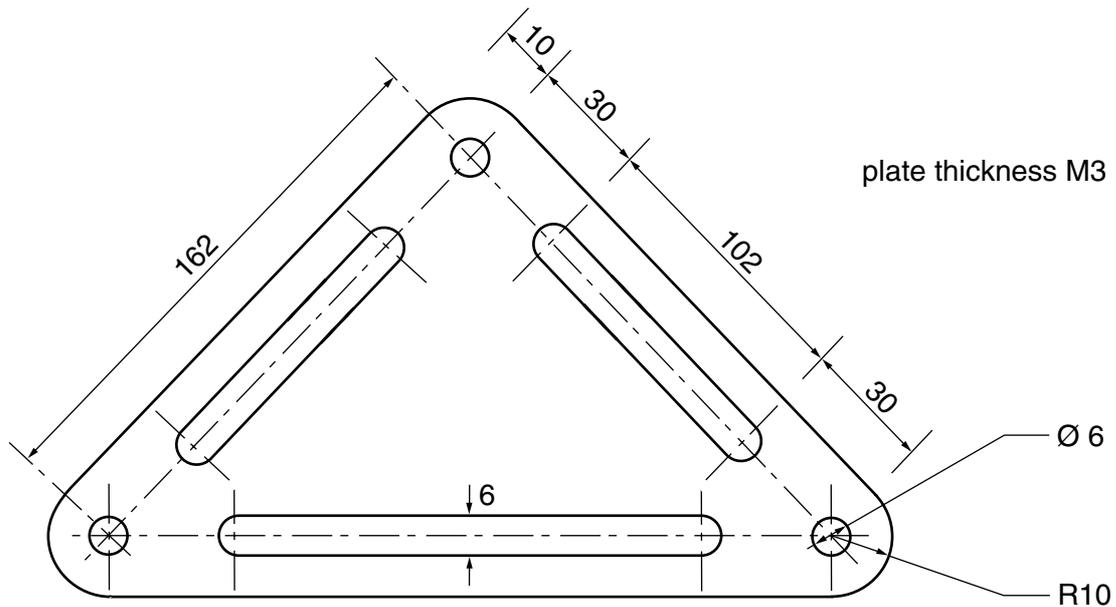
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.....[3]



- 3 The drawing below shows a triangular plate made from sheet material, it forms part of an assembly outdoor children's playhouse kit.



- (a) Compare the following sheet materials which could be used for the plate and state **one** advantage and **one** disadvantage with each.

Material	Advantage	Disadvantage
Plywood		
Nylon		
Brass		

[6]

- (b) Choose **one** of the materials named in (a) and using notes and sketches describe each of the following stages of making the plate. Name all tools and equipment used.

- (i) marking out the outline shape;

[4]

(ii) marking out the holes and slots;

[4]

(iii) drilling the holes;

[4]

(iv) cutting out the slots;

[4]

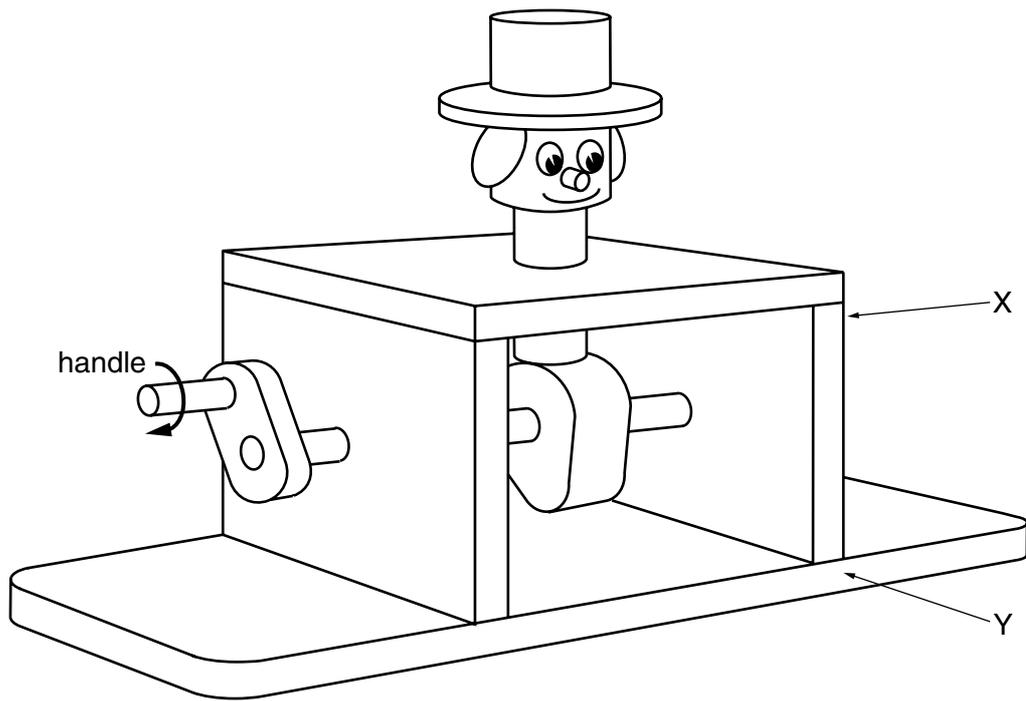
(v) cutting the outline shape;

[4]

(vi) finishing.

[4]

4 The outline design for wooden mechanical toy is shown below.



(a) Name **two** properties that a wood should have to be suitable for a child's toy.

(i)

(ii)[2]

(b) Show by means of sketches how the frame may be:

(i) joined together at X;

[4]

(ii) joined together at Y.

[4]

- (c) Describe with aid of notes and sketches how **one** of the joints given in answer (b) could be made.

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[8]

Turn over for parts (d) and (e)



(d) Use notes and sketches to show the following stages in drilling the holes in the two pieces of the frame prior to joining.

(i) holding the **two** pieces of material;

[3]

(ii) safety checks;

[3]

(iii) drilling the holes.

[3]

(e) Explain what happens when the handle on the toy is turned as shown.

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.....

.....[3]