

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.

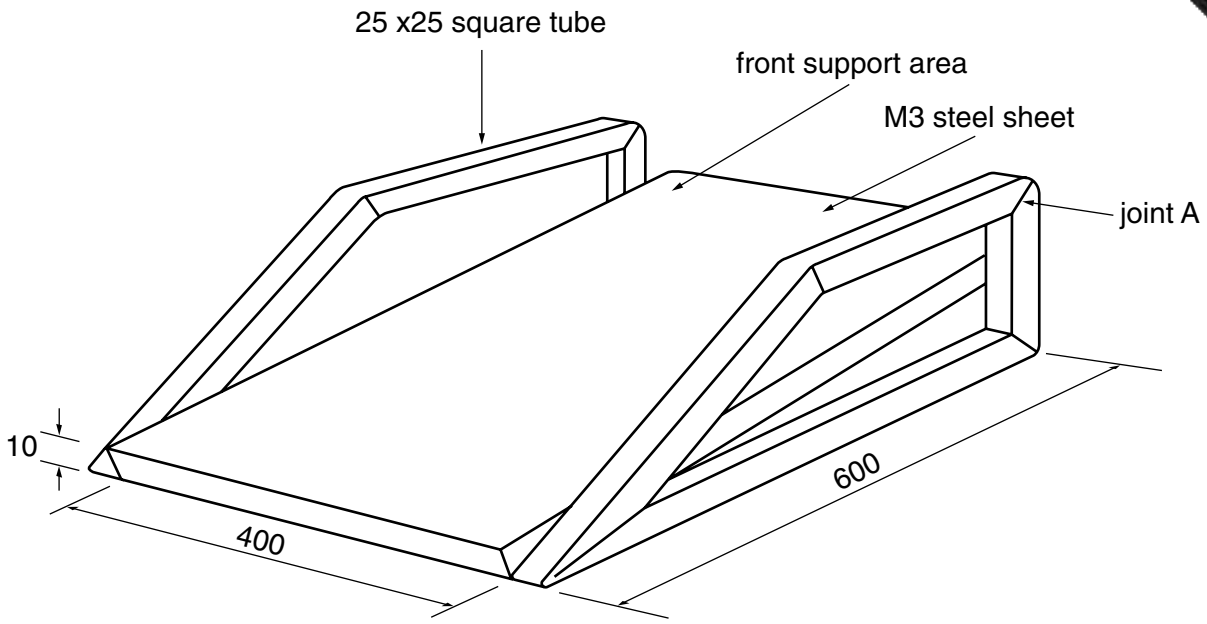
Write your answers in the spaces provided on the question paper.

**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.

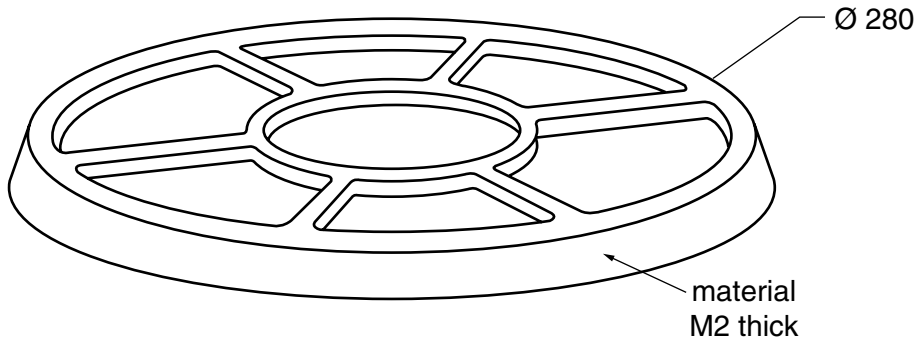
[4]

(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:

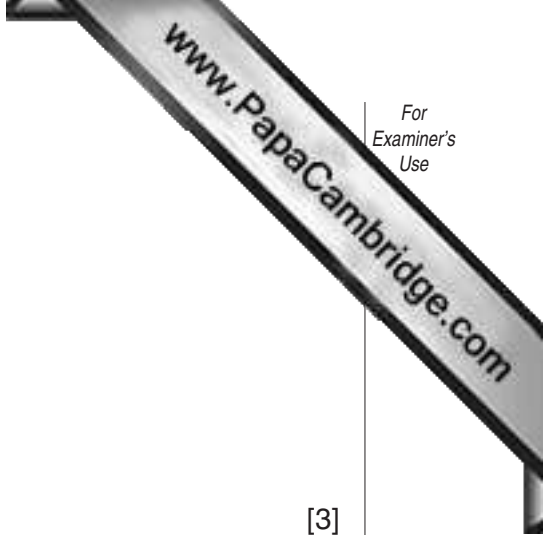
(i) Vacuum Forming.

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**

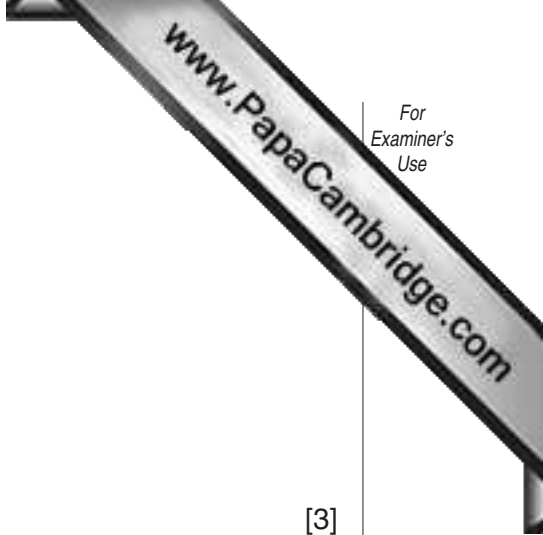
- a mould that is cold.

.....

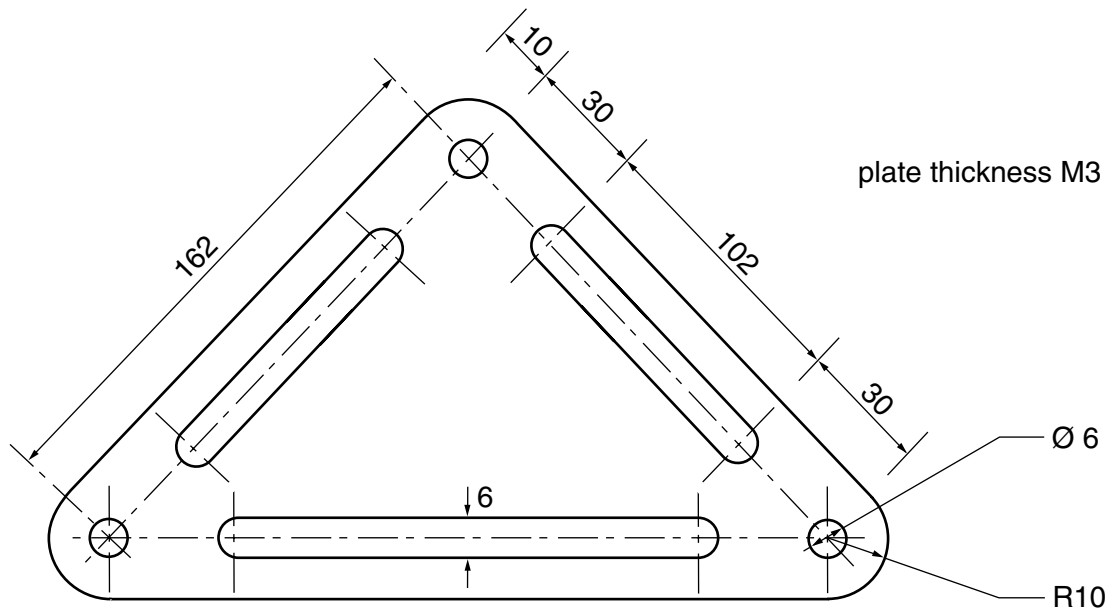
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.....[3]



- 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]

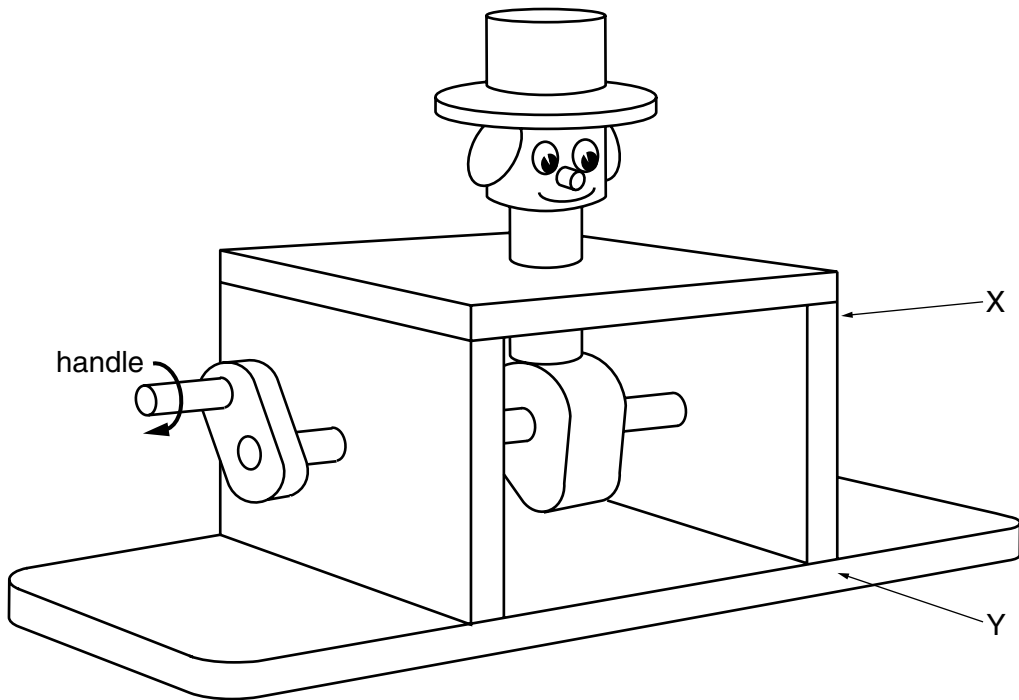
(v) cutting the outline shape;

[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.

.....

.....

.....

.....[3]