



Candidate Name	Centre Number	Candidate Number
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OXFORD CAMBRIDGE AND RSA EXAMINATIONS
General Certificate of Secondary Education

D & T (GRAPHIC PRODUCTS)

PAPER 4 (HIGHER TIER)

Specimen Paper **2003**

1 hour 30 minutes

Additional materials:
Drawing aids may be used.

TIME 1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces provided above and on the other sheets.

Answer **all** questions in the spaces provided.

All diagrams should be drawn accurately unless otherwise stated. Drawing aids may be used. Colour or shading should only be used if asked for in the question. Use your discretion where dimensions are not given.

INFORMATION FOR CANDIDATES

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

Dimensions are in mm unless stated otherwise.

Marks will be awarded for the use of correct conventions.

Question 2, product analysis, is based on the theme 'Children's activity packs' printed in the specification.

FOR EXAMINER'S USE	
Question 1	
Question 2	
Question 3	
Question 4	
Question 5	
TOTAL	

This question paper consists of 3 printed sheets.

1 Incomplete stages for the assembly of a mechanism made from card are shown. The mechanism has three parts; a Backing Card, a Pull Tab and a Pivot Arm.

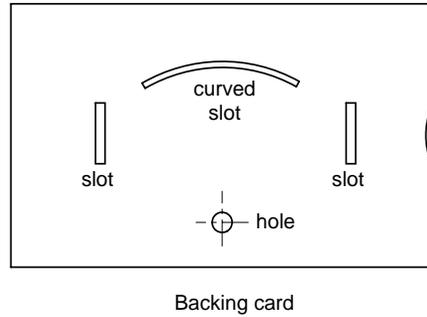
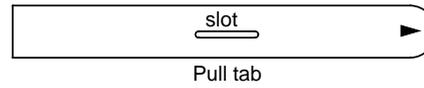
(a) Complete **Stage 1** by showing the Pull Tab in position in the two vertical slots. [1]

(b) Complete **Stage 2** by showing the Backing Card, Pull Tab and Pivot Arm fully assembled. [3]

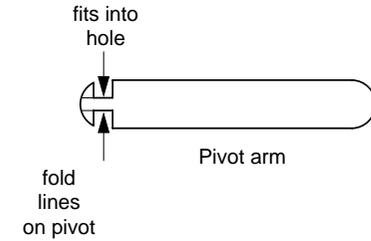
(c) State the input motion produced by the Pull Tab
 _____ [1]

(d) State the output motion produced by the Pivot Arm.
 _____ [1]

STAGE 1



STAGE 2



(e) In the space provided opposite, draw a modified version of the mechanism in which a second Pivot Arm is added so that the two Pivot Arms move like a pair of windscreen wipers. [2]

(f) In evaluation trials the card pivot point on the Pivot Arm has been found to tear easily. Describe how this problem could be overcome.
 _____ [1]

(g) Identify **one** key aspect of the manufacture of the slot to ensure that the mechanism works.
 _____ [1]

- 2 A drawing of a cartoon character is shown below.
The character is to form the theme for a childrens' activity pack.



- (a) Describe how market research could help in deciding whether the design for the character needs to be changed.

_____ [1]

- (b) Part of the activity pack is an A4 vinyl self adhesive sheet printed with ten images of the character.
The initial batch run is for 10,000 sheets.

Give **one** reason why photocopying would not be appropriate.

_____ [1]

- (f) Explain why the manufacturers of the activity pack have insisted the design for the character is generated within a computer package rather than drawn manually and then scanned into the system.

_____ [2]

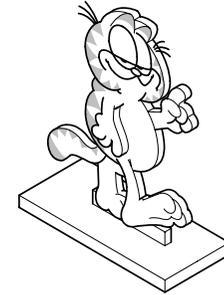
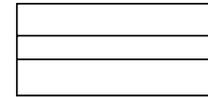
- (g) The initial sales campaign for the activity pack is to be launched only on the Internet.
Children will be able to download parts of the activity pack directly from the web site and then purchase the full pack by post.

State **one** advantage to the company in using this form of sales campaign.

_____ [1]

- (c) Part of the activity pack is a board game in which the children move playing pieces around the board.
Orthographic views and a pictorial sketch of one of the playing pieces are shown below.
Name, with a suitable reason, an appropriate graphic material for manufacturing the playing piece.

_____ [2]



- (d) Name the manufacturing process that would be used to cut out the outline of the character part of the playing piece.

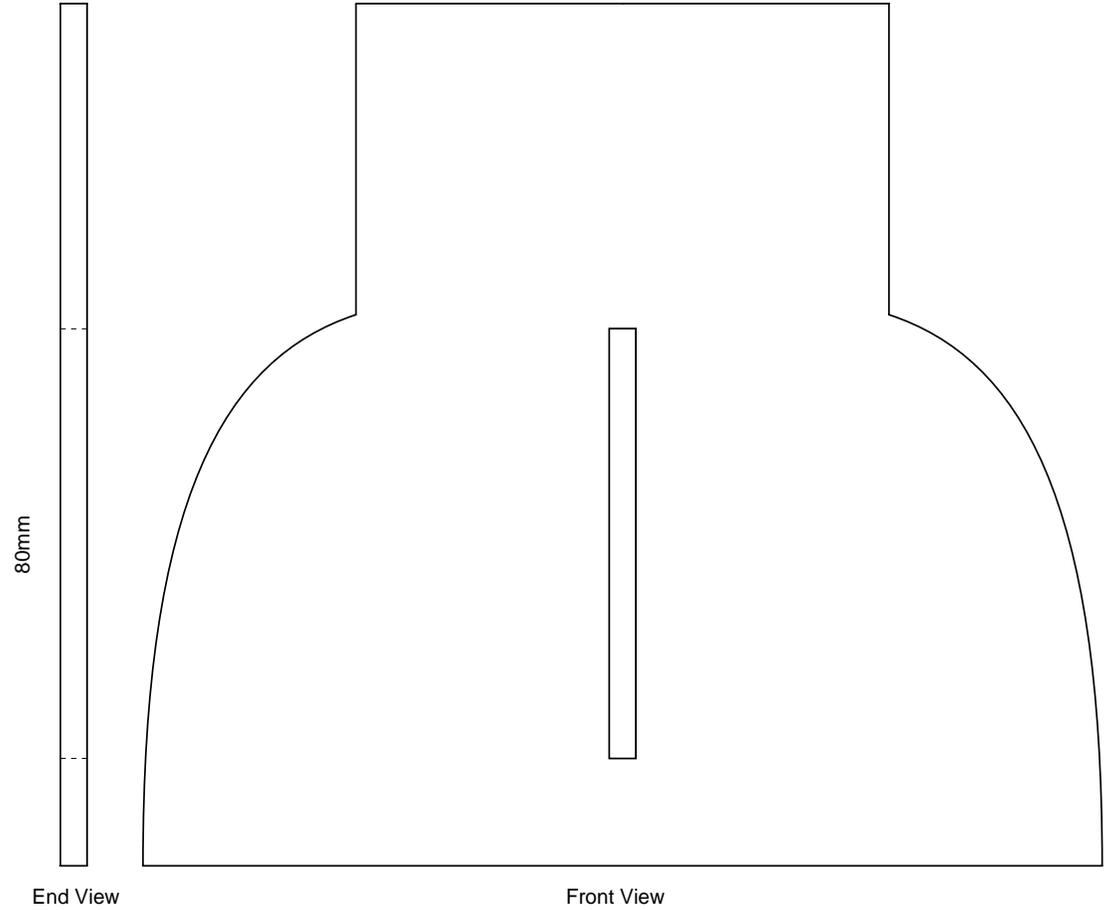
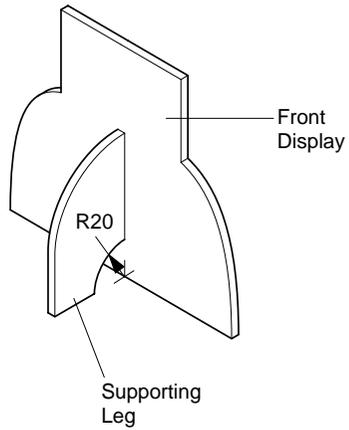
_____ [1]

- (e) Draw an exploded isometric sketch of the base of the playing piece, showing how the two pieces of the playing piece would be joined together, and easily taken apart by the children.
It is not necessary to draw the character. [2]

- 3 A pictorial sketch of a display stand is shown.
 The stand is made from 5 mm thick foamboard.
 The stand is in two parts with the front display piece kept upright by a supporting leg pushed into an 80 mm x 5 mm wide slot.
 The supporting leg is a quarter ellipse of Major axis 200 mm Minor axis 80 mm.

- (a) On the orthographic views complete the **front and end views** by drawing the supporting leg.
 Include hidden detail.

[6]



- (b) In evaluation trials the stand keeps falling forward.
 Sketch a simple modification to the stand to stop this happening.
 [2]

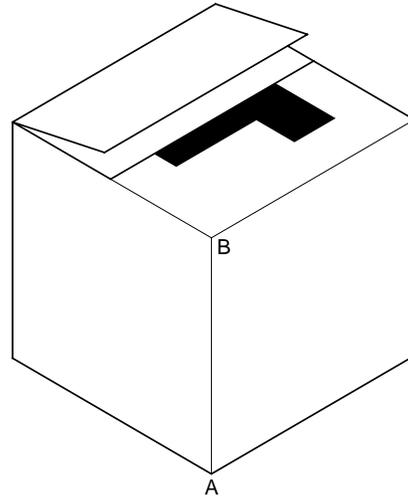
- (c) Describe how the slot could be automatically cut in 50 stands.

 _____ [2]

4 An isometric view of a novelty box, made from card is shown.

(a) A letter **T** is printed on the two flaps.
Complete the isometric drawing by adding the missing part of the letter. [2]

(b) State how the letter could be printed onto an initial batch of 100 boxes.
_____ [1]



(c) Use the starter line **A B** and the vanishing points **VP1** and **VP2** to draw a two point perspective view of the novelty box.
Draw the box with the two flaps folded open 180 degrees to show the inside of the box. [4]

(d) Give **two** advantages of using a CAD package to produce the two views of the novelty box.

Advantage 1

Advantage 2

[2]

(e) Give **one** disadvantage of introducing CAD in a small family run packaging company.
_____ [1]



5 The specification for a model clock to help teach children the time is given.

SPECIFICATION

The model clock should:

- have a maximum face size of 300 mm;
- have a face shape based on any geometrical shape;
- have an hour and minute hand which are manually set to the time;
- have 12 numbers which can be clearly seen on the face;
- be freestanding on a desk;
- be constructed from card and other suitable components.

(a) Use sketches and notes to develop a suitable clock design.
Include details of materials, components and joining methods. [6]

(b) Draw to a scale 1:2 a sectional view of your best design for the clock.
Show the hands at 6.00.
Take your sectional view through the vertical centre of the clock. [4]