

SAMPLE RESISTANT MATERIALS

GCSE EXAMINATION PAPER

CENTRE NUMBER

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CANDIDATE NUMBER

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SAMPLE PAPER1 - MARK SCHEME

SURNAME _____

FORENAME(S) _____

CANDIDATE SIGNATURE _____

2 HOURS ALLOWED

Materials required for this examination:

- normal writing and drawing instruments
- a calculator
- a protractor.

Instructions to candidates:

- Use black ink or black ball-point pen. Use pencil only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write on blank pages.
- Do all rough work in this book. Cross through any work that you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 120.
- The question in Section A relates to the context referred to in the Preliminary Material that was previously issued.
- All dimensions are given in millimetres unless otherwise stated.
- You are reminded of the need for good English and clear presentation in your answers.

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SECTION A

Answer all the questions

In this section you will be asked to:

- Write a Design Specification.
- generate a range of designs.
- develop an idea.

Design Brief:

A manufacturer of remote control organisers, has asked you to produce a range of designs for an organiser to be used in a living room / bedroom / study.

Produce **five** designs for a remote control organiser, for a living room / bedroom / study.

Below are shown a number of typical living rooms /bedrooms, where remote controls may be used.



Design Specification.

1. Write three design requirements of a remote control organiser. Include an explanation for each of your requirements.

Example:

Requirement: The organiser should be designed/manufactured, to hold a range of different sizes of remote controls.

Explanation: Remote controls for different electronic equipment are never the same size. They vary in size and their shapes differ slightly.

REQUIREMENT 1:

For any marks the requirement must be stated.

1 mark for the requirement.

EXPLANATION:

up to two marks for the explanation - depending on detail.

(3 marks)

REQUIREMENT 2:

For any marks the requirement must be stated.

1 mark for the requirement.

EXPLANATION:

up to two marks for the explanation - depending on detail.

(3 marks)

REQUIREMENT 3:

For any marks the requirement must be stated.

1 mark for the requirement.

EXPLANATION:

up to two marks for the explanation - depending on detail.

(3 marks)

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/rmflsh1/remote10.html>

<http://www.technologystudent.com/rmflsh1/remote11.html>

<http://www.technologystudent.com/rmflsh1/remote12.html>

<http://www.technologystudent.com/rmflsh1/remote13.html>

This question is about creative design.

You are advised to spend about 15 minutes on this question.

2. Read the design brief and your design requirements again, before attempting the question below.

Sketch **FOUR** different designs for a remote control organiser.

All your designs must store a range of remote controls.

Marks will be awarded for creativity and imagination. **(4 X 5 marks)**

Up to 5 marks for each idea.

If more than four ideas are sketched, mark the first four.

For each idea:

0 marks for just sketch.

1 mark for basic sketch with labels.

2-3 marks for sketch and labels/notes

4-5 marks for detailed sketch and notes/labels.

QUESTION 2 CONTINUED:

Question 3. This is concerned with developing a design.

You are advised to spend about 12 minutes on this question.

Choose **one** of your designs from Question 2.

Develop your initial design to a final version. Include of notes and sketches.

You will be awarded marks for:

- how you developed your design to meet the needs of the user. **3 marks**
- details of manufacture / construction. **3 marks**
- details relating to functions, features and sizes. **3 marks**
- your explanation of materials and finishes. **2 marks**

Awarded marks for:

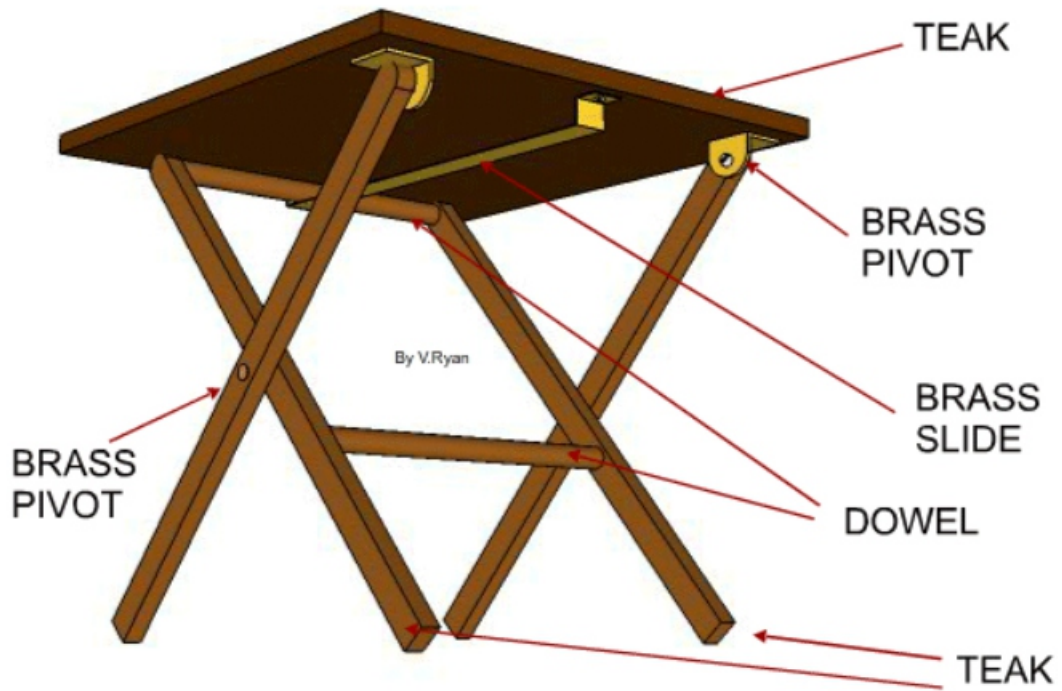
- *development of the design to meet the needs of the user. **3 marks***
- *details of manufacture / construction. **3 marks***
- *details relating to functions, features and sizes. **3 marks***
- *explanation of materials and finishes. **2 marks***

QUESTION 3 CONTINUED:

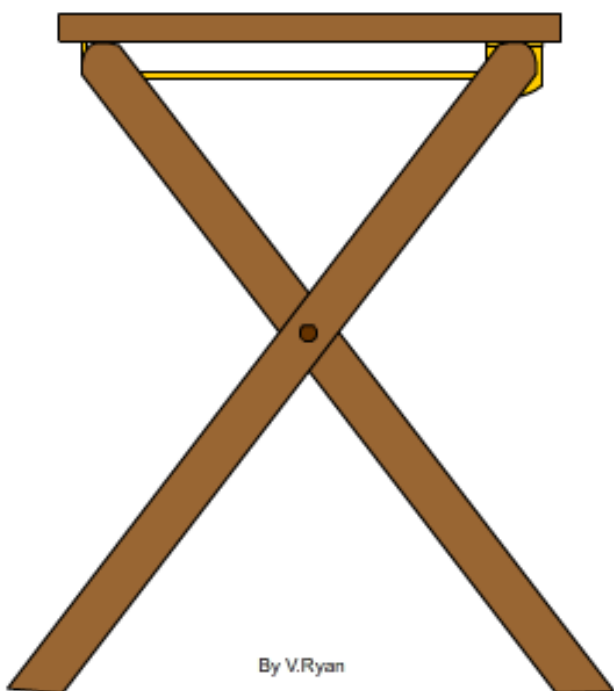
SECTION B
Answer all the questions

4. This question is about manufacturing a product.

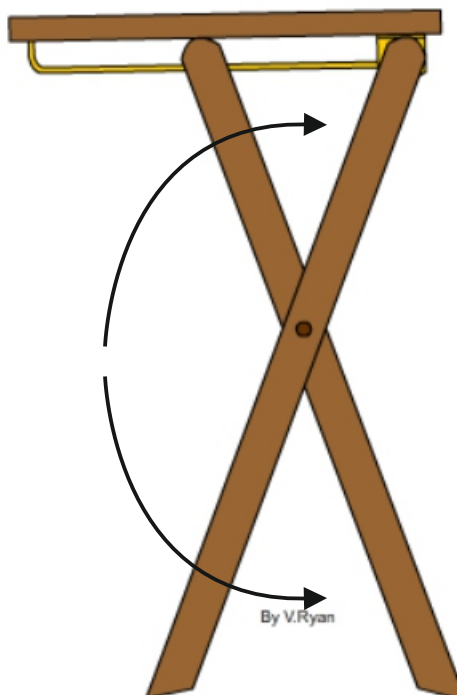
Carefully study the drawings of the folding table shown below.



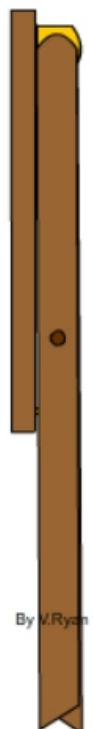
STAGE 1



STAGE 2



STAGE 3



TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/rmprep08/cncpic1.html>
<http://www.technologystudent.com/rmprep08/cncpic2.html>
<http://www.technologystudent.com/rmprep08/brass1.html>

4a. Using notes and sketches describe how you would manufacture a batch of ten folding tables (**legs ad table top only** - see previous page for the design)

The table is designed through the use of CAD (Computer Aided Design) and manufactured through CAM (Computer Aided Manufacture)

In your answer, include an explanation of how you would:

- use CAD to design the legs and table top **3 marks**
- use CAM to cut out the shapes you have designed. **3 marks**
- manufacture one brass hinge. **3 marks**

Include the names of all the equipment and software that you would use.

Marks awarded for:

- *use CAD to design the legs and table top* **3 marks**
- *use CAM to cut out the shapes you have designed.* **3 marks**
- *manufacture one brass hinge.* **3 marks**

Include the names of all the equipment and software that you would use.

Teacher discretion regarding marks according to detail in the sketches and notes. For top marks to be awarded both sketches and notes must be included, in detail.

4 (b) Using notes and sketches, explain how you would manufacture the legs and top of the folding table, using **traditional methods (not using CAD/CAM)**, in a typical school workshop.

You should include details of:

- marking out. **3 marks**
- cutting/shaping. **3 marks**
- **name** a suitable finish and state why it was selected.. **3 marks**

Name all the tools and equipment you would use.

Marks awarded for:

- *details regarding marking out.* **3 marks**
- *details regarding cutting/shaping.* **3 marks**
- *details regarding 'finishing'.* **3 marks**

Name all the tools and equipment you would use.

Teacher discretion regarding marks according to detail in the sketches and notes. For top marks to be awarded both sketches and notes must be included, in detail.

TO HELP YOU ANSWER
THIS QUESTION

http://www.technologystudent.com/despro_flsh/finish3.html

http://www.technologystudent.com/despro_flsh/finish4.html

http://www.technologystudent.com/despro_flsh/finish5.html

http://www.technologystudent.com/despro_flsh/finish6.html

4c. Using notes and sketches, describe / explain the type of finish you would apply to the legs and table top. **3 marks**

award one mark for just a sketch or just a statement / simplistic notes.

2-3 marks for both a sketch(s) and notes.


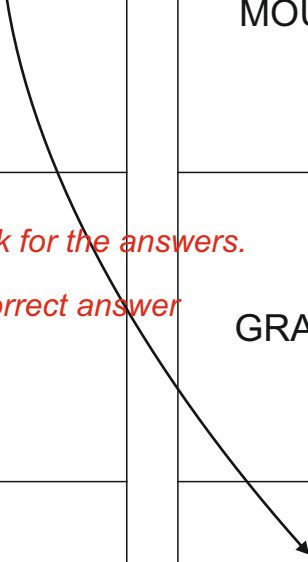




Teacher discretion regarding the detail of the answer.

Question 5 is concerned with materials and their properties.

**TO HELP YOU ANSWER
THIS QUESTION**

<http://www.technologystudent.com/prddes1/materials1.html>

5a. Materials are available in a range of sections, shapes and sizes. For each of the products listed below, name the main material type from which each is manufactured. Draw a line to the correct stock form / size. The first is completed for you as an example. **4 marks**

CARD	METAL	WOOD	PLASTIC	WROUGHT IRON/BLACK MILD STEEL
PRODUCT	MATERIAL TYPE			STOCK FORM / SIZE
PEDAL BIN 	METAL 			ROUGH SAWN, PLAINED, MOULDING, PAR, SHEET SIZE
TRADITIONAL CHAIR 	<i>Follow the link for the answers.</i> <i>1 mark per correct answer</i>			GRANULES, SHEET, ROD, POWDER, FOAM
MODERNIST CHAIR 				SHEET, GAUGE, PLATED
ORNATE TABLE 				A3, A4, A5, THICKNESS, WEIGHT, GSM, COLOUR
POPUP INVITATION CARD 				FLAT TRIP, SECTION, HOLLOW SECTION, SOLID SECTION, ROD, BAR

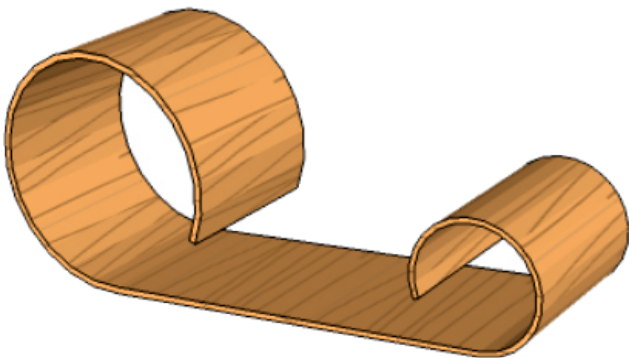
5b. Describe the main advantage of flexi ply, over other forms of manmade boards? Use notes and sketches in your answer. **4 marks**

Follow the link for detailed answers / information

1 marks for just a sketch of just notes.

2-3 marks for both a sketch and notes in reasonable detail

4 marks for a detailed answer with notes and sketche(s)



5c. Describe how the permanent form/shape seen opposite, could be manufactured from several layers of flexi ply. Use labelled sketches and notes. **4 marks**

Follow the link for detailed answers / information

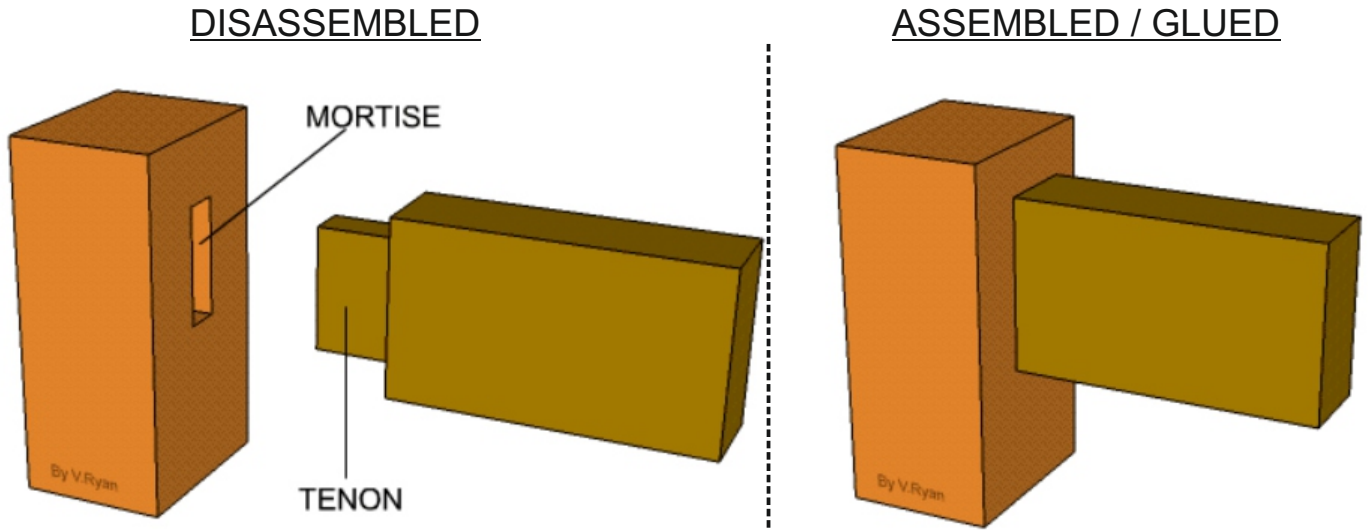
1 marks for just a sketch of just notes.

2-3 marks for both a sketch and notes in reasonable detail

4 marks for a detailed answer with notes and sketche(s)

6. This question is concerned with planning and manufacturing

6a. Below are two views of a typical mortise and tenon joint. Draw up to six stages of the marking out and cutting the **mortise** part of the joint. **12 marks**



<p>1</p> <p><i>2 marks per stage</i></p> <p><i>1 mark for a sketch per stage</i></p> <p><i>1 mark for just a written description per stage.</i></p> <p><i>for 2 marks per stage - must be notes and sketch</i></p>	<p>2</p>
<p>3</p>	<p>4</p>
<p>5</p>	<p>6</p>

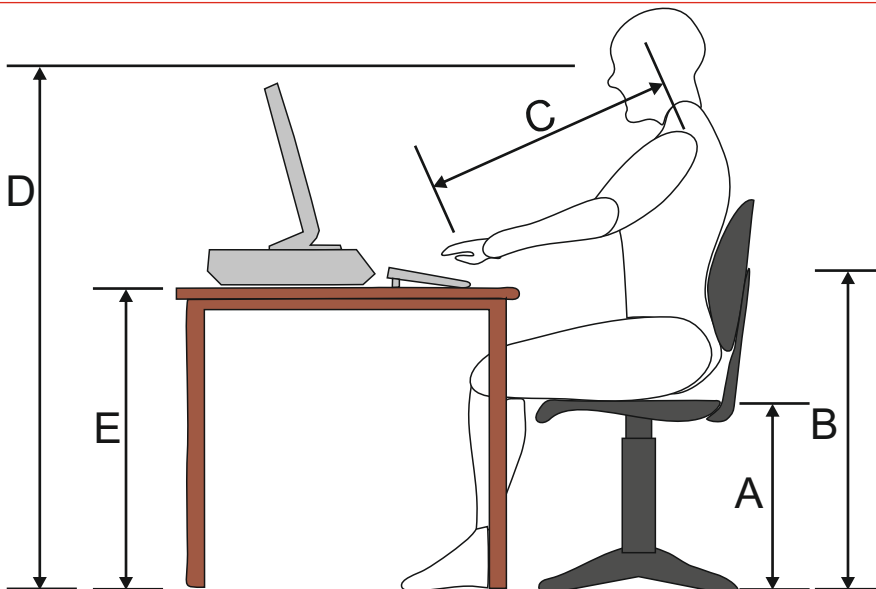
7. This set of questions relates to human factors and inclusivity

7a. Explain the term ANTHROPOMETRICS. 2 marks

*Follow the link for a detailed answer
1 mark for basic answer
2 marks for more detailed answer*

7b. Explain the term ERGONOMICS. 2 marks

*Follow the link for a detailed answer
1 mark for basic answer
2 marks for more detailed answer*



7c. The diagram opposite shows five important measurements that must be considered when setting up a computer workstation.

For each of the labelled dimensions, explain why it is important. 5 x 2 marks

MEASUREMENT 'A':

MEASUREMENT 'B':

*1 mark for basic answer
2 marks for more detailed answer*

Follow the link for sample answers.

MEASUREMENT 'C':

MEASUREMENT 'D':

MEASUREMENT 'E':

8. This question relates to environmental issues

8a. Explain each of the following environmental terms. **3 x 2 marks**

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/prddes1/lifecy1.html>

Sustainability:

*Follow the link for a detailed answer
1 mark for basic answer
2 marks for more detailed answer*

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/prddes1/upcycling1.html>

Upcycling:

*Follow the link for a detailed answer
1 mark for basic answer
2 marks for more detailed answer*

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/prddes1/susenv1.html>

<http://www.technologystudent.com/joints/sustain1.html>

Sustainability:

*Follow the link for a detailed answer
1 mark for basic answer
2 marks for more detailed answer*

TO HELP YOU ANSWER THIS QUESTION Follow the link below.

<http://www.technologystudent.com/prddes1/qual1.html>
<http://www.technologystudent.com/prddes1/qual2.html>
<http://www.technologystudent.com/prddes1/quality1.html>

Designers need an understanding of Quality Control and Quality Assurance

9a. What is meant by the term Quality Assurance? 4 marks

*Follow the link for a detailed answer
1 - 2 marks for basic answer
2 - 4 marks for more detailed answer.*

Teacher discretion regarding marks awarded for level of detail.

9b. What is meant by the term Quality Control? 4 marks

*Follow the link for a detailed answer
1 - 2 marks for basic answer
2 - 4 marks for more detailed answer.*

Teacher discretion regarding marks awarded for level of detail.

10. This question is concerned with production methods.

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/joints/scalep1.htm>

http://www.technologystudent.com/joints/revcard_contp1.html

http://www.technologystudent.com/joints/rev_batch1.html

10a. What is the difference between Continuous Production and Batch Production? Include an example of a product manufactured by each system. 4 marks

Follow the link for a detailed answer

1 - 2 marks for basic answer - without an example.

2 - 4 marks for more detailed answer.

for marks 2 - 4 the pupil must clearly understand the difference between the two systems and include an example

Teacher discretion regarding marks awarded for level of detail.

11. A common hazard, its risk level and associated controlled measure(s) are written in the table below. Describe two hazards, their risk levels and control measures, for a workshop. Use the blank tables for your answers. 2 x 4 marks

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/prddes1/healthandsaf1.html>

<http://www.technologystudent.com/prddes1/helf2.html>

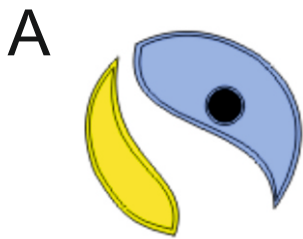
HAZARD	RISK - LEVEL	CONTROL MEASURE(S)
<p><i>Possibility of sharp, extremely hot steel 'swarf', flying at high speed in the direction of the operator.</i></p>	<p><i>Medium level possibility, due to the physical properties of sheet steel.</i></p>	<p><i>Fit Guard. Ensure guard is in position. Goggles supplied. Foot stop for emergency. Staff training, so that drilling is controlled correctly by the operator and the risks are understood. Appropriate protective clothing provided.</i></p>
HAZARD - 1	RISK - LEVEL	CONTROL MEASURE(S)
	<p><i>1 mark for correctly identified hazard</i></p> <p><i>1 mark for correct risk level (teacher discretion required)</i></p> <p><i>up to two more marks for the control measure (teacher discretion required)</i></p>	
HAZARD - 2	RISK - LEVEL	CONTROL MEASURE(S)
	<p><i>1 mark for correctly identified hazard</i></p> <p><i>1 mark for correct risk level (teacher discretion required)</i></p> <p><i>up to two more marks for the control measure (teacher discretion required)</i></p>	

This question is focussed on materials and also symbols.

TO HELP YOU ANSWER
THIS QUESTION

<http://www.technologystudent.com/despro2/drink7.htm>

12. Three important symbols are seen below. Complete the table by adding the symbol letter to the correct description. 3 marks



LETTER	DESCRIPTION
	Displayed on a product it means that the manufacturer/retailer has agreed to the 'British Toy and Hobby Associations' Code of practice. It is a consumer symbol that represents the manufacturers promise to conform to all relevant safety information.
	This means that the contents of the package has been produced in the Third World and that the producer (ie. the farmer) has received a fair and realistic price. subsidises.
	The product inside the package, has been tested to European safety standards. The symbol is normally applied to non-food products such as electronic products or toys. However, it may still be applied to the packaging, as a reference to the package itself being safe.

Follow the link for the answer.
1 mark per correct answer