

Examiners' Report

June 2016

GCSE Design & Technology: RMT
5RM02 01

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Introduction

The format of the paper is very familiar now to candidates and centres. It is encouraging to report that centres appear to be using past papers and previous reports to support and improve their teaching and candidates' learning.

On the whole candidates continue to improve in many areas. They respond to the longer written questions better and various methods are adopted when responding to the design question.

There are still a large number of candidates who are writing too much outside of the space provided on the paper and are using additional sheets. There is sufficient space provided on the paper for candidates to be able to communicate fully and still be able to score full marks.

Question 1 (a)(i)

This question was well answered with the large majority of candidates giving the correct response.

Question 1 (a)(ii)

The flat bits use was not done well by many candidates. Too many candidates thought it was used for marking out or that it could be used in any number of materials.

Question 1 (a)(iii)

Despite the name of the tool being given as a rasp (and **not** a file), the overwhelming number of responses observed referred to it being used to file wood, metal or plastic.

Question 1 (a)(iv)

Many candidates were able to name some kind of marking out tool, but only a limited number were able to correctly identify the tool shown as a mitre square.

Question 1 (b)(i)

This type of question is recall in relation to being able to name two different properties of stainless steel. A good number of candidates were able to name at least one property with hard or hardness being the most commonly seen response.

Question 1 (b)(ii)

A good number of candidates were able to correctly identify one risk associated with welding, with burns or damage to eyes being the most commonly seen correct response. Candidates need to ensure that they focus their responses in questions like this to the task, i.e., welding, and not simply focus on general Health and Safety issues.

Question 1 (b)(iii)

This question was a "Describe" type question and as such it required candidates to make a point and then develop it to say why or what the benefits or consequences are.

A good number of candidates were able to make a comment about the process of laser cutting being accurate or components being identical. Some were able to go on and develop their response but many candidates were not able to fully identify the benefits or consequences.

When faced with this type of question, candidates should try and use connectives such as 'which means' or 'therefore'. This means they could develop their answers, giving themselves the best possible chance of securing the second mark.

Question 1 (c)(i)

This question was a test of factual knowledge about the classification of polymers. This question was not completed well by a large proportion of the cohort.

Question 1 (c)(ii)

This question asked candidates to identify which type of manufacturing process would be used to make the clear acrylic tube of a fixed cross section. A large majority of candidates were not able to correctly identify the process as extrusion. The most common incorrect response observed was injection moulding.

Question 1 (d)

This was an 'Explain' type question which is similar in structure to the aforementioned 'Describe' type question.

Each single 'Explain' is worth 2 marks, with two explanations being asked for a total of 4 marks on offer.

(d) Explain **two** advantages of using solar energy to power the garden light. (4)

- 1 Better for the environment as there are no greenhouse gases produced when (working) using the light. All green renewable energy.
- 2 Saves the user money as they do not need to pay for a power supply. Eg batteries or mains supply.



ResultsPlus Examiner Comments

The candidate here has made two good correct points, one about no greenhouse gases being produced, and one about not having to pay for the power to be supplied.



ResultsPlus Examiner Tip

In this instance the candidate made appropriate connections and as such they were awarded full marks.

Question 2

The design question is now very well established and candidates continue to improve with their level of response. The question requires two different designs to be proposed in response to a set of specification points.

It is worth noting at this stage that it is not sufficient for candidates to simply label their solutions and say 'sit on a flat stable base' or 'allows for the postcard to be easily removed' without saying how or why. Such candidates will not be credited for this type of response. It is important that they annotate their work to say how such points are achieved.

Question 3 (a)(i)

This is another question where candidates need to be recalling knowledge about a specific type of material within a given context, in this case a chair.

Two properties of ash were asked for, and most candidates were able to correctly identify one, the most common response seen was 'being tough'.

Question 3 (a)(ii)

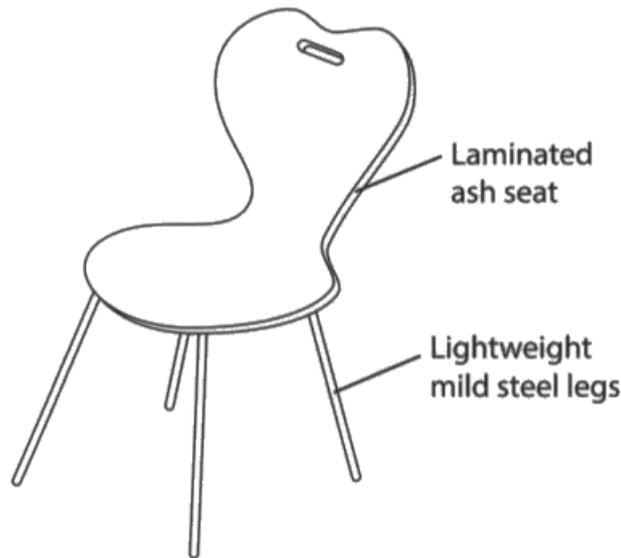
A description was required here as to why ash was a better choice of material for the laminated chair rather than mild steel.

On the whole, this question was not well done. Many candidates made reference to mild steel not being able to be laminated. When candidates did score marks, it was most commonly related to the fact that ash was more flexible or lighter than steel. In these instances, candidates did not fully go on to develop their responses to say why these points were appropriate.

Question 3 (b)

This question was completed quite well with a good number of candidates being able to identify one reason for applying a coat of varnish, the most common response being to protect the chair / timber.

13 The drawing below shows a chair made from ash and mild steel.



(a) (i) Give **two** properties of ash that make it suitable for the laminated seat.

(2)

- 1 It is very strong
- 2 bonds well with materials such as glue.

(ii) Describe **one** reason why ash is a better choice of material than mild steel for the laminated seat.

(2)

Because ash can be shaped easier than mild steel, therefore it is easier to manufacture.

(b) The ash seat is finished with a coat of varnish.

Describe **one** reason why the ash seat is finished with a coat of varnish.

(2)

So that it has a nicer finish
So that it looks more appealing to the user.



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Examiner Comments

The candidate has given a correct point and they have gone on to say what the benefits are. In this instance they noted that the varnish finish would make it look nice and went on to say that it would appeal to the user.



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Examiner Tip

It is important here with this type of question that the points made are appropriate. In many responses seen, candidates made comments about the varnish stopping the wood from splintering, which is not correct.

Question 3 (c)(i)

This question relates to how the selected product is successful in meeting the specification points given.

(c) Explain why the seat is successful in meeting the following specification points:

(i) easy to stack

(2)

Ash is light weight so it
makes it easy to stack.



ResultsPlus Examiner Comments

There are always a number of reasons why the products are successful in meeting the criteria stated but it is important that candidates try to select the most obvious or natural reasons.



ResultsPlus Examiner Tip

This is an 'explain' type question and as such it requires a point to be made and then explained. In this case the candidate has correctly identified the fact that ash is lightweight which is correct but they simply went on to re-state the question - 'so it makes it easy to stack'. In this situation where a candidate simply restates what was given in the question, no marks can be awarded.

Question 3 (c)(ii)

The same applies here from the previous part question 13ci, in that this is an 'explain' type question.

(c) Explain why the seat is successful in meeting the following specification points:

(i) easy to stack

(2)

Making the seat this shape allows it put another same chair on top because of the shape of the seat and legs.

(ii) easy to move.

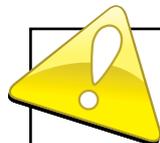
(2)

Ash is light weight, and the seat has a carrier just on top which makes it simple to put your hand through and pick up the chair.



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Examiner Comments

Many candidates made reference here to the fact that the materials were lightweight or that there was a handle in place.



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Examiner Tip

In this example you can see that the candidate has noted the fact that there is a handle but they went on to say that it was simple to put your hand through and pick up the chair, rather than to restate the question. As such this response scored 2 marks.

Question 3 (d)

There was a full range of marks scored here. Candidates have improved their response style by writing in full sentences and making good comparisons rather than merely compiling lists of points and observations.

It is worth noting that the question is not asking candidates to make a final judgement as to which product they prefer or would buy.

Similarly, it is also worth restating that if candidates do not evaluate the product with reference to the two stated requirements, in this case form and user requirements, they will not be awarded any marks.

Question 4 (a)

This was quite a straightforward question which asked for two finishes that could be applied to the aluminium.

Most candidates were able to score one of the two marks on offer with the most common response being paint. However, many candidates gave two different types of paint or suggested that the aluminium could be galvanised or plated rather than being anodised.

Question 4 (b)

This question was not completed at all well. There have been similar questions or part questions on previous papers and as such it was hoped that centres might have taught this and candidates learned it better than we saw.

In basic terms it should have been straightforward recall. It was evident where centres and candidates had covered this as candidates scored all 3 marks available.

Question 4 (c)(i)

In general terms this question was poorly done along with the remaining questions on casting.

Very few candidates demonstrated any knowledge of what a split pattern was. Most candidates gave an answer, however they were related to being able to extract the weight once it had been cast.

Question 4(c)(ii)

Another question about the process of casting. Here candidates performed a little better, perhaps because a number have done some pewter casting in their centres.

(ii) Describe **one** reason for including a runner and a riser in the moulding process.

(2)

The runner is for where the basin is poured in and the riser is where any excess air can come ~~above~~ to stop bubbles.



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Examiner Comments

This should have been quite straightforward in many respects, either with the process being demonstrated in centres or watched on You Tube clips online.

In essence candidates simply needed to describe the reason for the inclusion of runners and risers when casting.



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Examiner Tip

The candidate has given a correct description as to why a runner and riser is used when casting and therefore they were awarded both marks.

Question 4 (d)

On the whole, the responses to this question were poor.

In a good number of responses seen, candidates decided to write about the advantages rather than the disadvantages of the process.

(d) Describe **two** disadvantages of sand casting.

(4)

1 It uses a lot of energy to melt the metal - lots of money.

2 New sand has to be packed each time one product is made - time consuming and wasteful.



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Examiner Comments

This response identified two correct disadvantages but only went on to describe one of them and as such they were awarded 3 of the 4 available marks.



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Examiner Tip

Try to make sure that you clearly identify a point and then make it evident with one of the connective words or phrases that you are going to use to describe or explain the benefit.

Question 4 (e)

This question proved to be a real discriminator in that many candidates failed to correctly identify the fact that it was asking about the ways in which mains supplied energy and materials could be minimised during the production as opposed to the design.

Many candidates discussed the issues relating to using different materials, such as steel, with many candidates suggesting it melted at a lower temperature than aluminium and therefore would save energy.

Paper Summary

Based on the performance of this paper, candidates are offered the following advice:

- Candidates should make use of skills and techniques through shorter focused practical tasks.
- Candidates must be secure and confident in their knowledge and understanding, especially in areas such as manufacturing techniques, tools, materials and their associated properties.
- Candidates should be encouraged to go over their design ideas with a pen if they have sufficient time so that the designs are more visible when marking.
- The use of additional sheets should be strongly discouraged for planning or for rough work.

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