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Examiners' Report

June 2010

GCSE Design and Technology 5RM02

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Introduction

This is the first year of this new GCSE specification. We saw a good number of entries for the paper, which of course can be re-sat at the end of year 11. It is also a single tier paper which alleviates the need for centres to make decisions about which tier to enter their candidates for.

Question 11(a) (i)

A good number of correct responses seen with the key phrase being to protect your eyes.

Question 11(a) (ii)

Candidates confused the try square with the ability to draw a straight line as opposed to the ability to check or mark out a right angle.

Question 11(a) (iii)

Not done very well by many candidates. The response key was seen on many occasions but was not correct. Most candidates will probably have used this item but failed to name it correctly.

Question 11(a) (iv)

Some correct responses were seen but some confused responses such as tappers or file were also seen.

Question 11(b)

Many candidates correctly stated that oak is a hardwood but it is not a property.

Question 11(c)

A good number of correct responses were seen but the most popular incorrect responses were butt or knock down fittings.

Question 11(d)

This question was very well answered with a good range of responses seen.

Question 11(e)

Cheap and light were the most common responses seen, both worthy of 1 mark each, but candidates did not fully explain their answers and so therefore limit the marks they can access.

(e) The drawer bottom is made from plywood.

Explain **two** advantages of making drawer bottoms from plywood rather than oak.

1 plywood is cheaper than oak so helps cut the cost of the product ⁽⁴⁾

2 plywood does not involve cutting down a tree as it can be made from recycled wood.

Question 11(f)

This question was generally well done with the price/cost and stock numbers being the most popular amongst a good range of correct responses.

Question 11(g)

Candidates identified a good range of advantages of using the internet but they did not fully describe their answers in order to score the second mark available. Key words such as 'which means' and 'therefore' are good triggers for candidates to use since they lead them on to giving a further justification.

(g) Describe **two** advantages, to the manufacturer of the desks, of using the internet to market its business.

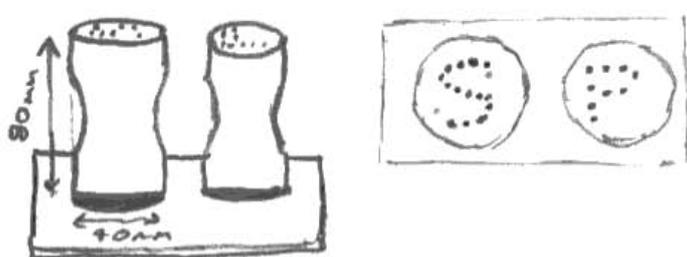
1 The internet is very broad ^{and versatile}, so every one ^{will} see it, ⁽⁴⁾
more so the majority of the world use the internet so ~~marki~~
marketing their business on the internet is very ~~versatile~~ and smart.

2 Marketing their business using ~~their~~ the internet will spread very
quickly because the information is passed on very quickly in the
world wide web and it is cheaper to advertise on the internet.

Question 12

In this question candidates are asked to generate two design solutions to a set of specifications.

Whilst a good number scored well for their first solution, they did not fully resolve their second solution differently and therefore lost marks. Resolving the second solution differently constitutes using different materials and processes for example. It should be noted that named materials must relate to processes stated unlike “stainless steel, vacuum formed”.

<p>Design idea 1</p> <p>The salt and pepper can easily come out from the holes in the top of the pots.</p>	<p>The pots are made from aluminium sheet pressed into two halves and welded together.</p> 	<p>You can identify Salt from the 'S' shape holes in the top and 'P' for pepper.</p> <p>They are easy to refill as the bottom is near ^{an ABS} cap with a leg to pull them open with.</p>
<p>The aluminium is easy to clean as it does not rust so can be put in the dishwasher.</p>	<p>They are held together as a pair by a small tray made of MDF with two holes drilled in to allow them to be slotted in.</p>	<p>The pots are easy to grip as they dip in the middle to allow it to be firmly gripped (8)</p>

Design Idea 2

The pot is made from stainless steel tube. One end is lathed to make a smaller ring to allow the cap to slot on.

The two pots are held together by magnets put on the side of the pots.

The steel is in a cylinder shape that is easy to grip.

The caps are vacuum formed acrylic. They snap onto the top and can be easily pulled off.



They are easy to clean as the plastic and steel is dishwasher proof.

They can be easily identified by the names SALT and Pepper stamped on the side.

They can be refilled by pulling the cap off and pouring salt/pepper in.

(Total for Question 12 = 16 marks)

Question 13(a)

Here clear/transparent and waterproof were the most popular responses seen.

Question 13(b)

This question was poorly answered by most candidates since they generally did not acknowledge the tapered shape or the fact that it was a simple hollow shape.

Question 13(c) (i)

Many popular responses with large switch and easy to find in the dark but candidates on the whole did not go on to fully explain or clarify the reason why the torch was easy to turn on and off.

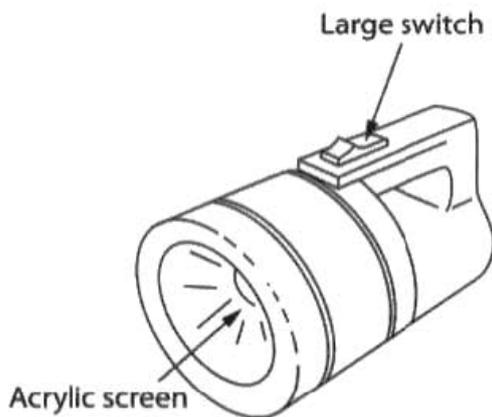
Question 13(c) (ii)

Large handle and fits the user's hand were popular responses with some candidates being able to mention the fact that the torch would be balanced in the hand.

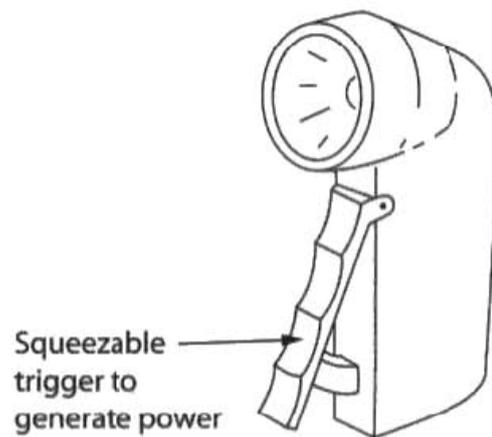
Question 13(d)

Although this was a new question it was fairly well answered by most candidates. There was some confusion over the size of the torches drawn which raised comment about the ability of one torch to light up more area than the other. The other confusion was that the torch with the trigger needed to be held in constantly to switch it on or that it could accidentally be switched on if put away incorrectly. Some commented on the weight of the torch and how that could be tiring. There were some answers highlighting the position in which the torch needed to be held ie, one with hand down by the side, the other holding the torch upright and the advantages/disadvantages of these positions. There were a few lists either as bullet points or comparison tables. There were also many candidates who drew conclusions as to which torch was the best even though this was not asked for. The use of technical vocabulary varied greatly as did the use of spelling, punctuation and grammar.

*** (d) The drawings below show two different types of torch.**



Torch A



Torch B

Evaluate torch A compared with torch B.

(6)

Torch B uses renewable sources of energy as you generate your own power to light it whilst torch A doesn't.

Torch A can be easily turned off using the switch whilst torch B will run until it runs out of power.

Torch A is more convenient as you only

have to turn it on and off while torch B has to constantly be squeezed.

Torch A would be heavier as it has a very large bulb and uses batteries.

Torch B is held in a more uncomfortable position as it is easier to point the light source such as Torch A.

(Total for Question 13 = 16 marks)

Question 14(a)

Strong was a popular answer but is not an acceptable term or property at this level, tensile, shear and compressive strength however are all acceptable and relevant to the product.

Question 14(b)

Generally well done by many candidates with preventing rust, improving grip and aesthetics being amongst the most popular responses.

Question 14(c)

This part question was not particularly well done with many candidates not knowing much about the process of electroplating. Many candidates confused the process with the fact that it would stop users of the scissors being electrocuted if they cut through a wire.

Question 14(d)

Quite well done by a good number with specific mention of snap tools and ball pein hammers. However, many also simply described drilling a hole and then using bolts or screws.

Question 14(e)

This question was fairly well answered by candidates. Where it was poor it was really off the mark and comments ranged from protecting habitat to deforestation and the need to replant three trees for each one that is cut down. There was a lot of reference to the Kyoto agreement but not much expansion in relation to the question. The most common answers related to recycling materials usually the steel as one point and plastics as another. This was sometimes confused with saving scrap and waste products from manufacture. Renewable sources of energy, reduction of packaging and efficient use of machinery were also featured in some responses but again little extension of the explanation. Some mention of using local resources and local factories to cut transportation. There were also a lot of do not dip coat the handles or stop plating the blades to cut emissions and even some suggestions to stop making the article.

*** (e) Care of the environment is an increasing concern for society.**

Discuss the ways in which the environmental impact could be reduced during the manufacture of the scissors.

(6)

In the manufacture of the scissors, ~~they~~ they could use recycled metal/mild steel, to make the blades, which would reduce landfill and ~~stop~~ reduce the CO₂ emissions from the mining vehicles and ~~the~~ transportation. As the ~~the~~ coated handles are made from plastic, it has to be extracted out of the ground under the sea, as crude oil, etc. If you recycled ~~out~~ other plastics, already used once, then it would reduce ~~the~~ the ~~emissions~~ emissions created by the factories, going into the atmosphere. If this carries on it will damage the natural environment of the world. The scissors could come with an easy way to recycle them, to further cut down pollution. They could use more of an environmentally friendly form of plastic that uses biomass, etc. Mild steel could be recycled from ~~the~~ car body parts after scrapping.

Centres need to continue to work hard at teaching candidates specific knowledge outlined in the specification. Candidates need to be clear about properties of materials in relation to unseen and unfamiliar products within the context of the examination paper. They also need to be able to apply their knowledge and understanding to a range of unfamiliar products where they need to make decisions about what is relevant in the context.

In the design question, candidates need not write lots of notes but clear simple annotation to help convey their ideas such as what material and process has been used. It is also worth noting at this stage that the material and process should match such as vacuum formed acrylic rather than blow moulded stainless steel.

In both question parts where candidates are expected to show QWC, quality of written communication, they need to write with greater clarity and expression. They should present a set of well reasoned, balanced points, advantages and disadvantages which are fully explained or justified. A simple list of bullet points or a table of points without showing a detailed understanding of the issues will not be able to access the full range of marks.

Grade Boundaries

Grade	Max. Mark	A*	A	B	C	D	E	F	G	U
Raw mark boundary	80	56	48	40	33	29	25	22	19	0
Uniform mark scale boundary	80	72	64	56	48	40	32	24	16	0

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