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Examiners' Report

June 2013

GCE Design and Technology Product Design 6RM02 01

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June 2013

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Introduction

This is now a well-established examination and as such centres generally prepare candidates well for the requirements of the paper. There is clear evidence of good examination technique being both taught by centres and used by candidates in their responses. Having said that there are still a significant minority who throw more than a grades' worth of marks away due to not reading questions carefully enough, their responses showing detailed knowledge, but which score zero due to it not being relevant to the question asked. This year also saw a significant surge in vague responses lacking sufficient detail to gain marks. The most common form of this focused on tasks being 'easy', of which the following were very common.

2(b) Centre punching - it makes it **easier** to drill the hole.

2(c) Cutting fluids - it makes it **easier** to drill the hole.

3(ai) Wing nut - it makes it **easier** to use.

4(a) UF plug - UF is **easy** to shape.

4(c) EL lighting - EL lighting is **easy** to use.

5(c) Glue gun - it's **easy** to apply.

6) Laser cutting - it's **easy** to use.

Although most of the above may be true, this level of response on a Level 3 examination does not show a sufficient depth of knowledge to be worthy of marks. However, where candidates went on to give a specific point as to why it was easier, then a mark was awarded. For example, 2(b) Centre punching - it makes it easier because the drill point will locate in the dent and not slip across the surface (1). It may be useful to show this report to candidates in order to re-enforce that specific detail is required in responses that shows real knowledge, rather than vague statements.

Question 1(a)

A straight forward question and the most common correct answers were deciduous, broad leaves and trees which lose their leaves seasonally. Less able candidates mainly focused on generalisations, such as longer growth time, closer grain and strength, none of which are reasons for the classification.

Question 1(b)

A well answered question with most candidates scoring 4+ marks. Strength, toughness, hardness and durability were common responses although the justifications were frequently mixed up. Other popular responses included easily worked, finishes well and good aesthetics. These points tended to be less well explained with candidates often just repeating the point again in different words, so only gaining 1 mark.

Figure 1 shows a picture of a toy made from beech.

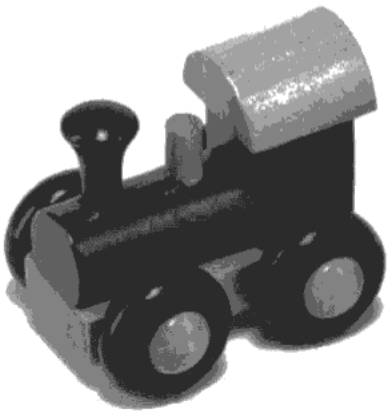

Figure 1

(b) Explain **three** reasons why beech is a suitable material for the toy.

(6)

1 Beech is aesthetically pleasuring meaning it will appeal to the client.

2 Beech can withstand indentation meaning it has a good property of hardness.

3 Beech is a tough material meaning it can withstand sudden impact

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Examiner Comments

A well structured answer with three clear points made and each justified, although note that the second reason states the justification first.

Figure 1 shows a picture of a toy made from beech.

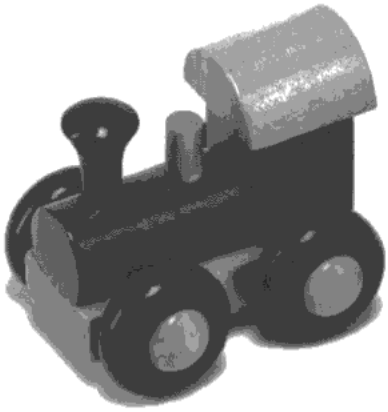

Figure 1

(b) Explain **three** reasons why beech is a suitable material for the toy.

(6)

1 It is easy to work so can be cut or made into many shapes relatively easily.

2 It has good hardness so will be resistant to indentation and abrasive wear.

3 It has an aesthetic surface finish that can be left plain or painted to any requirements.

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Examiner Comments

The first reason in this response makes a point then repeats it again using different words rather than justifying it (1 mark). Unfortunately this is a common mistake. Candidates need to be able to make a point and then justify why this point is relevant to the question. A more able candidate's response would have been that it is easy to work therefore volume production of the toy should be reasonably rapid. The second reason is appropriately justified (2 marks), but the final point is again just a statement without justification. (1 mark), it could have been justified with a statement concerning it being more appealing to children.

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Examiner Tip

Make sure you understand how to justify a point. The use of the word 'therefore' is a good place to start.

Question 1(c)

Most candidates scored a single mark by sketching a correctly cupped plank, but few gained the second mark showing the correct direction of cup with the end grain lines straightening. This results in the edges bending downwards rather than upwards.

Figure 2 shows a plank of solid timber.

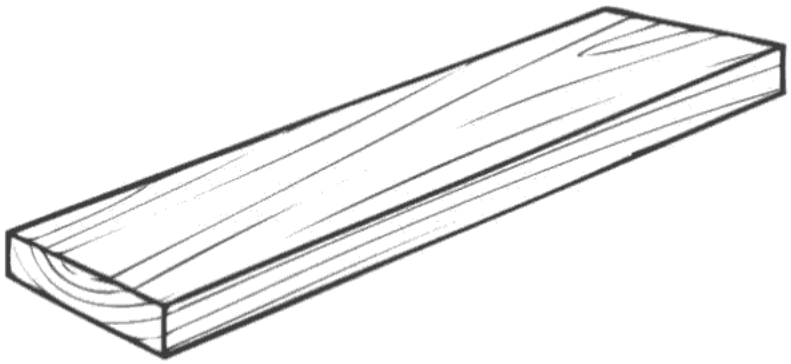
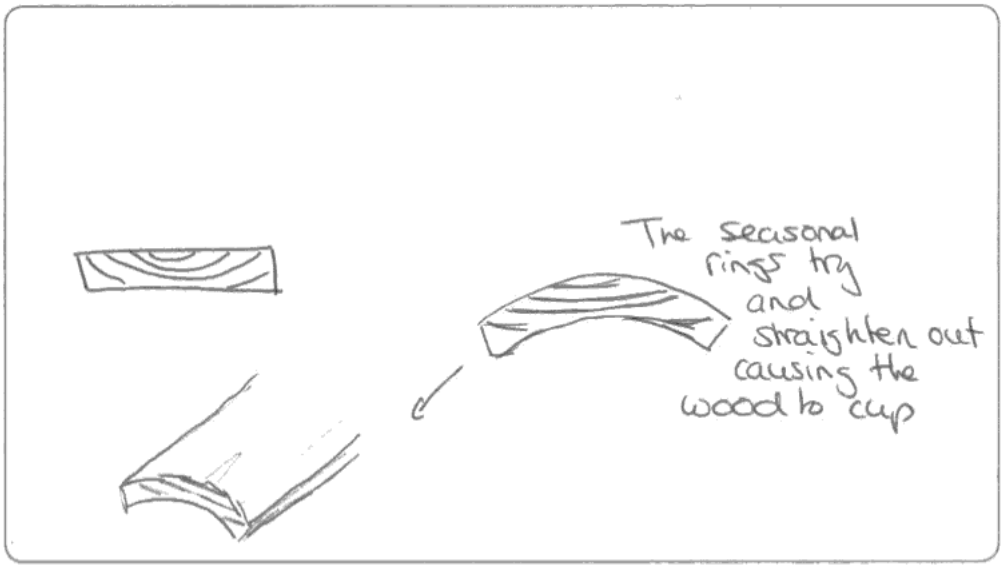


Figure 2

(c) Draw a diagram to show how the plank would 'cup' if it was not seasoned carefully.

(2)



(Total for Question 1 = 9 marks)

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Examiner Comments

A fully correct answer showing a cupped plank with the grain straightening. The use of additional sketches in both 2D and 3D really does show that the candidate has a clear understanding.

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Examiner Tip

Sketching in both 2D and 3D helps communicate your understanding clearly and there generally is sufficient time available.

Figure 2 shows a plank of solid timber.

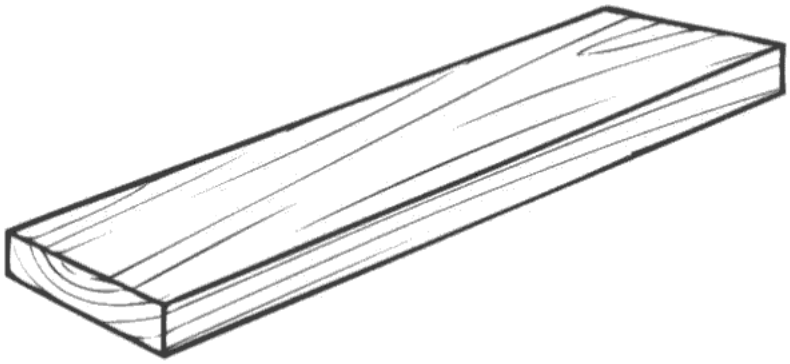

Figure 2

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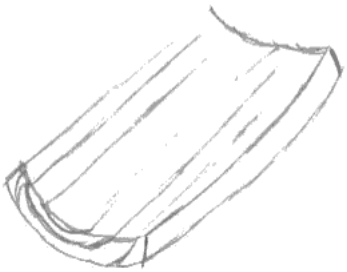


(Total for Question 1 = 9 marks)

ResultsPlus
Examiner Comments

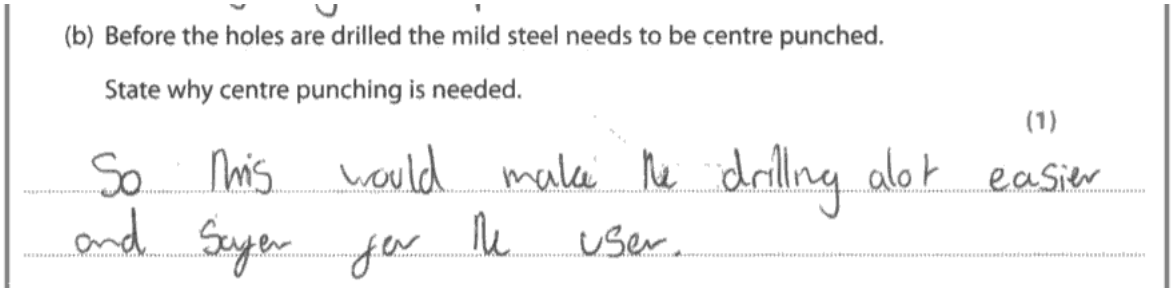
This response gained only 1 mark as although the cup shape is shown, it is shown with the gain lines bending more rather than straightening, therefore only shows a partial understanding of how the plank would cup.

Question 2(a)

Straight forward question with most candidates scoring 2+ marks for correctly identified PPE. Apron, gloves, safety boots and hair bands were the most frequent answers. A minority of candidates still stated goggles, which was invalid as they are given in the question, or identified control measures other than PPE, such as guards, stop buttons, etc.

Question 2(b)

Well understood situation which clearly showed candidates experience of drilling metals. Many clearly stated responses given. Having said this, a few focused their response on aiding marking out and identifying the centre point rather than guiding the drill. Responses that simply stated that it makes drilling easier were regarded as too vague to gain a mark.



(b) Before the holes are drilled the mild steel needs to be centre punched.

State why centre punching is needed.

(1)

So this would make the drilling alot easier and safer for the user.

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Examiner Comments

This response, although in a general sense may be correct, it does not show sufficient understanding to be worthy of a mark.

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Examiner Tip

Candidates need to make sure that they put specific knowledge into their answers rather than general statements.

Question 2(c)

(c) Give **three** reasons why cutting fluids would be required when drilling holes in the 10 mm thick mild steel plate.

(3)

1 A lot of heat builds up because of friction. The cutting fluids cools it down.

2 So the finish of the hole is smooth as the fluids lubricate the drill bit helping for a cleaner hole.

3 Used so the drill bit doesn't become blunt as fast.

(Total for Question 2 = 7 marks)

ResultsPlus
Examiner Comments

A good answer gaining the full 3 marks. Three correct points are clearly stated.

(c) Give **three** reasons why cutting fluids would be required when drilling holes in the 10 mm thick mild steel plate.

(3)

1 for the drill not to react and damage the mild steel plate.

2 smoother drilling process.

3

(Total for Question 2 = 7 marks)

ResultsPlus
Examiner Comments

An incorrect first response followed by a correct second response which is just enough to gain a mark, although it is unclear whether the 'smooth' refers to lubricating the cutting action or the quality of surface finish the process leaves. Either would have been correct in this case. The third reason is left blank.

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Examiner Tip

Full sentences should always be used rather than short phrases or single words, as meanings can be unclear. You should also never leave a response blank if you can help it.

Question 3(a)(i)

A large number of responses simply stated that it makes the nut easier to use. This response is too vague. A hexagonal nut is easier to use, in that you can get it tighter with far less effort using a spanner than you can a wing nut. A self-locking nut is easier to use as only a single spanner is needed to lock it rather than a pair if a second lock nut is used. Candidates need to be specific and communicate their knowledge clearly. Responses that correctly identified that the wing nut can be used by hand, with fingers or without tools gained the mark.

Question 3(a)(ii)

Few candidates understood that a spring washer was a locking device often used in situations which are subject to vibration. Most responses incorrectly focused on the benefits of plain washers, in that they spread the load or protect the surface of the material.

Question 3(b)

A wide range of responses here, with many excellent sketches showing a clear understanding through to poorer sketches showing little knowledge. The most common response showed a countersunk head wood screw which gained a single mark for the shape of the head. To gain the second mark candidates needed to show a threaded parallel shank with a flat end rather than a point.

(b) Draw a countersunk head machine screw in the box below. **(2)**

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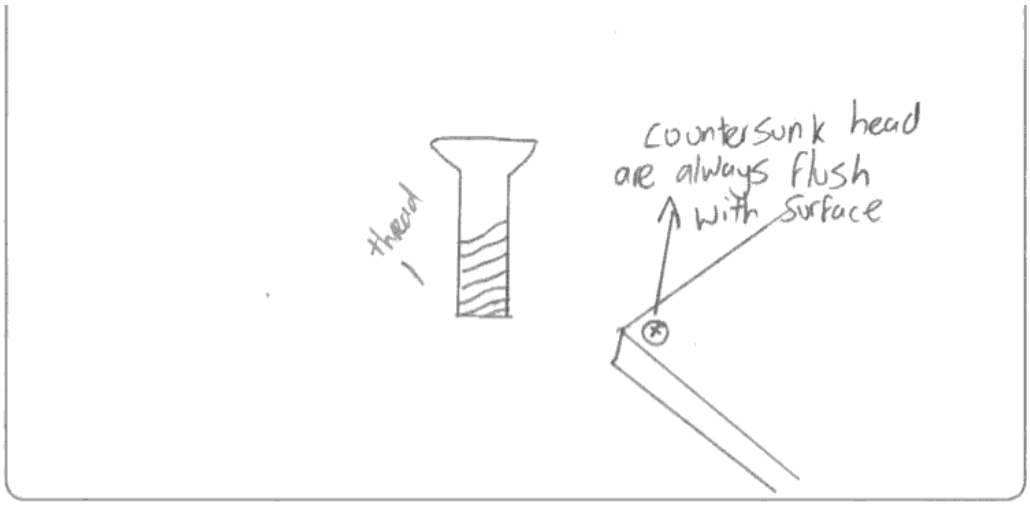
Examiner Comments

This response, which was very common, shows a typical woodscrew. These responses gained a single mark for the countersunk head.



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Examiner Comments

A good answer, gaining the full 2 marks. The sketch is not the highest quality but it is certainly clear enough to communicate the correct features.

Question 3(c)(i)

This is undoubtedly one of the weaker areas in candidates' knowledge with many responses showing a correctly sketched V-thread, but few gained further marks. The most common response was to confuse this thread with that of the thread on a woodscrew. A minority were able to identify correctly either the buttress or the acme thread profile, but very few correct characteristics were given. A significant number of responses were left blank.

(c) Three common thread forms used in engineering are:

- V-thread
- Buttress thread
- Acme thread

Choose **two** of the thread forms listed above.

Draw a diagram to show the profile of each thread and give **one** working characteristic which results from its specific shape.

(2)

(i) Chosen thread form 1 V - thread

Working characteristic

Self cutting - can be screwed into e.g wood and cut its way through the material.

(2)

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Examiner Comments

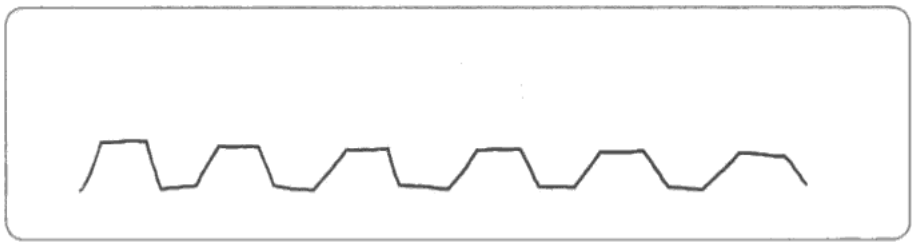
This was a typical response showing a clear V thread which gained 1 mark. The explanation refers incorrectly to the thread characteristics of a woodscrew rather than an engineering V thread.

Question 3(c)(ii)

See comment for 3(c)(i).

(2)

(ii) Chosen thread form 2 Acme



Working characteristic

Very strong hold and are only usually used on large screws + bolts

(Total for Question 3 = 8 marks)

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Examiner Comments

A fully correct response with a clear profile drawn and a valid characteristic given. Although the end of the response refers to its use on a bolt, which is unlikely, this does not detract from the correct characteristic of strength already identified.

Question 4(a)

Generally a well answered question with most candidates scoring 3+ marks. The most common answers focused on UF being a good insulator of both electricity and heat, followed by clear explanations of why these properties were valuable. Mechanical properties of strength, toughness and hardness with explanations, were often intermingled but were awarded marks appropriately. Responses which stated that UF is cheap were not awarded as it is not a particularly economic polymer to either purchase or process.

4 Figure 4 shows two views of a mains plug. The body of the plug is made from urea formaldehyde.

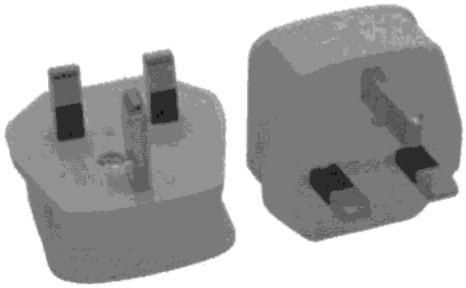

Figure 4

(a) Explain **three** reasons why urea formaldehyde is a suitable material for the body of the plug.

(6)

1 Its can be easily formed using a mould, the mould can then be used again producing the plugs at minimum cost per unit.

2 Its an insulator so won't conduct electricity.

3 Its durable so should be able to withstand daily wear and tear, any drops etc.

ResultsPlus
Examiner Comments

This response gained the full 6 marks for three justified points, although the second response is a little brief.

4 Figure 4 shows two views of a mains plug. The body of the plug is made from urea formaldehyde.

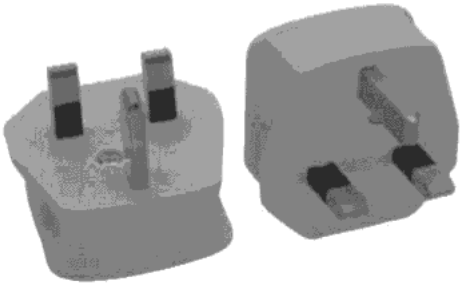

Figure 4

(a) Explain **three** reasons why urea formaldehyde is a suitable material for the body of the plug.

(6)

1 It doesn't conduct electricity, so it is safe to use around anyone as they won't be harmed.

2 It is easy to produce, This mean you can produce lots of them. good for batch or mass production

3 ~~more~~ cost effect, it is easy to manufacture ~~make~~ and produce. won't have to pay much to produce.

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Examiner Comments

The first reason gains 2 marks for a point with a relevant justification. The second simply states that it is easy to produce. This is a general statement and does not show sufficient understanding of how it could be shaped, e.g. moulded or formed. Having said this there is a valid justification, so a single mark was awarded. The third reason was not accepted as UF is not a particularly cheap polymer.

Question 4(b)

A full range of responses was again seen here with many candidates clearly understanding the smart property of photochromic paint and communicating it clearly gaining both marks available. Many candidates stated simply that the reaction was to 'light' rather than 'UV' light or 'sunlight', and others confused it with the thermo-chromic effect, gaining a single mark for recognition of the colour change. There was also a wide range of incorrect responses ranging from 'light reactive quick drying paint' to 'electric paint'.

(b) Photochromic paint is a smart material.

Explain the 'smart' action of photochromic paint.

(2)

When UV light is shined onto the paint it changes colour, once the UV light source is removed it returns back to its original state.

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Examiner Comments

An excellent response gaining the full 2 marks with both the input and output clearly identified.

(b) Photochromic paint is a smart material.

Explain the 'smart' action of photochromic paint.

(2)

photochromic paint, the colour changes due to different lighting or temperature.

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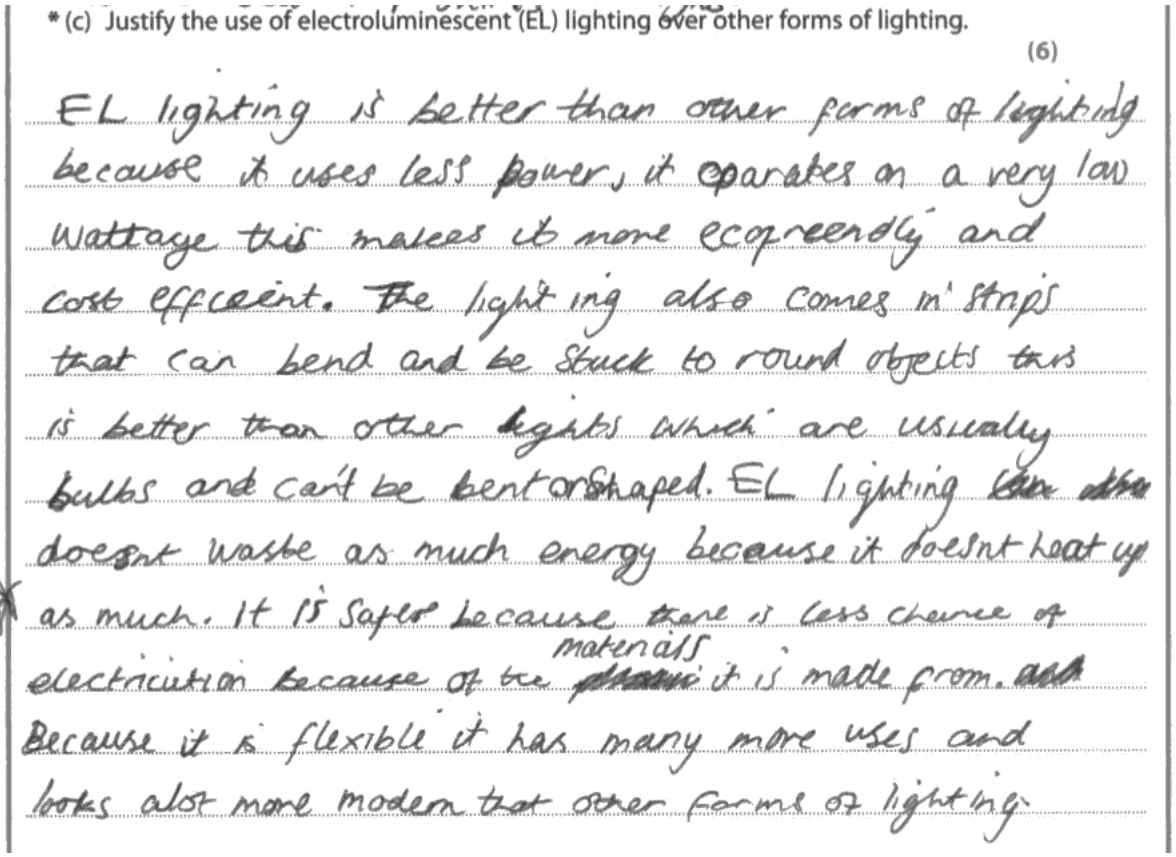
Examiner Comments

This response gained a single mark for recognition that a colour change occurs. Lighting in general will not effect this change and candidates needed to specifically identify that it is UV light or sunlight as an input.

Question 4(c)

Electroluminescent lighting was a challenging topic to all ability levels with many simplistic responses gaining 1-2 marks, but also others gaining 5-6 marks for detailed answers showing a good understanding of this technology. 'Low energy usage' and 'cheap to run' were easily the most popular points, but from this point answers were wide and varied drawing from most of the 20+ points in the mark scheme. A significant minority confused 'glow in the dark' phosphorescent products with this topic and failed score.



* (c) Justify the use of electroluminescent (EL) lighting over other forms of lighting.

(6)

EL lighting is better than other forms of lighting because it uses less power, it operates on a very low wattage this makes it more ecofreendly and cost efficeint. The lighting also comes in strips that can bend and be stuck to round objects this is better than other lights which are usually bulbs and can't be bent or shaped. EL lighting also also doesnt waste as much energy because it doesnt heat up as much. It is safer because there is less chance of electricution because of the materials it is made from. Because it is flexible it has many more uses and looks alot more modern that other forms of lighting.

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Examiner Comments

An excellent response that identifies a wide range of characteristics, and justifies most of them. In this type of question marks are awarded for each point and each justification, so candidates can go on scoring more marks for each point made up to a maximum of 6. This response contains more than six.

* (c) Justify the use of electroluminescent (EL) lighting over other forms of lighting.

(6)

Electroluminescent lighting converts energy into light. It is a very efficient method of producing light and is better than most other forms of lighting. For instance it is more efficient than a standard halogen lightbulb, meaning it needs less electricity/energy to create the same if not more light energy. LED's (Light emitting Diodes) are properly more efficient than electroluminescent light but are mae expensive. This meas that electroluminescent lighting is justifiable over other types of lightins, as it is efficient as well as producing bright light.

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Examiner Comments

This is a very repetitive response where the candidate has identified a point and then keeps repeating it again. The candidate does get a second mark for the reference to other lighting forms being more expensive, giving a total of 2 marks.

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Examiner Tip

Repeating points will not gain additional marks. Make a point and move on. Ensure you give at least as many different or justified points as there are marks available.

Question 5(a)

In this question many candidates gave epoxy resin as a suitable adhesive for acrylic and failed to score a mark. The question specifically states a chemical bond is required and epoxy resin does not chemically attack the surface of acrylic like Tensol and the other adhesives listed in the mark scheme. Hence epoxy resin will give a relatively weak bond. Having said this it was pleasing to see a large number of correct answers.

Question 5(b)

The use of PVA adhesive is well understood with most candidates scoring full marks.

(b) Describe the process of using PVA adhesive to join two pieces of wood.

PVA would be applied on both joi
areas of the wood, and as it drie
soaks into the wood, and the chem
bonds between molecules will harde
This is what holds the two peice
wood together.

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Examiner Comments

This is a miss-directed response where the candidate has explained how the adhesive bonds the material rather than how the adhesive is used. Having said this, a single mark was awarded for applying the adhesive. The reference to 'dries' is insufficient as there is no indication of a drying period, it could be instant.

(b) Describe the process of using PVA adhesive to join two pieces of wood.

(3)

PvA is to be appear to both pieces
OF wood / the wood is then clamped
togeather and left for 24 hours for the
give to cure

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Examiner Comments

A good response, clearly identifying three key parts of the process and gaining the full 3 marks.

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Examiner Tip

Three marks are available here, which means three points need to be made. Make sure the points made are relevant and not a repeat, e.g making the same point twice just using different terminology.

Question 5(c)

Justifying the use of a glue gun seemed to be quite challenging to candidates with surprisingly few gaining the full 4 marks. The most common answer was 'quick setting', with others being drawn from across the mark scheme. Only a limited number of responses recognised that hot glue can stick a wide range of materials. Many responses again used the phrase 'easy to use' which did not gain a mark. Where candidates took this response further stating a specific aspect that made it easier, such as 'it's easier to use because the parts do not need clamping', then a mark was awarded.

(c) Justify the use of hot melt glue when constructing a model out of material off-cuts.

(4)

The glue will creates a quick and easy bond between the off-cut ~~mate~~ material. Hardly any skill is needed, however the user just needs to stay clear of the hot glue as it can be very detrimental to ones skin.

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Examiner Comments

This response gained a single mark for 'creates a quick...bond'. The reference to skill level was not accepted as most adhesives are straightforward to apply, whether from a bottle or a tube and require no less skill than hot glue. The final statement concerning a safety warning, although true is outside the parameters of the question.

(c) Justify the use of hot melt glue when constructing a model out of material off-cuts.

(4)

It can join different materials together. Its quick & easy when sticking little pieces of material together. It does not take long to set at all.

It creates a good strong bond between surfaces.

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Examiner Comments

A good attempt which gained 3 marks. The first for identifying that it can stick 'different materials'. The second was awarded for 'does not take long to set'. It was not awarded for 'quick' as use of the glue gun may not be quick if you have to wait for it to heat up. Again candidates need to be specific and not make short statements. The reference to being easy to stick little pieces, does not gain a mark as although it can stick little pieces, so can most other adhesives, therefore it is not a specific reason for selecting the glue gun. The third mark was awarded for 'strong' as, although hot glue is not known for its strength it is strong enough for most modelling situations, which is the context of the question.

Question 5(d)

The question focus here is on the risks to health from VOC's. The large majority of candidates stayed with this focus and often gained the full 4 marks. Where candidates strayed into other hazards related to the use of adhesives, such as sticking fingers together or getting it on clothing, few marks were gained.

(d) Many adhesives contain volatile organic compounds (VOCs).

State **two** risks to health posed by adhesives that contain VOCs and identify the subsequent control measures required when using them.

(4)

Risk 1

skin irritation, when accedently applied to skin.

Control measure

wear gloves when applying adhesives.

Risk 2

main cause stains or damage clothes.

Control measure

wear suitable apron when in contact with adhesives ~~ect~~

(Total for Question 5 = 12 marks)

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Examiner Comments

This response gained 2 marks for correctly identifying VOC's as an irritant and stating an appropriate control measure. The second risk identified is invalid as it is neither a health risk nor a VOC issue.

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Examiner Tip

Read questions carefully and underline key words, as it helps to correctly focus your answer.

(d) Many adhesives contain volatile organic compounds (VOCs).

State **two** risks to health posed by adhesives that contain VOCs and identify the subsequent control measures required when using them.

(4)

Risk 1

fumes given off when the adhesive is setting.

Control measure

work in a well ventilated area.

Risk 2

risk of fire as some VOCs are ~~highly~~ highly combasuble.

Control measure

keep area free of fire and sparkes, e.g. no ~~matches~~ matches in area.

(Total for Question 5 = 12 marks)

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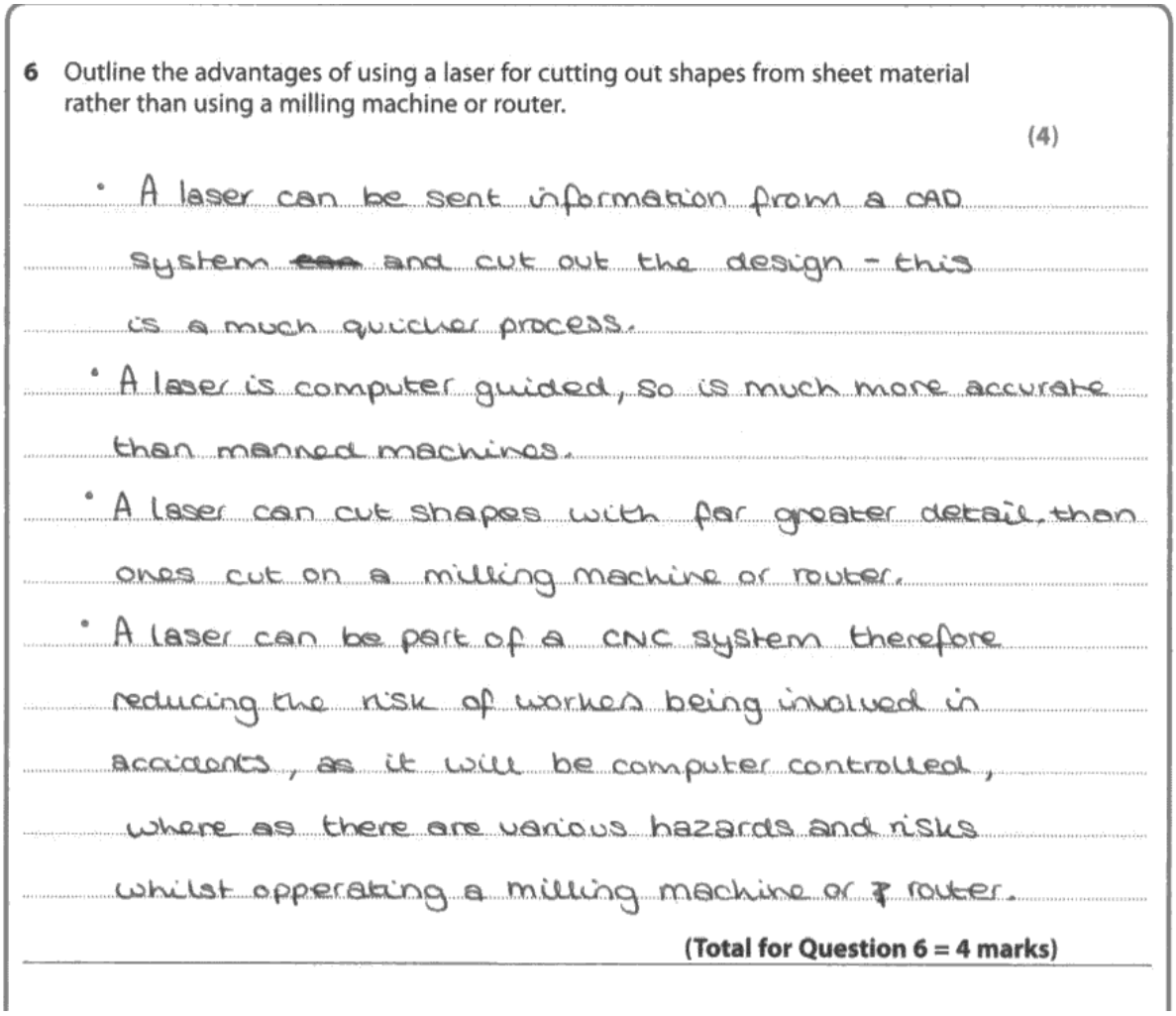
Examiner Comments

This response gained the full 4 marks with two clear risks arising from the use of adhesives that contain VOC's and appropriate control measures.

Question 6

Most candidates scored well on this question, being able to identify three or four benefits of using a laser cutter over a milling machine or router. This type of question has been well used in the past and candidates were able to comfortably hit the common answers related to speed, accuracy, repetitive accuracy, etc. Some candidates also showed a little more insight regarding not having to clamp materials down and there being no swarf to dispose of.



6 Outline the advantages of using a laser for cutting out shapes from sheet material rather than using a milling machine or router.

(4)

- A laser can be sent information from a CAD system ~~eee~~ and cut out the design - this is a much quicker process.
- A laser is computer guided, so is much more accurate than manned machines.
- A laser can cut shapes with far greater detail, than ones cut on a milling machine or router.
- A laser can be part of a CNC system therefore reducing the risk of workers being involved in accidents, as it will be computer controlled, where as there are various hazards and risks whilst opperating a milling machine or ~~f~~ router.

(Total for Question 6 = 4 marks)

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Examiner Comments

A good answer gaining the full 4 marks with four clear points given.

ResultsPlus
Examiner Tip

The use of bullet points can help candidates know whether they have given at least the minimum number of points required.

6 Outline the advantages of using a laser for cutting out shapes from sheet material rather than using a milling machine or router.

(4)

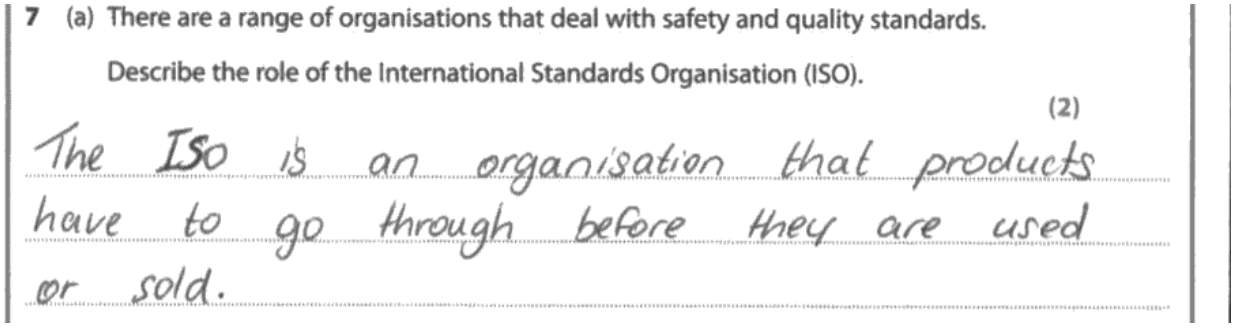
A laser cutter is better because when you are cutting the shapes, you can be more accurate and precise, so that you get an almost perfect result in the sheet material.
If you used a milling machine you ~~could~~ couldn't be as accurate when cutting the material.

ResultsPlus
Examiner Comments

This response gained a single mark for accuracy, which was then stated again from the opposite point of view. The candidate may have thought that they have gained a high score as they have written lot of. It doesn't work like that.

Question 7(a)

Few candidates gained marks concerning the role of the ISO. By far the most common response was to present the ISO as a global police force whose role was to regulate the sale of all products around the world preventing the sale of poor quality or dangerous products. The most common correct response identified their role in setting global standards, but very few understood the voluntary nature of compliance with these standards, nor the benefits of compliance regarding the promoting of quality and safety. As regards setting standards for the global compatibility of products such as DVD sizes and data storage formats, which allow businesses to compete internationally, this was hardly seen at all.



7 (a) There are a range of organisations that deal with safety and quality standards.

Describe the role of the International Standards Organisation (ISO).

(2)

The ISO is an organisation that products have to go through before they are used or sold.

ResultsPlus
Examiner Comments

A typical answer showing no genuine understanding of what the ISO's role is, which gained no marks.

7 (a) There are a range of organisations that deal with safety and quality standards.

Describe the role of the International Standards Organisation (ISO).

(2)

The ISO Set Standards for products such as machines to be made to ~~the~~ and how and what level this has to be done to. most things ~~how~~ ~~Nowadays~~ today have to be done to ISO standards.

ResultsPlus
Examiner Comments

This response shows some understanding of the ISO's role in setting standards which gained 1 mark, but goes little further.

Question 7(b)

For candidates with a thorough knowledge of how quality assurance (QA) systems are put into practice within businesses, this was an opportunity not wasted. More able candidates structured their knowledge carefully by briefly describing the quality checks applied through each stage of designing, raw material sampling, quality control during manufacture and after-sales services. Less able candidates tended to focus on just one or two aspect of QA, in particular quality control within manufacture. Here candidates gave lengthy descriptions of multiple quality tests in order to ensure quality, but failed to score well as often only this single aspect of QA had been explored. Other responses frequently wandered into total quality management practices or advantages of QA systems, also failing to gain marks.

* (b) Manufacturers must have quality assurance (QA) systems in place in order to ensure that customers receive quality products.

Explain the different aspects of a quality assurance system.

(6)

Different aspects of a quality assurance system can be done in different ways. Some companies may have check points throughout their manufacturing process where they check the product when it reaches each point to make sure its still at a good standard of quality. Other companies may check only a certain amount of ~~them~~ products when actually complete e.g. not 20/100 to check how many of them are up to the good standard they need to be and we that figure to alternate the manufacturing process to make it more consistent with the goods they produces standard.

ResultsPlus
Examiner Comments

This response focuses on a single aspect of QA, i.e. quality control and describes this at length losing sight of the original question, which requires a range of different aspect to be explained.

ResultsPlus
Examiner Tip

Stay with the question and do not deviate, even if you do know more about a topic. Make sure you have fully answered the question.

* (b) Manufacturers must have quality assurance (QA) systems in place in order to ensure that customers receive quality products.

Explain the different aspects of a quality assurance system.

(6)

Quality Assurance is a system put in place over the whole of the production of a product. It starts at the initial designing process, this involves checking the designs and any CAD, Modelling or prototyping. By doing this the Company know that they are not going to begin manufacturing a product that will need to be recalled. Quality Assurance is also implemented during manufacture, in the ferm of quality contrd checks. Making sure that each component is of a high quality and sits inside any tolerance levels. Quality Assurance applies checks within any storing of the product and eventually it even looks at costomer feedback, for any possible improvement. A Quality Assurance system is located at every stage, from checking the quality of materials, to the designs, the machinery, each component, employee training, and costomer response. This is all to save costs and reduce recall or damage to the company image.

(Total for Question 7 = 8 marks)

ResultsPlus

Examiner Comments

A high scoring response where the candidate describes an aspect of QA, then moves on to the next and the next, picking up the marks for the different aspects as they go until the full 6 marks are gained.

Question 8

A wide range of responses stretching even the most able candidates, a small number of whom did reach the full 8 marks. Many candidates were able to draw on a range of knowledge about automated production systems, economies of scale and production levels, pulling together strands of each in order to evaluate continuous production as a suitable method of manufacturing drinks cans. More able candidates could explain both advantages and disadvantages of the system which is an expectation of an 'evaluate' question, as full marks can only be gained with a balanced argument. Unfortunately a large minority of candidates clearly miss-read the question, even after underlining key words and proceeded to evaluate the *sustainability* of a continuous production system rather than the *suitability* of a continuous production system. This pulled many responses in the wrong direction, however many picked up a few marks where common points were identified.

***8** Evaluate the suitability of a continuous production system for the manufacture of drinks cans.

(8)

Because in continuous production the machinery is never on.
Continuous production runs all day every day so the energy used to keep the machinery on running is high, however for many some kinds machines the energy required to turn on and off the machines can be high as they moderate may have to be heated from cold to reach high temperatures from being cold.
A lot of energy is used to make moulds and formers and since they are being used all day every day, they become less resistant to wear as they are used so they must be replaced more often than if they were used less.
Carefull planning and designing must be carri carried out as if a mistake is made there is a high amount of material wastage

ResultsPlus
Examiner Comments

A less well-structured response where the candidate gets an initial straight forward mark for stating that production runs 'all day every day'. The response then goes in an interesting direction which looks like it is going to make a point about energy being wasted, starting and stopping systems, but never actually gets there and deviates into temperature issues. The next aspect simply states that if moulds are used a lot they wear out quicker than if they were used less, which is true but has little to do with the question. The final statement is true for any level of manufacturing, so is also not worthy of a mark.

ResultsPlus
Examiner Tip

Before you start an extended response such as this, make a small plan listing the key points you want to make. Where candidates did this they rarely deviated from the question and scored well.

*8 Evaluate the suitability of a continuous production system for the manufacture of drinks cans.

(8)

Continuous production is fully automated and can run 24 hours a day, this will result in an increased production of cans. The volume of production needs to be high to cover the high set up costs of continuous production, as drinks cans aren't expensive. Drinks cans come in a standard size so can be mass produced quickly and easily using the same manufacturing processes - as continuous production is inflexible to follow market trends this is not a problem as the dimensions of cans won't change.

Continuous production is CNC, meaning there are very little workers, this maximises profit.

If a problem occurs it can usually be solved by reprogramming a machine, so can be solved quickly reducing down time.

Cans are a high demand product so many need to be produced as a result, continuous production is a form of mass production, and will produce the most units.

Continuous production is the most cost effective way of producing drinks cans, as wages are reduced and the amount of units will cover the initial set up costs.

(Total for Question 8 = 8 marks)

TOTAL FOR PAPER = 70 MARKS

ResultsPlus
Examiner Comments

A well-structured answer where the candidate stays with the focus of the question and moves through a range of reasons, going from point to point without getting bogged down or deviating. The full 8 marks were awarded for this response.

Paper Summary

On the whole this seemed to be quite a high scoring paper, with candidates picking up many marks.Based on their performance on this paper, candidates are offered the following advice:

- Read questions slowly, read it all and read right to the end.
- Read them again and underline the key words.
- Respond appropriately to command words, such as state, describe, explain, evaluate.
- Note the marks.
- Draw good diagrams with labels.
- With extended writing answers write a plan at the top of the page, then stick to it.
- Read your answers if you have time at the end.

Grade Boundaries

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