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Examiners' Report
June 2012

GCE Design & Technology: Resistant Materials Technology
6RM03 01

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June 2012

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Introduction

This paper followed the same format as in previous years, consisting of 7 questions with an average of 10 marks per question – Total 70 marks.

A range of question styles are used on this paper to elicit the required information from candidates:

'Give' - These questions are worth 1 mark for each point made. The points are stand-alone and take the form of a single sentence/comment.

'Describe', 'Explain' or 'Outline' - These are questions which need a point (for 1 mark) with a justification/reason/example (for 1 mark). These take the form of single sentences or a paragraph in which candidates give a range of points with a relevant justification/reason/example.

'Discuss' or 'Evaluate' - These are questions which require the candidate to formulate an argument for and against a point. Candidates must give at least ONE example for and ONE example against in order to score full marks.

Examiners were impressed with overall knowledge shown this year, as many more candidates are now answering all of the questions, which has not been the case in previous years. Candidates are getting better at structuring their answers. For example questions 6 and 7 were essay based questions and more candidates were separating out the 'Pros' and 'Cons' in clearly worded paragraphs, rather than just putting down things in the order they thought of them, which very often leads to repetition.

There are still however, too many candidates who don't justify their answers in the 'explain' type questions and therefore limit themselves to a maximum of half marks.

Question 1 (a)

Q(1)(a) was designed to test candidates' knowledge of the advantages which can be gained by laminating timbers together to form new sections. Far too many answers were based around 'plastic shrink wrapping'.

Answer ALL the questions. Write your answers in the spaces provided.

1 Figure 1 shows a laminated wooden bridge.

Figure 1

(a) Give **three** advantages lamination has compared to solid timber for the construction of the arches of the bridge.

(3)

1 The laminated wood is alot stronger

2 The laminated wood not prone to twisting or cupping.

3 The laminated wood is cheaper than solid wood.

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Examiner Comments

The first two answers show just how concise an answer can be to score the mark.

Three discreet advantages are necessary.

Answer ALL the questions. Write your answers in the spaces provided.

1 Figure 1 shows a laminated wooden bridge.

Figure 1

(a) Give **three** advantages lamination has compared to solid timber for the construction of the arches of the bridge.

(3)

1 Lamination is much stronger than solid timber.

2 Unlike using solid timber, Lamination would not weaken as easily (eg) when exposed to water.

3 Lamination would with stand more weight than solid timber, for example a car.

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Examiner Comments

It is vital for candidates to check that they are not repeating the same answer using different words. In this example, answer 1 and answer 3 are basically concerned with strength, and therefore only score 1 mark.

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Examiner Tip

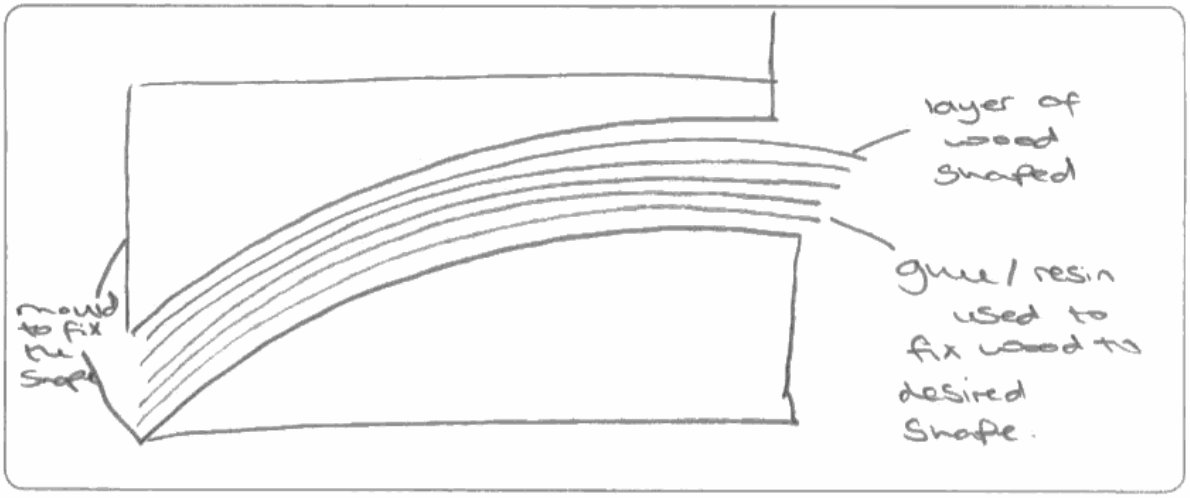
A quick planning note would possibly help the candidate identify three discreet answers before embarking on writing them down.

Question 1 (b)

This question was designed to get candidates to describe the process of lamination. No reference to the bridge (shown in the question) was necessary, but some candidates chose to use the bridge in their answer.

(b) Describe, using notes and/or sketches, how a laminated arch would be manufactured.

(3)



laminated wood is a built up of two materials (wood and a resin) which creats a strong hold. thin sheets of wood are glued together to form around a mould to take the shape and produce the desired outcome once dried its removed from the mould forming the shape of the mould creating a strong material.

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Examiner Comments

3 marks were awarded from the diagram for: adhesive, laminates and former.

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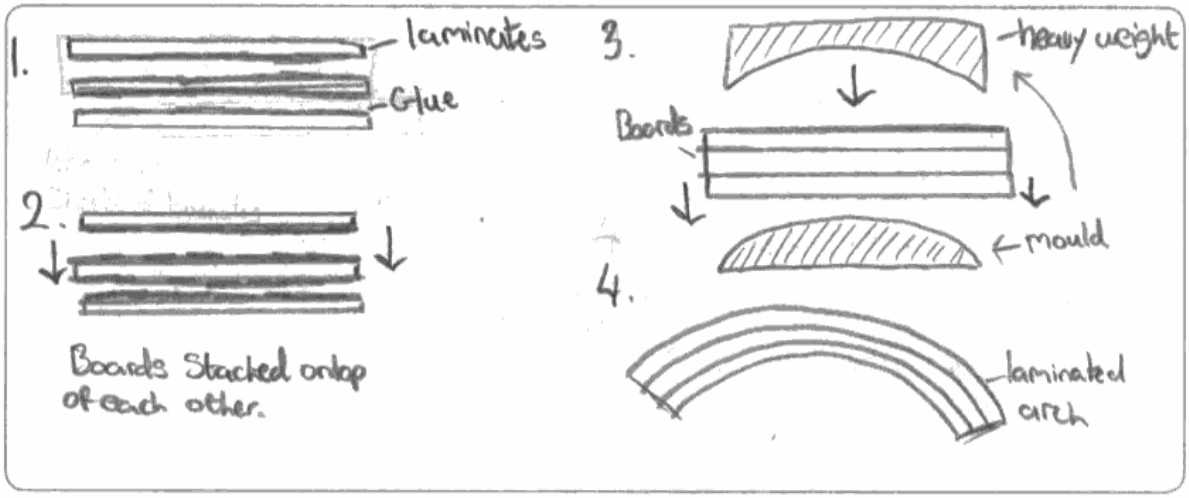
Examiner Tip

This candidate chose to use both diagram and text, which in fact was not necessary, as the marks were all awarded for the diagram. Candidates need to be aware of repetition, as this uses up valuable time in the exam.

(b) Describe, using notes and/or sketches, how a laminated arch would be manufactured.

(3)



1. The large flat sheets are covered in a thin layer of wood glue and left until tacky.

2. Once Glue is tacky an odd number of laminates are stacked ontop of each other.

3. They are then clamped or pressed onto the mould for the desired shape, and left until dry.

4. the laminated arch is is finished.

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Examiner Comments

This example scores the 3 marks for: laminates, a former and adhesive.

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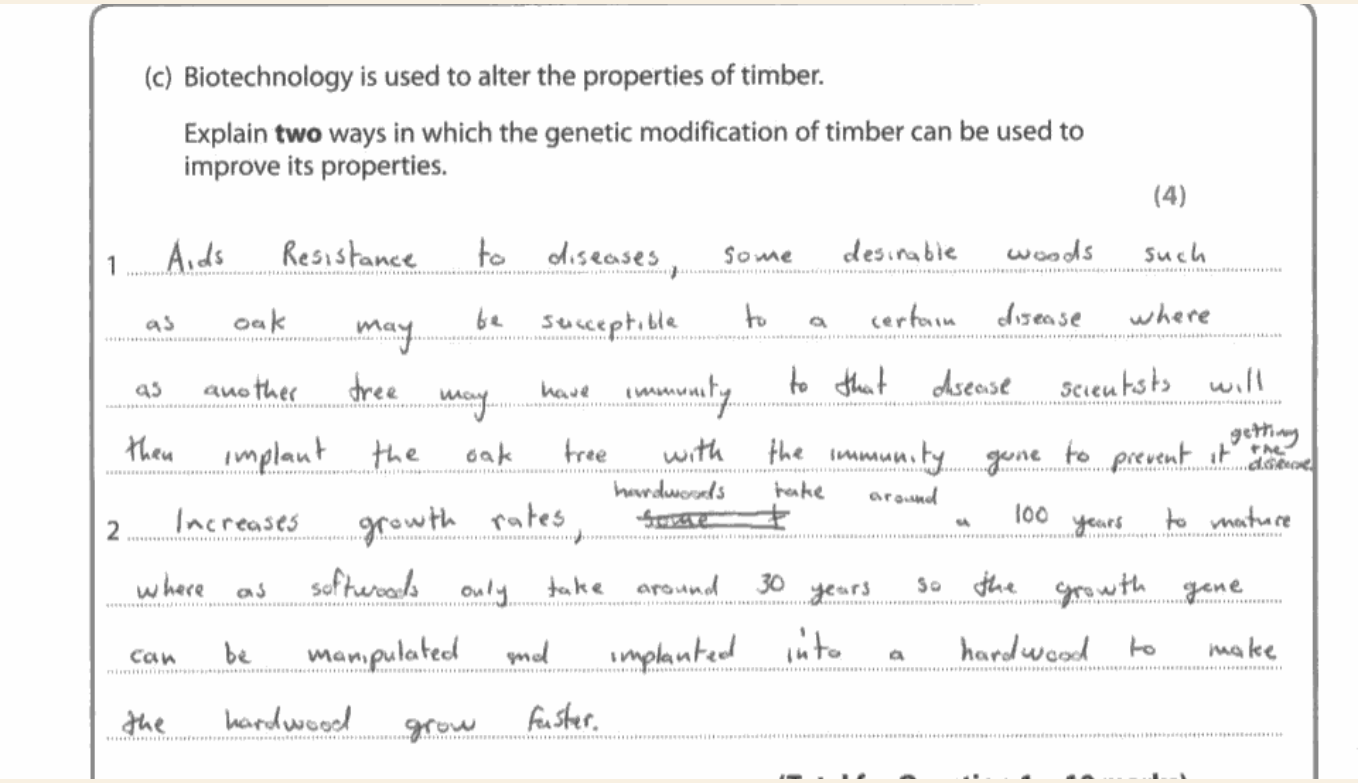
Examiner Tip

Whilst these diagrams are excellent, there is a lot of unnecessary repetition. If the candidate had just drawn stage 3, and shown the boards/laminates separated, and labelled adhesive between the layers, this is all that would have been necessary for full marks.

Question 1 (c)

This question was designed to elicit TWO separate answers, each with a justification.



(c) Biotechnology is used to alter the properties of timber.

Explain **two** ways in which the genetic modification of timber can be used to improve its properties.

(4)

1 Aids Resistance to diseases, some desirable woods such as oak may be susceptible to a certain disease where as another tree may have immunity to that disease scientists will then implant the oak tree with the immunity gene to prevent it getting the disease

2 Increases growth rates, ~~some~~ hardwoods take around a 100 years to mature where as softwoods only take around 30 years so the growth gene can be manipulated and implanted into a hardwood to make the hardwood grow faster.

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Examiner Comments

This answer scores 2 out of 4 marks, as the candidate gave two valid points but no justification.

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Examiner Tip

Planning an answer may help candidates to think about providing two points and two justifications. Also, if candidates use link words like "so", "therefore", and "as a result" in their answers, it pushes them towards providing a justification.

(c) Biotechnology is used to alter the properties of timber.

Explain **two** ways in which the genetic modification of timber can be used to improve its properties.

(4)

1 One way for GM timber is to modify it so that it grows much faster, so is able to increase supply as demands rise, more timber in the same time scale compared to normal trees.

2 Another way is to modify it so that it is more resistant to biological attacks, so that there is less damaged ~~wood~~ raw material, ~~being~~ that needs to be thrown away, also so that once made into its intended product, it ~~will~~ lifespan is extended.

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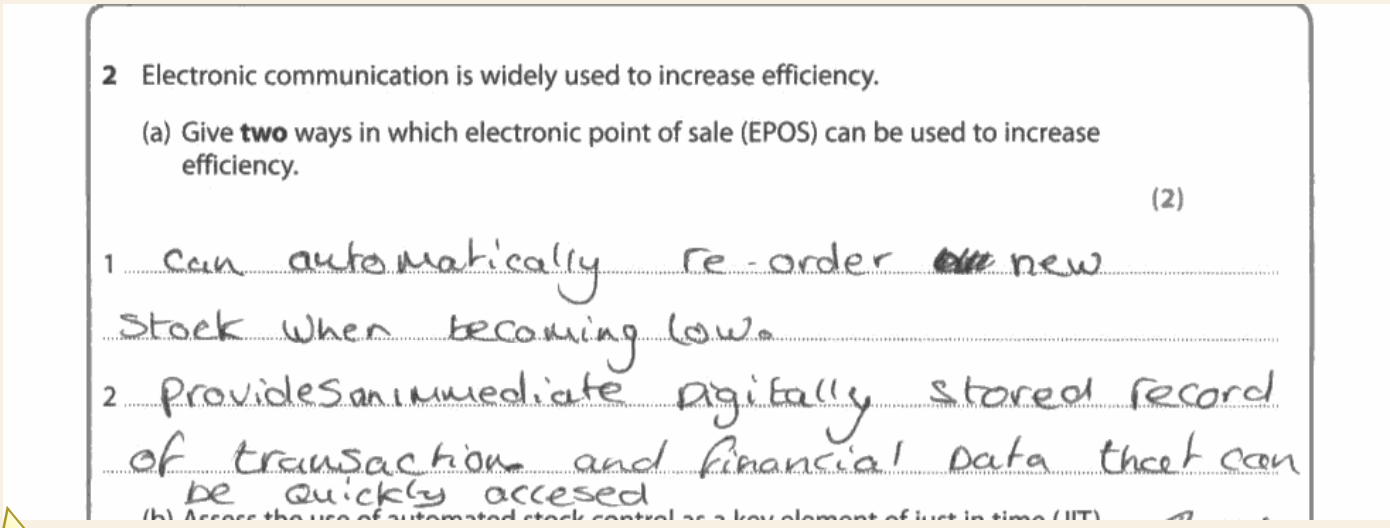
Examiner Comments

This answer scored 4 out of 4, as the candidate has used the link word 'so' in both answers, which has led them to justify each answer.

Question 2 (a)



2 Electronic communication is widely used to increase efficiency.

(a) Give **two** ways in which electronic point of sale (EPOS) can be used to increase efficiency.

(2)

1 Can automatically re-order new stock when becoming low.

2 Provides an immediate digitally stored record of transaction and financial data that can be quickly accesed

ResultsPlus
Examiner Comments

This question required two discreet answers. This example scored 2 out of 2 for the system being able to re-order stock (BP3 in the mark scheme) and data for digital analysis (BP6). Although the words in the mark scheme differ quite radically from this candidate's answer, the answer conveys an understanding of each mark scheme point and is awarded accordingly.

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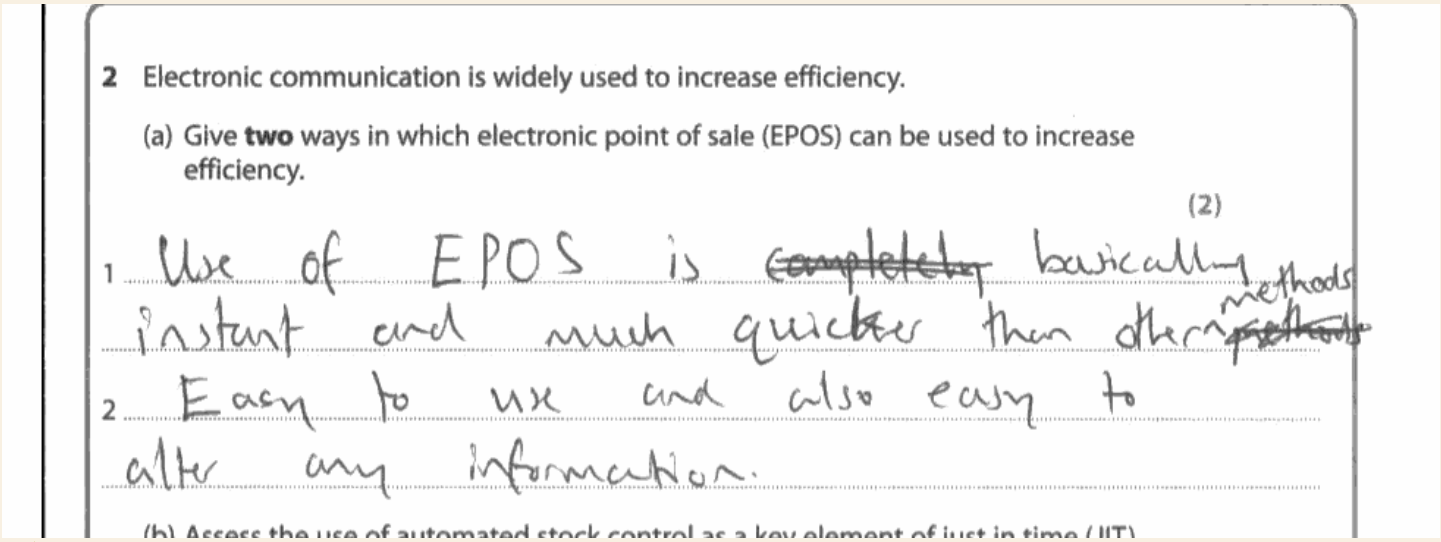
Examiner Tip

The use of technical language is vital when answering this type of question, e.g. digital data.



2 Electronic communication is widely used to increase efficiency.

(a) Give **two** ways in which electronic point of sale (EPOS) can be used to increase efficiency.

(2)

1 Use of EPOS is ~~completely~~ basically methods instant and much quicker than other ~~methods~~

2 Easy to use and also easy to alter any information.

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Examiner Comments

Unfortunately this answer is far too vague to score marks. EPOS **is** a rapid system, but this answer doesn't say what is being made faster. A good example would be 'when a sale is made the system instantly updates stock levels'.

ResultsPlus
Examiner Tip

It is very important to relate the answer **directly** to the question.

Question 2 (b)

This question was not generally answered very well. Far too many candidates focused a large proportion of their answer on describing features of a JIT system, rather than how ASC integrates with JIT.

(b) Assess the use of automated stock control as a key element of just in time (JIT) manufacturing.

(6)

using a ~~centralised computer~~ system

Automated stock control will mean that the materials are always replenished and never run out, this is vital with JIT manufacturing as it is very responsive to changes in demand for the product. If the stock control were not automated this could either lead to overstocking which would mean higher storage costs or no stock when it is needed which will be detrimental to the manufacturing process.

The automated stock control will mean that stocks are only ordered when needed and also that the manufacturing can be responsive to changes in demand.

Also, automated control stock means that no materials are wasted and therefore money is wasted.

ResultsPlus
Examiner Comments

This is a good answer that scored 5 out of 6. However, this answer could not have scored full marks as there was no disadvantage given, which is essential in an 'assess' question.

ResultsPlus
Examiner Tip

A scrap of paper used to plan, on which there is a Pros AND a Cons column, would ensure BOTH sides of an argument had been considered.

(b) Assess the use of automated stock control as a key element of just in time (JIT) manufacturing.

(6)

The use of automate stock control as a key element of Just in time manufacturing allows the manufacture to utilise all available resources this then makes it so no cash is tied up in stock, so there is a constant inflow and outflow of production.

ResultsPlus
Examiner Comments

This example scored 1 mark for no cash being tied up in stock (BP 1 on mark scheme), but fails to elaborate further.

ResultsPlus
Examiner Tip

It is also not necessary to rewrite the question as the start of the answer, as writing the first line and a half is using up valuable time.

Question 3 (a)

This question was designed to elicit four discreet facts about the use of CAM. The wording of the question does not ask directly for advantages, but the fact that it asks for reasons why a manufacturer would choose it, means candidates should tailor their answers accordingly.

3 Figure 2 shows an alloy wheel which has been machined using computer aided manufacture (CAM).

Figure 2

(a) Give **four** reasons why a manufacturer might choose computer aided manufacturing (CAM) for the production of the wheel.

(4)

1 CAM is highly automated so there is less risk of human error

2 The machines can work continuously.

3 The machines work at high speed

4 CAM can produces identicle products multiple times

ResultsPlus
Examiner Comments

This candidate scored 4 out of 4 for simple, clearly explained answers.

ResultsPlus
Examiner Tip

Examiners would prefer to see all the answers begining with 'CAM' as per answers 1 and 4, or 'the machines' as per answers 2 and 3. This candidate gives the impression from this style of answer that they think the machines and CAM are two different things.

3 Figure 2 shows an alloy wheel which has been machined using computer aided manufacture (CAM).

Figure 2

(a) Give **four** reasons why a manufacturer might choose computer aided manufacturing (CAM) for the production of the wheel.

(4)

1 Very accurate as the CAM machine cuts to very small tolerances.

2 More efficient as CAM programs reduce wastage from manufacturing decreasing cost of ~~product~~ product.

3 Safety risk reduced as CAM machine will not make human ~~error~~ injured ~~error~~ (fault possible) errors which could lead to injury as it is a machine > it can get machine

4 The CAM once set up & programed can run for 24 hours a day if necessary, reducing downtime on machine = ↑ productivity.

ResultsPlus
Examiner Comments

This answer scores 4 out of 4 but adds a good deal of unnecessary text.

ResultsPlus
Examiner Tip

If the question says "give", "name" or "state", then there is no need to justify or give an example.

Question 3 (b)

This question was design to test candidates' knowledge about how concurrent manufacturing operates, and relate the knowledge to a manufacturer's view point.

(b) Explain **three** reasons why a manufacturer might choose a concurrent manufacturing strategy.

(6)

1 Concurrent produces designs right the first time which gives them the competie edge in the market to meet customer demand.

2 A Manufacture will chose it as it saves time as the design does not have to be redesigned. which will also cost money.

3 It gets together different aspects of production such as market reasearch, Product manufacturers, managers. To see what Customer needs are and what trends are being put forward.

ResultsPlus
Examiner Comments

This answer was good and scored 5 out of 6 marks. 2 marks for the first and second answer, and 1 mark for the third answer, which repeats the 'trends' justification given in answer 1.

ResultsPlus
Examiner Tip

Although this question is designed to have three justified points, credit will be given if the answers are valid but don't necessarily follow the examples in the mark scheme. For example, the first answer has actually got two of the points from the mark scheme whilst answer 2 has two justifications from the mark scheme. Where possible, credit will be awarded.

Question 4 (a)

4 Figures 3 and 4 show computer keyboards. The keyboard in Figure 3 has been designed to be more ergonomic than the more traditional computer keyboard shown in Figure 4.

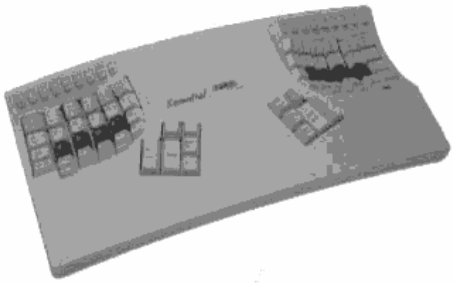

Figure 3

Figure 4

(a) Outline what is meant by 'ergonomic design'.

(4)

An ergonomic design is how a product is made to be comfortable for the user as well as to be safe. Anthropometrics is used so the product is designed to fit the body shape in a comfortable and natural way and not to put strain of the body to use it.

The product should allow long periods of used without straining or ~~injuring~~ injuring and any part of the body. It should be designed for ease of use with all functional parts being visible. All functional parts must be easily accessible for used and any ~~buttons~~ buttons should be easily reachable by fingers or thumbs. Any removable / replaceable parts must be easy to replace.

ResultsPlus
Examiner Comments

This example scored 4 out of 4 as it has a number of valid points which are clear and distinct. No reference to the keyboard was necessary.

This question used two keyboards on which candidates could 'hang' their answers about ergonomics, but candidates could also score full marks without specific mention of the keyboards.

4 Figures 3 and 4 show computer keyboards. The keyboard in Figure 3 has been designed to be more ergonomic than the more traditional computer keyboard shown in Figure 4.

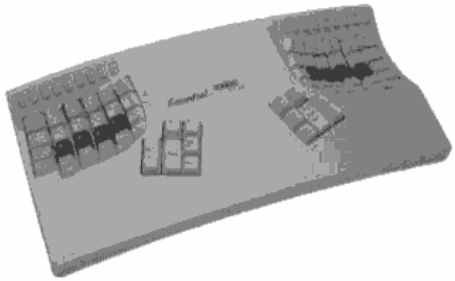

Figure 3

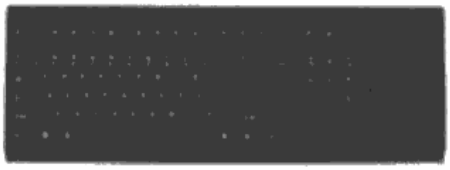

Figure 4

(a) Outline what is meant by 'ergonomic design'.

(4)

'Ergonomic design' is a kind of new style always to design produces. This kind of design usually ~~has~~ very personal and humanity. It has ~~a sense of humour~~ ~~strange~~ strange shapes and tricky designs. 'Ergonomic design' usually ~~has~~ 'function follows form', it might looks artistic but not really functional. But sometimes also can be 'form follows function' because functionally design might has a tricky shape.

ResultsPlus
Examiner Comments

This candidate has unfortunately confused aesthetics with ergonomics, which was not uncommon. Also there are several repeats in the answer which candidates must guard against.

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Examiner Tip

Candidates who find it hard to organise their answers would perhaps be better advised to use bullet points.

Question 4 (b)

This question was aimed specifically at the keyboards shown and required direct reference to their features.

(b) Explain **two** advantages of the keyboard shown in Figure 3 over the more traditional keyboard shown in Figure 4.

(4)

1 The user will be able to use the keyboard faster, as all the buttons are located at a much smaller distance from the fingers than that of an ordinary (traditional) keyboard, work done faster (saves more)

2 The user will be able to use the keyboard for a longer period of time, as it is designed for the comfort of the users hands, therefore the user will be to work for longer (more efficient)

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Examiner Comments

This answer scored 4 out of 4 as two relevant points were given and backed up with valid justifications.

Credit will be given to candidates even though the mark scheme for answer 1 was written in reverse to the answer (BP 2 in the mark scheme).

(b) Explain **two** advantages of the keyboard shown in Figure 3 over the more traditional keyboard shown in Figure 4.

(4)

1 There are ~~two~~ Seactions with keys ~~that~~ in them to make it more comfortable for users to type when using the Keyboard. The are Shaped in such a way for fingers to be comfy.

2 The keys look to be alot more spaced out so the users will not be Pressing othe Keys by accident. There is also alot ~~of~~ Less Keys So users will Know where the Key these looking for is.

ResultsPlus
Examiner Comments

Unfortunately this candidate has made a point about comfort (1 mark) but then made the same point as a justification - a common mistake.

Question 4 (c)

This question was aimed specifically at the keyboards shown and required direct reference to their features.

(c) Explain **two** disadvantages of the ergonomic keyboard over a more traditional one.

(4)

1 Aesthetically ~~wise~~ it does not look good or normal to the consumer. So it will ~~not be bought~~ have as many sales.

2 People have already ajusted to ~~the~~ figure four. and it will take time to get used to it.

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Examiner Comments

A good answer scoring 4 out of 4 marks. Examiners are always looking to award marks for valid answers. This candidate has clearly shown (by the crossed out portion of answer 1) that they feel the aesthetics will put some people off and reduce sales. However the candidate has crossed out the **not** when clearly they meant to leave it in.

(c) Explain **two** disadvantages of the ergonomic keyboard over a more traditional one.

(4)

1 it is a completely different layout to regular keyboards so people might find it difficult to type quickly until they were used to it.

2 the keys are spread out so it must be much larger than a traditional keyboard. This suggests it consumes a lot of space which may be awkward on a desk.

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Examiner Comments

This is a 'perfect' answer as the two points are clear and well justified, scoring 4 out of 4.

Question 5 (a) (i)

This question was designed to get candidates to discuss how a designer would consider the use, and properties, of materials when designing the ink cartridge. This answer was not particularly well answered by many candidates, as they focused far too much on what happens to the cartridge once used, rather than the **whole** life cycle.

5 Designers should consider the life cycle of a product when designing.

Figure 5 shows a printer ink cartridge.

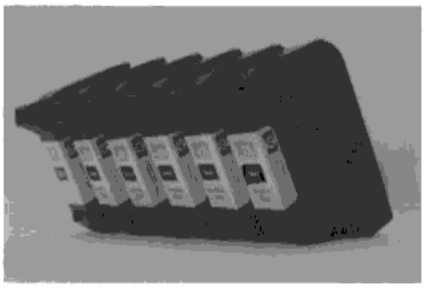

Figure 5

(a) Discuss how the designer of the printer ink cartridge might have considered sustainability in the following:

- materials
- distribution

(i) Materials

(4)

He might have designed the cartridge to be made with the minimum ameount of materials. He may of also designed the materials to be ~~recycled~~ recycleable to reduce the carbon foot print of the product. Also because it has been made using the least amount of materials, if the cartridge gets thrown away ~~it~~ it will cause the least amount of harm posible.

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Examiner Comments

This answer scored 2 out of 4 for valid points about minimising the amount of plastic used and recycling it.

ResultsPlus
Examiner Tip

Questions like this require a focused life cycle analysis. Candidates could score 2 marks for recycling if they separate it down into (i) using recycled plastic to make the cartridge and (ii) recycling the cartridge at the end of life.

5 Designers should consider the life cycle of a product when designing.

Figure 5 shows a printer ink cartridge.

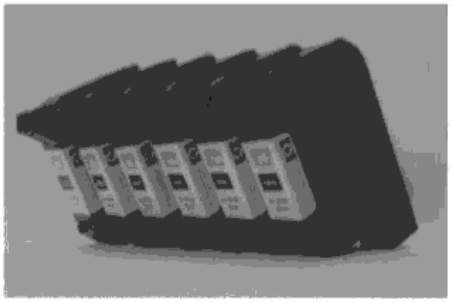

Figure 5

(a) Discuss how the designer of the printer ink cartridge might have considered sustainability in the following:

- materials
- distribution

(i) Materials

(4)

If he would consider wether he would use a biodegrable plastic casing this is because you will want to throw the product away. It would also make the product more recyclable now so that it is sustainable.

He would also consider wether he use recycle plastic so that he is dimishing earths recourses and therefore sustainable

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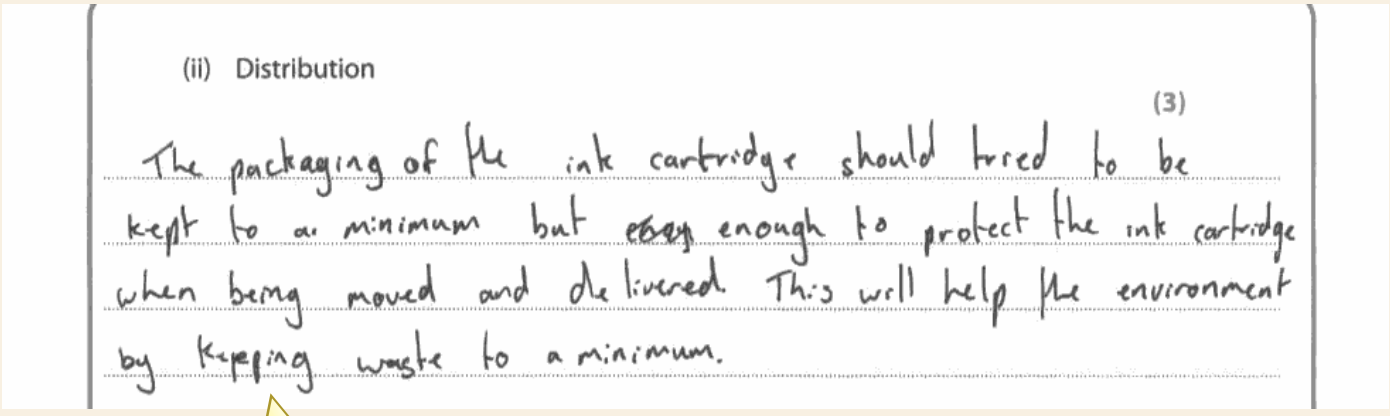
Examiner Comments

This candidate has gained 2 marks for recycling, both using recycled platic and then recycling the plastic after use.

Question 5 (a) (ii)

This question was technically related to how the designer of the cartridge would have to consider distribution. However, the vast majority of candidates focused far too heavily on eco-friendly transport, which would not be the main focus of the cartridge designer's brief.



(ii) Distribution

(3)

The packaging of the ink cartridge should tried to be kept to a minimum but ~~easy~~ enough to protect the ink cartridge when being moved and delivered. This will help the environment by keeping waste to a minimum.

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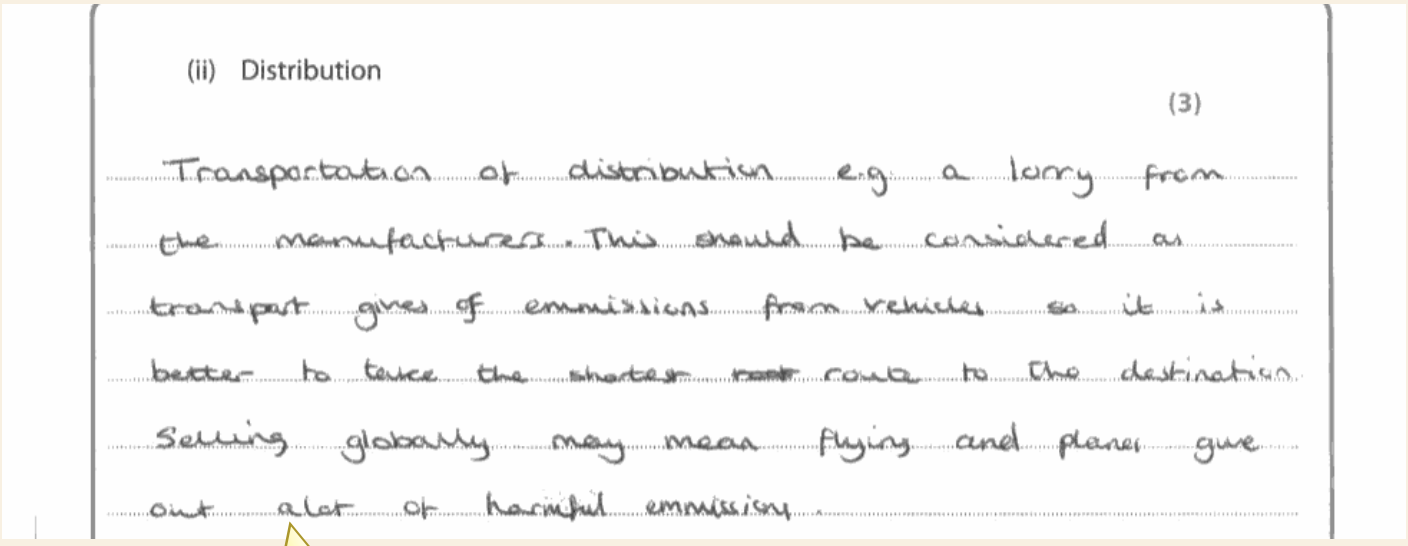
Examiner Comments

This answer scored 2 out of 3, as it gave sufficient content on minimal packaging (BP 1 in the mark scheme) and protection during delivery (BP 3).



(ii) Distribution

(3)

Transportation of distribution e.g. a lorry from the manufacturers. This should be considered as transport gives of emmissions from vehicles so it is better to twice the shortest ~~root~~ route to the destination. Selling globally may mean flying and planes give out alot of harmful emmissions.

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Examiner Comments

This answer unfortunately doesn't target the question. If the candidate had focused on reducing transport requirements by packing the cartridges in a space-saving way, this would have gained them credit.

Question 5 (b)

This question was aimed at miniaturisation in general and could be answered without the need to refer to the MP3 player in the diagram. However, many good responses did use the MP3 player as the basis of their answer.

(b) Advances in technology have allowed for the miniaturisation of products.

Figure 6 shows a hand held music player.

Figure 6

Give **three** advantages of miniaturisation.

(3)

1 Easily portable

2 Cheaper as less materials are needed.

3 Multiple items can be fitted into one smaller device.

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Examiner Comments

This answer scored 3out of 3 marks. The final answer is a little vague, but enough information is given to suggest that the candidate means 'multiple features' when they have written 'multiple items'.

(b) Advances in technology have allowed for the miniaturisation of products.

Figure 6 shows a hand held music player.

Figure 6

Give **three** advantages of miniaturisation.

(3)

1 Smaller product so less materials used to make the product so less resources are used up

2 The cost to produce a smaller product is much lower so will save the company money

3 the ~~it~~ smaller ~~they~~ design is more user friendly so becomes more popular for the consumer

(c) Give **two** disadvantages of miniaturisation.

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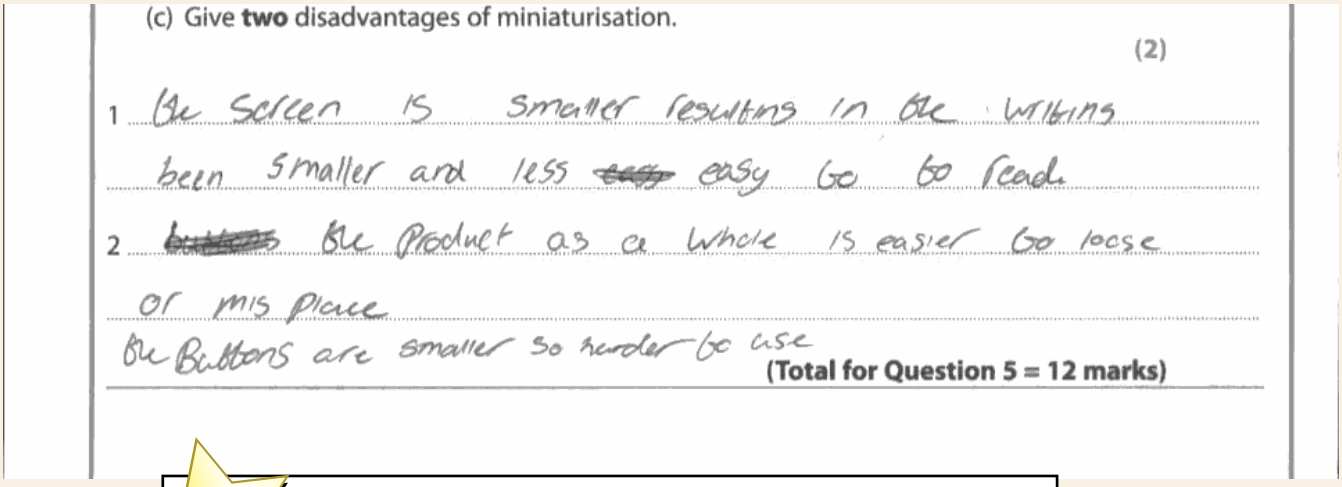
Examiner Comments

This answer only scored 1 out of 3 marks for the first answer - "less materials needed". The second answer is really a repeat of the first, and is also very vague, while the third answer doesn't really make a valid point.

Question 5 (c)

This question was aimed at miniaturisation in general and could be answered without the need to refer to the MP3 player in the diagram. However, many good responses did use the MP3 player as the basis of their answer.



(c) Give **two** disadvantages of miniaturisation.

(2)

1 The screen is smaller resulting in the writing been smaller and less ~~easy~~ easy to to read.

2 ~~buttons~~ the product as a whole is easier to loose or mis place the Buttons are smaller so harder to use

(Total for Question 5 = 12 marks)

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Examiner Comments

This answer scored 2 out of 2 for "smaller screen is harder to read" (BP 3 in the mark scheme) and "easier to lose" (BP 1).

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Examiner Tip

Candidates often think of something after they have written down an answer and tend to tack it onto the end of another answer, where it has no real relevance (as seen in answer 2). It will be marked and creditied if valid, but candidates should try to separate things out so they don't get jumbled in with another answer.

(c) Give **two** disadvantages of miniaturisation.

(2)

1 products may become physically weaker and less robust.

2 products often become more expensive with further technology.

ResultsPlus
Examiner Comments

Unfortunately this candidate has not really given valid answers, as miniaturisation doesn't necessarily make things weaker or more expensive.

ResultsPlus
Examiner Tip

It is really important for teachers to target points such as portability, increased precision required to manufacture and fewer workers required due to the automation which is necessary to produce such small products economically. These points are general to most miniaturised products and can be used in answer most questions relating to miniaturisation.

Question 6

This question gave candidates a chance to show what they knew about wind power and it's relevance in changing from finite to renewable power sources. It was generally well answered by many candidates, many of whom were able to provide more than ten points.

***6** Renewable sources of energy are an important consideration for sustainable living.

Figure 7 shows a wind farm.

Figure 7

Evaluate the use of wind generated electricity as an alternative to fossil fuelled power stations.

(10)

It is expensive to set up wind farms, as the amount that need to be set up will cost alot of money. But when they are set up they will start saving money as wind is free to generate. But wind farms will only work if it is windy, wind farms will need to be located on high land so maximam wind can be received. This means that land will need to be purchased for the wind farms to be installed. Having wind farms located on high ground means they can be seen more easily. Wind farms are an eye sore and ruin the appearance of the country side. But this is a small price to pay as wind farms produced less to none emissions,

this means that they are alot easier on green house gasses. Wind farms once installed do not cost a lot of money to run. They are also a lot better on the enviroment than fossil fuels and do not require any burning of any products, they just use natural resources! Wind farms will produce good levels of energy and will ~~er~~ always be able to generate wind as long as there is a small wind blowing. Although wind farms would not produce the same amount of energy that fossil fuels would. Would take alot of wind to generate the same amount of energy that a small amount of fossil fuels would generate. Although eventually fossil fuels will run out, but wind will always be available and will never run out. This means that we will have a constant supply of energy from wind farms.

ResultsPlus
Examiner Comments

This candidate has given a good answer with many salient point, but it seems that they have started writing their answer with a key fact that they have remembered from lessons, and then moved on randomly from there. It is very important for candidates to use structure in answering a question like this.

ResultsPlus
Examiner Tip

It would be better to discuss the Pros and then the Cons in order to avoid repetition, and also to make sure that there are both in the answer.

***6** Renewable sources of energy are an important consideration for sustainable living.

Figure 7 shows a wind farm.

Figure 7

Evaluate the use of wind generated electricity as an alternative to fossil fuelled power stations.

(10)

•Due to the high burning of fossil fuels by stations the atmosphere has got damaged, ~~and~~ It has contributed to global warming and has also reduced the availability of finite resources on earth.

•Fossil fuelled power stations continuesly burn fossil fuels which then in results emitts harmful substances and pollutes the atmosphere.

•By using wind generated electricity, in other words the use of windmills, the atmosphere is kept clean ~~from~~ and no harmful substances are released by them.

• However windmills have a very high initial set-up cost, especially in this case has more than one windmill will be needed to generate the required amount of energy to power a station.

• Windmills are completely environmentally friendly and a sustainable method to produce energy power.

The energy is generated by the movement of the external air. The air that is outside is then converted into electricity energy which can be used to power anything, and windmills are completely sustainable as they do not cause any harm to the environment.

ResultsPlus
Examiner Comments

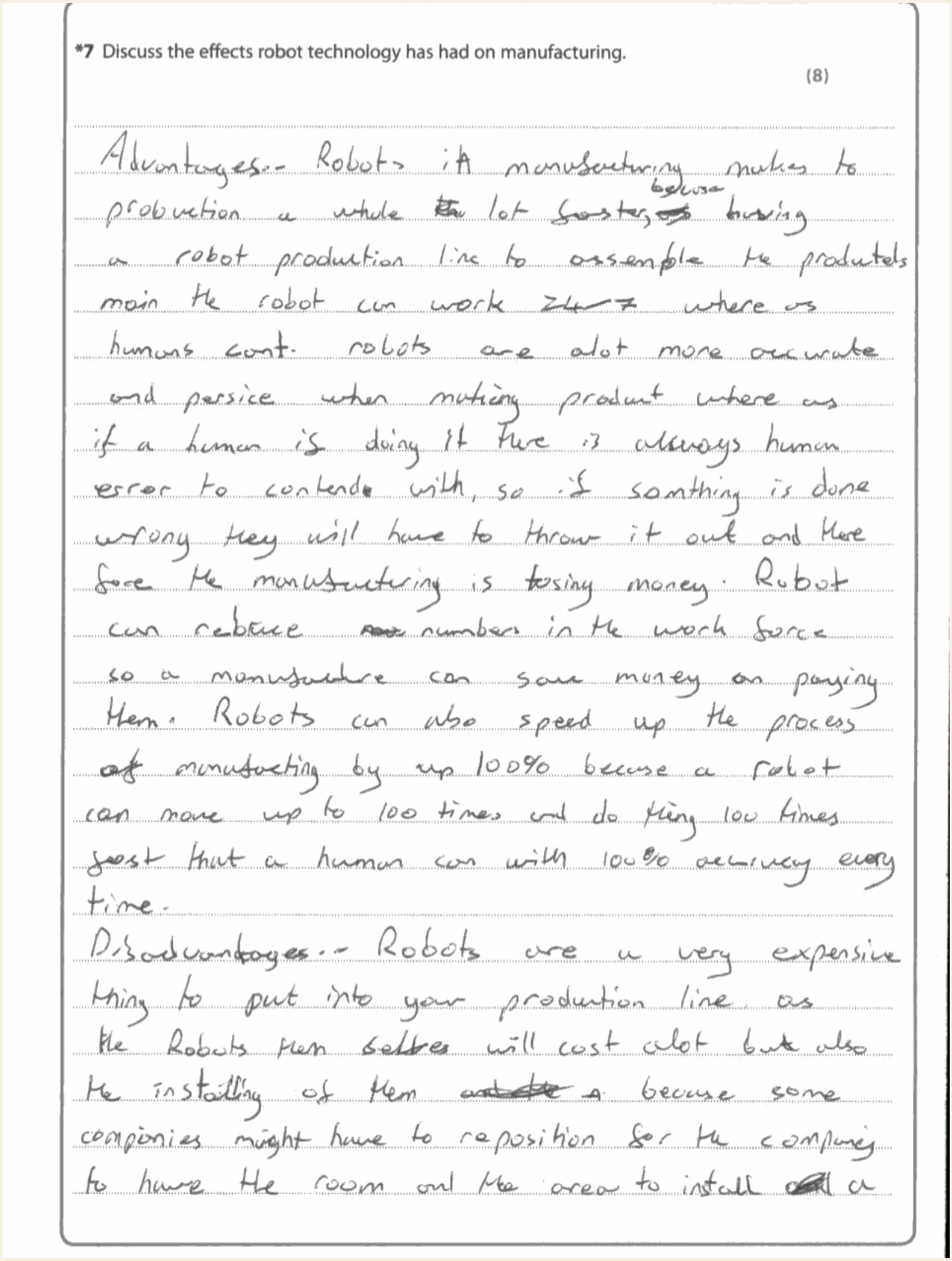
This candidate has scored 3 out of 10 as they have made three valid points, but unfortunately they have also repeated some answers. Also the final two paragraphs score no marks as the penultimate paragraph basically repeats the question, and the final paragraph describes how the turbine works, which misses the point of the question. These are common mistakes.

ResultsPlus
Examiner Tip

Planning, using a list of Pros and Cons, is vital for many candidates if they are to structure their answers well.

Question 7

Robot technology is a rapidly changing and complex field, and one which in the past was avoided by many. It is good to see that many candidates are now well versed in the area. A very wide range of responses were evident amongst the more able candidates, but it was also pleasing to see a huge reduction in the number of candidates who scoring fewer than half marks.



*7 Discuss the effects robot technology has had on manufacturing.

(8)

Advantages:- Robots in manufacturing makes to production a whole lot faster, because having a robot production line to assemble the products main the robot can work 24/7 where as humans cant. robots are alot more accurate and persice when making product where as if a human is doing it there is always human error to contend with, so if somthing is done wrong they will have to throw it out and there for the manufacturing is losing money. Robot can reduce number in the work force so a manufacturer can save money on paying them. Robots can also speed up the process of manufacting by up 100% because a robot can move up to 100 times and do thing 100 times fast that a human can with 100% accuracy every time.

Disadvantages:- Robots are a very expensive thing to put into your production line as the Robots them selves will cost alot but also the installing of them as because some companies might have to reposition for the company to have the room and the area to install all a

robot system- Robots means there is no need for a big workforce therefore putting men and women of of jobs. Other down fall is that if a robot breaks down it could cost alot for to repaire them again and time for the Robot to start manufacturing again. The other problem is that there will have to be new workmen hired with the skills and knowlage to operate and fix the robots.

ResultsPlus
Examiner Comments

This answer scored 8 out of 8, as it gave a number of valid points which were broken down into Advantages followed by Disadvantages. Very clear and easy to mark.

*7 Discuss the effects robot technology has had on manufacturing.

(8)

Advantages

- Can Produce large ~~quabi~~ ~~quabies~~ quabities of Products which are all similar in a short Period of time.
- Can Produce high detail of Products fast compared to People making Products by hand.
- Robots can work in an enivorment which is hazordest or unsafe for humans
- less room for human error ~~as~~ because Robots do not get tired or lose Consintration.
- Saves workers from ~~repeated~~ repeating the same movement over and over.
- efficent for long-term Production/ manufacturing.

Disadvantages

- Are Very costly and expensive to set ~~of~~ up in the short term.
- Workers may lose Jobs or be required to retrain to be able to Operate systems.
- Workers may feel that they are no longer needed or of any use because the robot does all the work. (low moral)
- Highly Skill Programers are needed to reprogram robots for other tasks which can be time Consuming and expensive.
- If computer ~~is~~ system ~~Done~~ Down Robots cannot function.
- Do not have the ~~abillity~~ ability to touch, feel, taste or smell like humans.

ResultsPlus
Examiner Comments

A very good answer which has clearly been planned prior to writing. It scored 8 out of 8 marks.

ResultsPlus
Examiner Tip

The use of bullet points is perfectly acceptable and so long as the candidate has at least ONE advantage or ONE disadvantage included in their answer, they may score full marks.

Paper Summary

Based on their performance on this paper, candidates should:

- Make sure a justification/reason/example is given for questions which require them.
- Make sure a different justification/reason/example is given for each point as a repeat justification/reason/example will not be credited twice.
- Avoid repetition in answers by planning before writing.
- Avoid a summary paragraph at the end of an essay style question which does nothing but repeat the points already made.
- Improve the quality of diagrams used. A good, labelled 2d diagram will generally be better than a poor 3d sketch.
- Try to avoid writing 'out of clip' or going onto extra sheets of paper, as very few candidates score further marks on the extra sheets. There should be enough space given on the paper, and often the extra sheets just contain repeat answers, mainly due to poor planning.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:

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