

Examiners' Report  
June 2015

GCE Design & Technology 6RM03 01

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## Introduction

This year's paper did not differ in style or format from the previous year and consisted of 7 questions totalling 70 marks. As usual there was a mixture of question styles ranging from short, single sentence style responses to a double page essay based response.

In general more candidates appear to be planning their responses prior to starting writing. This, along with what seems to be better preparation is leading to much fuller and far more fluent responses and far fewer responses where the candidate repeats a single point several times and therefore fails to score further marks.

However there are still some candidates who are not attempting certain questions and centres should be reminded that questions can be set from every/all sections of the specification, so it is VITAL that every aspect of the specification is taught. Also centres are reminded that candidates should have knowledge of and the ability to apply all aspects of the specification in a range of contexts using written and/or sketched answers.

Some candidates still struggle to answer the question in a relevant manner due to misinterpreting the 'trigger' words used at the start of each question. These words are available in both the text book and the feedback meeting materials and should be used as part of the classroom teaching of exam technique in order to prepare candidates for the exam.

The positive aspects this year were:

- Most candidates attempted the majority of the questions, although some appeared to be 'educated guesses'.
- Candidates are answering questions more concisely.
- The use of bullet pointed answers helped many candidates to clarify their answers.
- The majority of candidates stayed within the clipped areas.
- The subject content appears to be taught in greater depth in more centres.
- Candidates from these centres are demonstrating an improved 'understanding' of the subject knowledge
- However, there were still a few weaknesses again this year:
- Poor handwriting and grammar (*this made some answers **very** difficult to decipher*).
- Not reading and digesting the question **fully** before answering.
- Not understanding the basic examination terminology ('trigger' words).
- Answers that are not concise and go onto additional sheets and **very** seldom scored additional marks.
- The use of a conclusion which just **repeats** the points made in the answer.

## Question 1 (a) (i)

This question was designed to elicit knowledge of the advantages of video conferencing and although this is now a relatively outdated term, the majority of candidates were able to apply their knowledge of more current technology e.g. 'Skype' to cover all the relevant answers.

1 (a) (i) Give **four** advantages of video conferencing.

(4)

1 Quicker way of communicating as it cuts out travel times

2 Saves money

3 Can make the project finish faster

4 Easier way to communicate



**ResultsPlus**  
Examiner Comments

This question was well answered by the majority of candidates



**ResultsPlus**  
Examiner Tip

1. Quicker way of communicating BP4 (1)  
2. Saves money BP9 (1)  
4. This answer is sufficient for BP4 but it has already been awarded

1 (a) (i) Give **four** advantages of video conferencing.

(4)

1 Save travel costs

2 can show information over the internet

3 can hold a video conference with multiple people all over the world

4 easy to set up and use.



**ResultsPlus**  
Examiner Comments

Some candidates combined 2 (or more) answers within the one response. This is not a problem as marks will be awarded accordingly



**ResultsPlus**  
Examiner Tip

1. Save travel cost BP1 (1)  
2. Show information BP5 (1) - 'show' suggests visual images  
3. Multiple people BP2 (1) and all over the world BP3 (1) - award 2 marks even though both answers are in the same sentence.  
4. Easy set up and use would score under BP4 but full marks have already been awarded.

### Question 1 (a) (ii)

This question was designed to elicit knowledge of the disadvantages of video conferencing, which again was done using their knowledge of more current technology e.g. 'Skype' to cover all the relevant answers

(ii) Give **two** disadvantages of video conferencing.

(2)

- 1 People have camera shyness and don't act themselves
- 2 Stable and reliable broadband needed for video conferencing which isn't always available in areas



**ResultsPlus**

Examiner Comments

A good sound answer showing more than sufficient understanding to score full marks



**ResultsPlus**

Examiner Tip

1. Camera shyness BP4 (1) 2. Stable, reliable broadband BP2 (1) enough to suggest that if not there will be problems. 'Isn't always available in areas' this would be correct for BP5 but maximum marks have already been awarded.

(ii) Give **two** disadvantages of video conferencing.

(2)

- 1 The participants of the video ~~conf~~ conference have to be available to attend the video conference, unlike emails.
- 2 You are not able to transfer files in a video conference



**ResultsPlus**

Examiner Comments

This response shows only one correct answer



**ResultsPlus**

Examiner Tip

1. Participants have to be available BP6 (1) 2. This is not strictly correct as data can be transferred and shown live on screen

## Question 1 (b)

This question was designed to elicit an essay based response on why a company 'may' choose JIT. Most candidates answered this well and showed a good understanding of the concepts and their positive implications for the company. However some candidates spent a large proportion of their answer stating the negative aspects of JIT and why a company may choose NOT to implement JIT.

(b) Outline the reasons why a company may choose to implement a 'just in time' (JIT) manufacturing system.

(8)

JIT or JIT ~~are~~ / lean manufacturing system is where a company orders supplies for manufacture when it is required; when a <sup>low</sup> stock level is reached, manufactures may use this because:

- low storage costs, money is saved on storage.
- less wastage <sup>urgently</sup> ~~to take~~ ~~rather~~ ~~of~~ ~~overstocking~~.
- if the manufacturer has a reliable supplier
- quality of products is improved.
- ~~is~~ very unlikely to overstock.
- higher profit margins
- a way to control stock.
- ~~less raw material~~ more space for other things rather than a large warehouse and ~~+~~ like an employee lounge increasing employee satisfaction.



**ResultsPlus**

Examiner Comments

This candidate chose to respond in a bullet point format which is fine so long as the bullet points are sentences and not just single words. Some of the phrases are very short and are close to being insufficient, but I feel there is sufficient knowledge shown over the ENTIRE answer to award the marks as shown.



**ResultsPlus**

Examiner Tip

lean manufacturing BP 7 (1)  
order supplies when required BP1 (1)  
Low storage costs BP3 (1)  
Less wastage BP2 (1)  
quality of products improved BP9 (1)  
higher profit margin BP4 (1)  
a way to control stock BP5 (1)



(b) Outline the reasons why a company may choose to implement a 'just in time' (JIT) manufacturing system.

(8)

Just in Time manufacturing systems offer a range of good and appealing reasons to a manufacturer for its implementation. Just in time reduces waste material by only ordering supply when its needed. JIT can save potential storage costs by minimising the amount of stock in storage which the manufacturer would have to pay for. As a result of putting less demand on the raw materials input, the process becomes more sustainable giving a good impression of eco-awareness. JIT can often lead to a Kanban mentality of 'pulling' products through manufacture as requested by consumers furthering the reduction of waste.

JIT does have limitations and its disadvantages include high set up costs and a difficult environment for workers due to the increased need of automation. The importance of analysis of market and target groups is crucial and any mistakes with regards to the analysis could lead to unexpected spikes in demand which supply cannot meet, reducing customer satisfaction and sales (loss in profit) which strains the supply lines but can also cause excessive stock problems the manufacturer was trying to avoid by not producing too much.





**ResultsPlus**  
**Examiner Comments**

This candidate appears to have lost focus on the question and spent the latter part of the answer on negative aspects



**ResultsPlus**  
**Examiner Tip**

reduces waste BP2 (1)

only order supply when it's needed BP1 (1)

save potential storage costs BP3 (1)

as requested by consumers BP8 (1)

The rest of the first paragraph are repeats.

The final paragraph loses focus on the question as it covers reasons why a company would NOT use JIT.

## Question 2 (a)

This question elicited a large number of the given responses in the mark scheme and many candidates scored well. Clearly this topic is being taught well in most centres and candidates are able to recall their knowledge well

There were some candidates who listed 'bigger/taller/wider' as separate points as well as listing a number of 'faults' as different points. This is an important point as A2 level requires a more in-depth knowledge.

2 (a) Genetic engineering can be used to change the properties of timber.

Give **six** advantages of genetically engineered timber.

(6)

- 1 The timber reaches maturity at a lower age.
- 2 The yield is larger.
- 3 It can be resistant to insects.
- 4 It can be resistant to certain diseases.



### ResultsPlus Examiner Comments

This candidate scored well on the responses given but clearly had not got enough information to complete the task



### ResultsPlus Examiner Tip

1. Maturity at a younger age BP7 (1) - sufficient for a mark
2. Yield is larger BP1 (1) - trees are bigger therefore more timber is available
3. Resistant to insects BP4 (1)
4. Resistance to diseases BP5 (1)

2 (a) Genetic engineering can be used to change the properties of timber.

Give **six** advantages of genetically engineered timber.

(6)

- 1 Can grow faster  $\therefore$  more timber produced and sold
- 2 Can be resistant to disease  $\therefore$  will survive through diseases etc...
- 3 Can have different colours  $\therefore$  can be sold for luxury or different aesthetic purposes for higher prices.
- 4 Can be engineered to grow where didn't before & survive in different conditions i.e. cold or hot or wet or dry condition.
- 5 Engineered to have fewer imperfections, fewer knots and  $\therefore$  more structural strength.
- 6 Can take properties from other wood and combine with other woods to get better wood with combined properties.



**ResultsPlus**  
Examiner Comments

Some candidates like this one gave justifications of some points which will be credited as TWO marks (if they are both correct) as this is a 'give' style question and requires no justification/example.



**ResultsPlus**  
Examiner Tip

1. Grow faster BP7 (1) therefore more produced and sold BP8 (1)3. Different colours BP11 (1)4. Grow where didn't before BP17 (1)5. Fewer imperfections BP2 (1) more structural strength BP10 (1) - even though this answer is a 'therefore' from the previous answer it hits BP10 and is a correct result of the previous answer

## Question 2 (b) (i)

This question elicited a range of responses, but many candidates were clearly unsure about the properties a foamant brings to a plastic and numerous answers were based on other additives.

(b) Additives are used to change the properties of polymers.

(i) State **two** changes in the properties of plastic that occur when a foamant is added.

(2)

- 1 The plastic will become much more ~~very~~ buoyant with a foamant
- 2 The plastic becomes lighter as the foamant incorporates air bubbles into the plastic.



**ResultsPlus**  
Examiner Comments

This answer was clear and shows the 'improved' properties



**ResultsPlus**  
Examiner Tip

1. More buoyant BP5 (1)  
2. Lighter BP6 (1)

Too many answers just stated the properties i.e. buoyancy or strength, whereas the question says 'state two CHANGES in the properties'. It is therefore important to add increased buoyancy or decreased density or more buoyant in order to score the mark

## Question 2 (b) (ii)

Most candidates score a mark for strength but few failed to pick up a relevant explanation

(ii) Explain **one** reason why fibres are added to a polymer.

It will increase strength because the fibres<sup>(2)</sup> are kross-crossed so that it forms a rigid layer.



### ResultsPlus Examiner Comments

Although the choice of phrase used is not exactly 'subject specific technical' language there is sufficient knowledge shown to award the marks.



### ResultsPlus Examiner Tip

Marks:  
increase strength (1) kross-crossed  
(sufficient for interwoven) (1)

(ii) Explain **one** reason why fibres are added to a polymer.

(2)

Fibres are added to polymers to make them more strong and durable. This is so they become able to take more pressure without breaking thus increasing the amount of applications it can be used for.



### ResultsPlus Examiner Comments

This response showed a reasonable understanding but didn't gain the second mark as there was no relevant explanation



### ResultsPlus Examiner Tip

Marks:  
make them strong (1)  
The second point gives no relevant reason or explanation

### Question 3 (a)

This question was designed to elicit answers about the advantages of offshore manufacturing from the multi-national company's perspective. Far too many candidates got caught up with giving advantages to the hosting country or even disadvantages to the multi-national company or hosting company.

3 Multinational companies often use 'offshore' manufacturing.

(a) Outline the advantages of 'offshore' manufacturing to multinational companies.

(6)

Cheaper labour can be attained because more people are prepared for lower wages for monotonous jobs.  
Legislation is less strict compared to some countries like US, so meaning easier to set up.  
Land is cheaper, companies can create manufacturing facilities at a lower cost.  
Labour is more willing to take up more arduous tasks.  
Cheaper resources / Raw materials no need to pay import taxes on manufacturing materials.  
Creates a Global company, thus better reputation. International presence.



#### ResultsPlus Examiner Comments

It is very important to focus on the wording of the question and also to be specific when describing something. A phrase like 'legislation is less' is far too vague for A2, especially as there are four distinct versions of legislation in the mark scheme (BP6, 7, 8 and 10).

Some candidates underline the key words in the question in order to help them focus.



#### ResultsPlus Examiner Tip

cheaper labour BP1 (1)

more people are prepared for lower wages BP2 (1) the phrase 'MORE people' is enough to suggest a greater availability

legislation less strict - this is too vague as it could fit BP6, BP7 and BP8.

land is cheaper BP4 (1)

cheaper resources/raw materials BP9 (1)

no need to pay import tax BP8 (1)



3 Multinational companies often use 'offshore' manufacturing.

(a) Outline the advantages of 'offshore' manufacturing to multinational companies.

(6)

Multinational companies use offshore manufacturing for many different reasons. Offshore manufacturing often tends to be cheaper than manufacturing in the country the business is based, this reduces manufacturing costs. The factories are often positioned close to where the raw materials come from meaning they don't need to be transported a long way, again reducing costs. The factory may also be positioned centrally to the countries where the product is being sold, this means the delivery journeys are much shorter which has 2 benefits to the company: firstly they will save money on transportation costs. Secondly it will reduce their carbon footprint which will cause less damage to the planet and may also mean they adhere to a mark of quality such as British standards meaning they will be able to sell the product in other countries.



**ResultsPlus**  
Examiner Comments

A question like this is best answered by noting down as many points and justifications as you can and then making sure you pick (in this case 6) relevant points, otherwise the repeated justifications, although they may well be correct have already scored the mark and won't be credited again



**ResultsPlus**  
Examiner Tip

reduces manufacturing costs BP1 (1)  
factories close to raw materials BP5 (1)  
The rest of the answer is just repeating consequences of this proximity  
The final sentence is too vague for BP3



### Question 3 (b)

This question was designed to elicit answers about the advantages of offshore manufacturing from the host country's perspective and was answered far better than the previous question, with many candidates stating more than 4 relevant points in well-written answers.

(b) Describe the advantages to a developing country of hosting 'offshore' manufacturing.

(4)

A developing country will benefit from increased investment and re-generation of local areas, helping to improve infrastructure and promote further development. Another advantage of hosting offshore manufacturing is increased employment as jobs are provided by multinational companies, leading to increased income for the indigenous people who were previously unemployed. Less developed countries also benefit from technology transfer, as the new manufacturing processes bring new technology into less developed countries and gain access to them. Furthermore, ~~because~~ they can benefit from exporting more goods as it brings in more foreign currency and helps to improve the Balance of Payments of the given ~~country~~ host country.



#### ResultsPlus Examiner Comments

Similar to Q3a it is important not to repeat similar information like 'increased investment' and use it to say 'the country benefits, the cities benefit and the individuals benefit' as this will only score 1 mark



#### ResultsPlus Examiner Tip

increased investment BP6 (1)

regeneration of local areas, helping to  
???? infrastructure BP4 (1) IF a word is difficult to read, credit will be given if the rest of the answer gives sufficient info (which this does).

increased employment BP1 (1)

bring new technology into - is a repeat of BP4

can benefit from exporting and bringing in foreign currency is a repeat of BP6

(b) Describe the advantages to a developing country of hosting 'offshore' manufacturing.

(4)

Advantages include providing loads of jobs for a country that may not have many. Will pay good, reliable wages to boost countries economic growth. If ~~one~~ well known company moves here others can follow ∴ more jobs for population. Can demand more competitive wages etc... Can sell company natural resources, give wages to farmers + miners etc... & Big multinational companies open door to more foreign trade, and possibly sign of different life style to countries population. Improves image of developing country, which can help other aspects e.g. tourism for example. local produce can be sold for higher prices due to influx of wealth from company.



### ResultsPlus Examiner Comments

Although this answer includes a number of points which are inaccurate or not directly relevant to the question it contains four relevant points. Some points could be better expressed and the candidate uses different words than those in the mark scheme, but it is clear from the response that the candidate knows sufficient knowledge on the subject to score full marks



### ResultsPlus Examiner Tip

providing loads of jobs BP1 (1)  
boost countries economy BP6 (1)  
different lifestyle to countries population BP7 (1) a little vague but sufficient  
Improves image of developing country BP5 (1) image is enough for reputation

## Question 4 (a)

This question was focussed on 'recycling' yet far too many candidates gave responses that were based on ALL of the 6 Rs i.e. reusing, replacing etc. Generally, sound knowledge shown though many missed the obvious use of recyclable materials. Too many candidates included re-use and biodegradable materials, indicating a lack of any real understanding. However, many responses were explained well, possibly highlighting genuine concern about recycling issues.

- 4 (a) Recycling materials plays an important role in preserving the world's natural resources.

Outline how products can be designed for recycling.

A way that products can be designed for recycling is to make them more compressible which allows for more to be recycled at the one time. ~~For~~ Coca Cola bottles have come up with a design for square bottles that will be able to be compressed to about a quarter of their original size allowing for more to be packed into boxes for the recycling plant. They can also be designed from the way they ~~are~~ assemble eg. instead of screws they could clip together and apart. ~~This~~ This would make it easier when sorting the different materials.



### ResultsPlus Examiner Comments

This response is almost totally focussed on 'recycling' being a way to return products and not actually recycling the materials in the products and the inherent problems



### ResultsPlus Examiner Tip

The first part of this answer focusses on ways to minimise size to make transport TO the recycling plant more efficient, NOT actually recycling it -

clip together and apart BP2 (1)

- 4 (a) Recycling materials plays an important role in preserving the world's natural resources.

Outline how products can be designed for recycling.

(4)

Products can be designed to use a single material making it easier to decide where parts must go.

Products can contain information of what plastics and materials need to go where, thus consumers will know where to recycle, and what to recycle i.e. symbols of what materials they are. ~~Other points~~ Products could be designed to easily disassemble into their parts/materials making it easier to recycle.

Information on the packaging of the product could contain education of recycling telling the consumer where to take the product after its use.

Products should take advantage of materials that can be easily recycled.



**ResultsPlus**  
Examiner Comments

Although the text is a little simplistic in places, the overall understanding is conveyed in a way that shows the candidate understands the concepts and their impact on the process of recycling



**ResultsPlus**  
Examiner Tip

use a single material BP3 (1) - enough for understanding of minimum materials used

product can contain information BP5 (1) a little vague but reference to info suggests coding, either for the recycling company OR the consumer so they bother to recycle

easily disassemble BP2 (1)

materials that can easily be recycled BP1 (1)

## Question 4 (b)

This question was designed to elicit answers where candidates could show their knowledge of a design philosophy and relate it to the design of a product from that era. It was clear from the responses of many candidates that they were not able to do this well, tending to describe the chair, rather than how its design had been influenced. Few candidates made reference to the product being DESIGNED specifically for mass production and assembly. Also the majority of candidates just used the phrase 'form follows function' (I assume because the chair looks very padded and comfortable so the function must have been the more important factor) without any clear understanding that this product was designed to be made in a certain way so FORM was the driving factor.

(b) One influence on Art Deco styling was the 'celebration of the machine age'.

Figure 1 shows an example of Eileen Gray's Bibendum chair.



Figure 1

Outline how the philosophy 'celebration of the machine age' influenced the design of the Bibendum chair.

(4)

This philosophy influenced this due to machines allowing more freedom of design & allowed new products to be made. The strand on the bottom originally would not have been done but by extrusion a machine operation it could be completed. The perfect curve could have been done by hand but a machine would have been used to bend the metal into an ideal curve for the chair.

The leather on the chair would have been hard to stretch by hand but introduction of sewing machines allowed it to be carried out more easily. It can also produce the product quicker & allow for mass production due to the machines producing it.





**ResultsPlus**

**Examiner Comments**

This response shows a very limited understanding of the concepts and tends to be unfocussed in its approach



**ResultsPlus**

**Examiner Tip**

The section of text which scores a mark is 'the stand on the bottom would not originally have been done, but with (extrusion) a machine operation, it could be done' BP7 (1) - This is a somewhat vague answer but enough understanding (even though extrusion is probably not the 'best' method) to show mechanical techniques being used.

Also 'produce the product quicker allow for mass production' - again this is vague but this time there is NOT enough understanding to show the product is DESIGNED for mass production BP5. However this point WOULD have scored a mark for BP7 but that has already been credited earlier in the answer

(b) One influence on Art Deco styling was the 'celebration of the machine age'.

Figure 1 shows an example of Eileen Gray's Bibendum chair.



Figure 1

Outline how the philosophy 'celebration of the machine age' influenced the design of the Bibendum chair.

Art Deco used more man made materials than previously as seen in the Bibendum chair with the aluminium legs.

Unnecessary ornate decorations were removed and instead basic machine processes became ~~important~~ more favourable.

The philosophy of "celebration of the machine age" inspired a design that was more mass producible. The seat would have been machine ~~stitch~~ stitched and the legs would have been machine bent.

Mass Machine production made it more accessible to the people. (Total for Question 4 = 8 marks)





**ResultsPlus**  
**Examiner Comments**

This response covers a wide enough range of concepts, despite not being worded all that clearly in places, to score full marks



**ResultsPlus**  
**Examiner Tip**

more man made materials BP2 (1)

ornate decorations removed BP8 (1) this shows sufficient knowledge that the over-decoration was removed in favour of clean lines

inspired a design that was more mass produceable BP5 (1)

the legs would have been machine bent BP7 (1)

## Question 5

This question was designed to elicit answers which gave positive and negative characteristics of the use of H.E.P.. It was a well answered question. Quite a number of candidates had a wide ranging knowledge of these concepts and gave excellent answers, scoring highly and displaying a good depth of knowledge. Some candidates described wave power etc. although they did pick up marks on common responses e.g. no emissions.

### 5 Water can be used as a source of energy.

Evaluate the use of hydro-electric power (HEP) to generate electricity.

Hydro-electric power produces zero emissions during its life in operation. The only emissions produced are the ones during the manufacturing of it. It is good. It can produce enough power to supply a small town. The use of it is easier to produce it there will be enough water to supply electricity as water can be stored until needed.

However it is not a reliable source as in the summer months there may be little rain fall to supply water to it. Dams need to be created with floods large amounts of land and natural rivers are landscaped and wildlife. This system is very expensive to install. Energy is very hard to store so if demand increases for electricity it won't be able to fulfill it like fossil fuels can.



## ResultsPlus

Examiner Comments

This answer covers enough points correctly to score 8 marks but the candidate comes close to being too vague at times with their answers. It is important to use concise and technical descriptions to guarantee marks.



## ResultsPlus

Examiner Tip

zero emissions BP2 (1)

only emissions are produced are during manufacture BP21 (1)

The last sentence in the first paragraph is vague - easy to predict if there will be enough water as it can be stored. This can be credited under BP9 (1)

not reliable source as in summer there may be little rain BP12 (1)

created with flooding large areas BP15 (1)

ruins the wildlife BP19 (1)

Expensive to install BP11 (1)

if demand increases won't be able to fulfill like fossil fuels BP14 (1)

## 5 Water can be used as a source of energy.

Evaluate the use of hydro-electric power (HEP) to generate electricity.

Hydro electric power is not as sustainable and eco friendly as commonly thought. In order to generate electricity from water a dam needs to be built. Dams are often built out of concrete which is one of the most un-environmentally friendly materials.

On top of that is all the emissions produced from the machinery on-site, diggers etc, as well as all the trucks used to transport the material. Once the dam is built the area behind it needs to be flooded. This causes the destruction of many animals habitats meaning they will have to move and some will be killed. It may also mean that some people will have to move depending on where the dam is built. However all these impacts may be outweighed by the potential benefits of being able to create electricity without generating any pollution like traditional power stations.



**ResultsPlus**  
**Examiner Comments**

This response covers four points but the rest of the answer is general and tends to overstate points which have already scored the mark



**ResultsPlus**  
**Examiner Tip**

dams made of concrete which is unenvironmentally friendly BP21 (1)  
destruction of animal habitats BP19 (1)  
some people will have to move BP15 (1)  
without generating pollution BP2 (1)

## Question 6 (a)

This question was designed to enable the candidates to make a comparison between repairing and replacing, however a number of candidate's answers were focussed too much on personal opinion/experience and missed the point of the comparison. Far too much emphasis was given on consumerism and built-in obsolescence. A lack of planning really did let candidates down as there were many answers which just repeated the same point/points.

\*6 (a) Discuss the issue of 'repair versus replacement' from a consumer's point of view.

(6)

Repair versus replacement is the issue of whether the customer should repair a device or item or buy a ~~brand~~ new one. From a consumer's point of view repair seems like a more chosen solution rather than replacement as the cost difference would be ~~less~~, ~~is~~ an implication to the argument. This issue has come about due to built-in obsolescence which is when a product is designed to break down after a length of time. An example of this is an iPhone ~~which~~ as the battery ~~lose~~ loses charge more quickly as time goes on. For a consumer to replace a product this means having to buy another one at full price whereas the cheaper alternative is to fix the problem within the product which is more likely to happen. ~~with~~



### ResultsPlus Examiner Comments

This example shows a lack of planning and therefore a good deal of repetitiveness creeps into the answer



### ResultsPlus Examiner Tip

repair seems more chosen as the cost difference would be an implication BP2 (1) - even though this answer does not specifically state it is cheaper to repair, the inference is clear.

The rest of the answer just repeats and gives examples

\*6 (a) Discuss the issue of 'repair versus replacement' from a consumer's point of view.

(6)  
As a consumer there can be a few ~~att~~ attitudes ~~from~~ <sup>this</sup> topic. The first will consider cost. When you have a product that appears broken, you will want to repair it rather than replace it in order to save money. This is due to the fact that a single component is cheaper to make than the whole thing/product. This will result in it being cheaper to repair. However if the customer is required to repair the product themselves they may consider replacement for the following reasons. Speaking from experience, my iPhone was out of warranty and needed to have its screen replaced. The screen was cheap, however to install it was complicated. I seen the risk of breaking it so and understood that this would mean I would have to replace it anyway. replacement from a consumer's point of view is also going to be more convenient. It would be much quicker to get a product which is already and just needs sold than to wait for your product to be sent away, looked at, then returned. ~~As well~~ However a consumer who is environmentally aware may resist this convenience as the implication is that the old product will normally be thrown out. It is also more sustainable to reduce waste (and by repairing ~~you~~ rather than replacing ~~you~~ you are doing this) as the more waste, the more landfill required and even if it was to be recycled you are still needing more energy (and thus more emissions) to recycle the whole product rather than one part.





**ResultsPlus**  
Examiner Comments

This is a good answer which clearly covers a number of salient points and the candidate expresses them well



**ResultsPlus**  
Examiner Tip

repair in order to save money BP2 (1)  
to install it was complicated BP10 (1)  
replacement was going to be convenient BP11 (1)  
it would be much quicker to get a product than wait for yours to be sent away BP12 (1)  
environmentally aware may resist convenience BP7 (1)

## Question 6 (b)

This question was designed to elicit answers which covered the advantages to a company of carrying out a LCA.

There were a significant number of candidates who either didn't know or didn't understand that LCA is linked to sustainability. They often described a product's life or how it is manufactured. However many candidates were able to access good marks due to the broad nature of the topic.

Many candidates missed out on marks by listing only what an LCA could show rather than what could be done to make improvements with the data gathered from the LCA.

(b) Explain how a company may benefit from carrying out a life cycle assessment on its products.

(4)

Life cycle assessment is a technique used to evaluate the effect of a product - it's packaging from 'cradle to grave'. A company could benefit from this as it can be used to determine the existing carbon footprint of the product + then from this the company could develop methods of reducing it. It can also help to work out how to reduce the amount of materials they are using in ~~the~~ their products + packaging. By using the life cycle assessment it could help a company reduce it's environmental impacts therefore through this they could use the 'green' approach to market their products. They could also reduce their carbon dioxide emissions. Finally it could be used to help increase the efficiency of the manufacturing process.



### ResultsPlus Examiner Comments

This response covers sufficient information in a clearly defined way to score full marks



### ResultsPlus Examiner Tip

- cradle to grave BP1 (1)
- reduce amount of materials BP3 (1)
- reduce its environmental impact BP2 (1)
- use the 'green' approach to market their products BP7 (1)

(b) Explain how a company may benefit from carrying out a life cycle assessment on its products.

(4)

A company can save costs by carrying out an LCA on its products as extensive as it can analyse the different cheaper methods of producing it if it will not last very long.  
Increased customer satisfaction as the company will attempt to produce products with a longer life-span and customers will be satisfied with a product that lasts long & sustainable.  
Therefore, the company will have a better reputation for higher quality products.



### ResultsPlus Examiner Comments

This response could potentially have missed out on some marks. Some of the responses appeared to be heading down the correct route (i.e. the point about length of life – BP12), but ended after only a vague description. However this candidate did enough to pick up the full marks in other answers.



### ResultsPlus Examiner Tip

save costs BP5 (1)

can analyse cheaper methods of producing it BP4 (1)

'it will not last very long' is not enough for BP12

increased customer satisfaction is not the same as improved company reputation BP15 (although this is awarded later)

will attempt to produce products with a longer life-span BP13 (1)

better reputation BP15 (1)

## Question 7

This question was based on the advantages and disadvantages of QRM. Many candidates covered a number of the salient points but few managed to score full marks. It was clear from a number of responses that a number of candidates were a little mixed up with what QRM entails and the fact that it can encompass a wide range of other manufacturing strategies e.g. JIT and CIM as PART of the process

\*7 Many companies use quick response manufacturing (QRM) as a strategy to be more competitive.

Evaluate the use of quick response manufacturing (QRM).

Quick response manufacturing is an effective method to get products made & to consumers as fast as possible. It uses lots of sub processes such as "just in time" manufacture which means that companies always have the required resources & materials.

QRM isn't a continuous production method, as its purpose is to meet demands efficiently, if & when they come up. Products can be produced at a high rate using cell manufacture so that different parts of the product are being produced simultaneously, meaning that very little time is between starting manufacture & assembling the components. With overlapping ~~process~~ processes, huge lengths of time are removed from production which gives companies a good competitive edge over companies who perform one process at a time.

Using quick response manufacturing as a competitive strategy is a good idea as consumers will be likely to use the same company again due to a quick delivery of a product from start to finish. Customers may also be more likely to

recommend a company to others if they can effectively produce their goods.

One thing companies must be careful of is not to end up producing poor quality products at a very fast rate which could end up happening if they don't have rigorous quality control & checks.

There is an important balance of quality to quantity that must be carefully maintained to effectively use quick response manufacturing competitively.



### ResultsPlus Examiner Comments

This response unfortunately tended to hit only the most basic concepts and didn't cover them in much details, but sufficient to score the 4 marks awarded



### ResultsPlus Examiner Tip

products to consumers as fast as possible  
BP1 (1)

JIT BP8 (1)

meet demands if and when they come up  
BP2 (1)

gives company a good competitive edge  
BP6 (1)



\*7 Many companies use quick response manufacturing (QRM) as a strategy to be more competitive.

Evaluate the use of quick response manufacturing (QRM).

(10)

In QRM companies often also implement JIT 'Just in time' system for their stock management. This allows them to order in component at the last minute so less money is taken up in unused parts and warehouse storage. Re-stocking is often fully automated as it is run off stock management software, so it is much cheaper and quicker than manually restocking.

It also allows the manufacturer to be more flexible if the product changes he won't have a large amount of parts unused parts in storage. So therefore the money saved can be used in ordering new parts. QRM allows a <sup>manufacturer</sup> manufacturer to be more competitive as it can change the product it is making very quickly, so allows companies to make improvements to the product at any time without incurring a massive bill. It gives the manufacturer routing and manufacturer <sup>flexibility</sup> flexibility, so it can change its machines to make different products very quickly. Also the workforce is multi-skilled so less money is spent on training workers when the product changes. All of these points all increase customer satisfaction as it enables them to change

The product or manufacturing processes very quickly, and also increases efficiency so ~~the~~ product reaches the client very quickly.

However the ~~and~~ initial set up cost for QRM is ~~very~~ high for the manufacture. It needs a lot of machines that are very flexible i.e. can do many things. Also a multi-skilled workforce, which <sup>is required</sup> are much more expensive to employ than an unskilled workforce.



### ResultsPlus Examiner Comments

This was one of the better responses which was clearly planned and the candidate understood the concepts and was able to convey them and the resultant characteristics of QRM.



### ResultsPlus Examiner Tip

JIT BP8 (1)  
fully automated BP3 (1)  
flexible BP2 (1)  
more competitive BP6 (1)  
make improvements to the product BP9 (1)  
skilled workforce therefore less cost of training BP10 (1)  
product reaches the client quicker BP1 (1)  
initial set-up cost is high BP11 (1)  
multi skilled work force is more expensive to employ BP17 (1).



## Paper Summary

Based on their performance on this paper, candidates should:

- Make sure that they understand the trigger words in the question.
- Avoid unstructured answers. The use of bullet pointed statements, even in extended evaluate type questions, can help **some** candidates to score better marks.
- As questions will come from **all** parts of the specification ensure that the candidates have covered **all** of the specification.
- Make sure that candidates use technical language where appropriate if at all possible, candidates should **not** go outside of lined area provided.
- Candidates should think/plan **before** answering
- Candidates must justify/give examples for questions which require them
- Where there are generally **two** lines given for an answer, one mark per line awarded.
- There should be sufficient space given in order to score **full** marks.
- If a candidate is word processing their answers, they should structure them so that they are in the same format as the question paper i.e. if there is a 'give **four**' type of question, they should put their answers on four **separate** lines.
- If an answer exceeds the space given, candidates should put some sort of indicator for the examiner.
- Candidates who plan their answers should do so on separate pieces of paper rather than using a large portion of the answer space for this purpose.
- **HOWEVER**, candidates should **NOT** attach/hand in their sheets of rough working (or any other paper which does not contain specific answers) as this makes it impossible to scan the papers in the normal way.

## **Grade Boundaries**

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

<http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx>



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