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Examiners' Report

June 2017

GCE Design and Technology
Production Design3 6RM03 01

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Introduction

The structure of this paper followed the previous format in that it contained seven questions and had a time limit of 120 minutes. Most questions are broken into sub-sections (called items) in order to access a greater range of the specification. Where possible the sub-sections are generally related, though this is not always the case. Some questions, generally towards the end of the paper, require a more in-depth answer and command a larger number of marks per response. This year the minimum mark for an item is 2 marks, ranging up to a maximum of 10 marks for a full question,

Questions can be structured to include some choice by the candidates, but this year's paper did not have any of this type of question.

The paper is written to test candidate's knowledge, understanding and application of the following:

- Industrial and commercial practice
- Systems and control
- Design in context
- Sustainability

There is a range of command words which are consistent across both A/S and A2 papers and are used to help guide the candidates. Understanding the command words will help candidates to structure their answers appropriately

Give / State / Name

- These are usually 1 + mark questions where all the marks can be gained by single 'stand-alone' answers.
- Responses to these questions usually require a single statement or single sentence for the 1 mark

Describe / Explain / Identify / Justify / Outline

- These are usually 2 + mark questions with 'linked' answers.
- Responses to these questions usually require a statement AND a development of that statement for the indicated further marks.
- The development might be:
 - A justification
 - An example
 - A development

Evaluate / Discuss

- These are usually 4 + mark questions.
- Requires a developed series of statements that contains arguments both for and against. **Full** marks will NOT be awarded without at least **one** for **or** against argument.

The following are points which have improved from last year's examination:

- There was an encouraging decrease in the number of blank answers, with most candidates attempting the vast majority of the questions even if some were 'educated guesses'.
- The use of bullet pointed answers seems to help many candidates clarify their responses, but it is important for the bullet points to be coherent sentences and not just single word responses
- The majority of candidates are now staying within the clipped areas.
- More centres are clearly teaching the subject content in more depth.

The following are points which still need attention:

- Poor handwriting and grammar (*this made some answers difficult to decipher*). This seemed, yet again, to be worse than previous years, based on examiner comments.
- Not reading and digesting the question **fully** before answering therefore missing the point of the question and giving answers which did not score many marks.
- Not understanding the basic examination terminology.
- Answers that were not concise and went onto additional sheets, very often did not score further marks on the extra sheets.
- Some candidates still use the 'blank' pages in the booklet for extra space. This is a bad idea as these pages do not get scanned with the answer and unless some indication is made by the candidate, these pages will not get marked.
- Candidates must use more correct technical vocabulary in their answers as far too many answers are limited to 'general' descriptions of processes and procedures.
- Candidates should not write in ink pen as the wet ink often smudges onto the opposite page, or bleeds through the pages so that when the scripts are scanned there are two sets of very confused text which is extremely difficult to decipher
- Candidates must be more concise and PLAN their work before starting as far too many answers go round in circles repeating the same point numerous times.

Question 1 (a)

This question was written to test candidate's knowledge relating to the term 'ergonomics'. It required a response which showed an understanding of the relationship between a product and its user, relating the fact that the product was designed with the human body in mind and the relative outcome of a well designed ergonomic product i.e. comfort, safety, ease of use.

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

- 1 (a) Designers need to consider ergonomic factors when designing products.

Explain what is meant by the term ergonomics.

(2)

Products that are designed for humans,
which ~~are~~ ~~can~~ can be used easily and
comfortably.



ResultsPlus
Examiner Comments

This response covers the required 2 points of being designed for human use (1) and easily/ comfortable (1)

- 1 (a) Designers need to consider ergonomic factors when designing products.

Explain what is meant by the term ergonomics.

(2)

~~Is how the product works~~ How the product
is made to perform and how well it fits
with the specification.



ResultsPlus
Examiner Comments

This response does not hit the question focus as it is about the general design and performance of a product and does not relate to ergonomic use.

Question 1 (b)

This question was designed to test candidate's knowledge of how products could be designed to take into account the wide range of potential users. It required knowledge of 2 to 5 potential ways to tackle the problem of designing for people

- A single design to suit most
- A range of sizes
- An adjustable product
- Adaptation of a product
- Bespoke

(b) Explain two ways in which products can be designed to accommodate the diversity of human shapes and sizes.

- ⁽⁴⁾
1 Make the product adjustable, so that you can change its dimensions/size according to your own dimensions, and in the best way to fit you. i.e. adjust chair height according to your own height.
- 2 Make a range of sizes of the specific product so that the people of different sizes buy the product which fits them best with the relevant and is the best fit with the key dimensions that fit them best. Can be ranges can be made according to percentiles (i.e. 5-20% for one, 20-50% percentile for another, 50-80% for one, i.e. clothes of different sizes, but same design).



ResultsPlus
Examiner Comments

This response scored 4/4 as it clearly covers the adjustable and range of size points from the mark scheme and gives examples or justifies each one.

For an explain question like this it is advisable to use words like 'therefore' or 'so' as these tend to guide the candidate into making the required second point.

(b) Explain **two** ways in which products can be designed to accommodate the diversity of human shapes and sizes.

(4)

1. quantitative approach - this accounts for a scientific approach where sizes are measured and anthropometric data is used to predict dimensions that people will actually fit into. Designs generally ~~are~~ design for 90% of the population 5th - 95th percentile.
2. qualitative approach - this ~~predicts~~ predicts how users will actually feel when using these products. For instance how comfortable the product is, the customer is asked to give feedback.



ResultsPlus
Examiner Comments

This response has not really focussed on the correct point of the question. They have scored 1 mark for the fact that a product can be designed for '90% of the population'.

Question 2 (a)

The question was designed to elicit positives and their justifications/ explanations about the use of EDI. It could be answered from either an individual or business point of view.

This question was often not well answered as candidates sometimes explained disadvantages, which is not what the question asks for. Also several candidates gave the same justification i.e. 'saves time' for each point they made therefore limiting their potential mark. Also some candidates limited themselves to 'emails' as the only version of EDI which limited their responses.

2 Electronic Data Interchange (EDI) is now a part of everyday life for individuals and businesses.

(a) Explain **three** advantages of using EDI.

(6)

- 1 Edi is a paper less system so it will save the company money as it dose not need paper.
- 2 Edi allows for fast infomation sharing and can allow business to send large documents quickly and Paisly.
- 3 Edi also improves customer satisfaction because the company can build a Client base and easly and effectivly communicate with them.



ResultsPlus Examiner Comments

This response scored 5/6 as it hit the following points in the mark scheme.
Paperless BP2, so saves money BP1
Fast information BP4,
Improves customer satisfation BP10,
build a client base BP11



ResultsPlus Examiner Tip

Phrases like allows FAST sharing, so documents can be sent QUICKLY must be avoided as they just repeat the same marking point.

2 Electronic Data Interchange (EDI) is now a part of everyday life for individuals and businesses.

(a) Explain **three** advantages of using EDI.

(6)

- 1 You are able to send large file size, so the document will still be in good condition.
- 2 It's more secure, so data's will ~~not~~ be safe and hackers will not be able to get hold of the documents.
- 3 You are able to send documents over the computer to other countries, ^{which makes it faster +} prevents you from travelling which could take long.



ResultsPlus

Examiner Comments

This response scored 2/6 for the following:

More secure BP12

Send over the computer which makes it faster BP4

Question 2 (b)

This was the same as Q2a in terms of being able to answer from an individual or a business point of view. Many candidates answered this well using knowledge relating to incompatibility and cost as the main focus.

(b) Give **two** disadvantages of using EDI.

(2)

- 1 There is a possibility of sending to the wrong person, this could lose important information.
- 2 Emails can often get hacked, this proves in theft and also inside information getting out.



ResultsPlus

Examiner Comments

This response scored 1/2 for the following:

Getting hacked BP3

(b) Give **two** disadvantages of using EDI.

(2)

- 1 It has high set up cost
- 2 Both parties must have compatible software for differing file formats.



ResultsPlus

Examiner Comments

This response scored 2/2 for the following:

High set-up cost BP4

Must have compatible software BP1

Question 3 (a)

This question focussed on bio fuels and required both positives and negatives to be given. Many candidates used the term biomass in their answers which sometimes became confusing when they used answers like 'biomass can be used in cars'.

The majority of candidates scored well on this question and gave both sides of the argument in a well reasoned response.

3 (a) Evaluate the use of biofuels as a source of energy.

(6)

- They are seen to be 'Carbon neutral' as they do not release any harmful pollutants when used.
- It is a sustainable source of energy that does not ~~deplete~~ deplete finite resources.
- It is cheaper than fossil fuels to buy and use.
- It is not necessarily carbon neutral due to the ~~production~~ harvesting of crops that requires machinery to be used, which give off harmful pollutants.
- It is not readily available everywhere, so cannot be used if not local to the user.
- ~~It~~ To grow it requires land which could have been used for the growth of food.

— If used as a fuel it can provide an increase in power.



ResultsPlus

Examiner Comments

This response is a thorough one and covers more than the required six relevant points from the mark scheme: Carbon neutral BP4, sustainable BP1, does not deplete finite resources BP2, machinery in harvesting gives off pollutants BP11, not readily available BP14, land that could have been used for food BP12 and fuel with increased power BP6.



ResultsPlus

Examiner Tip

Phrases like 'do NOT release harmful pollutants' is incorrect because they do release SOME! Fewer harmful pollutants are released would score a mark.

Sometimes a point can be argued both ways and therefore score 2 marks. For example, BPs 6 and 13 are about power. BP6 is about the fact that biofuels do produce a larger output of power e.g. BHP, but at the cost of BP13 i.e. a reduced MPG/ less efficiently.

3 (a) Evaluate the use of biofuels as a source of energy.

(6)

Biofuels is a more viable source of energy compared to fossil fuels such as oil or coal. It is renewable and therefore has no danger of running ^{out} e.g. hydrogen power. Biofuels ~~would~~ in the long run would be very cost ~~effect~~ effective compared to non-renewable gases. ~~th~~ However compared to wind ~~or~~ or solar power it would be more difficult to get enough energy needed but with wind or solar power their requirements e.g. wind or sunlight, are not always guaranteed. Biofuels would not affect the aesthetics of land that wind turbines or solar panels do, which would make it much easier ^{to} produce without interfering with anyone's feeling.



ResultsPlus
Examiner Comments

This response only hits the renewable point in the mark scheme BP1.



ResultsPlus
Examiner Tip

When writing answers to questions like this it is important to just focus on the pros and cons of the system asked for in the question. This candidate tended to get a little sidetracked by talking about other types of energy source.

Question 3 (b)

This question was focussed on how countries that consume, but do not have much timber, can help minimise deforestation by encouraging sustainable timber production.

This required candidates to focus on incentive schemes, taxation, certification, boycotting, education and economic use of the timber than it felled. Far too many candidates limited their answers to things like genetic modification and used it in several different ways i.e. GM trees which can grow faster. GM trees which can grow bigger etc as separate answers. These candidates scored only 1 mark for the GM reference.

Also there were far too many generic answers which just said things like, 'make timber hard to cut down'. Also some candidates focussed on how to STOP the cutting down of trees altogether, or on how to cut them down and transport them in a more environmentally friendly way, which are incorrect for this question.

(b) Countries that consume large quantities of timber have a responsibility to minimise deforestation.

State **six** ways that these countries can encourage the development of sustainable timber production and trading systems.

(6)

- 1 - Taxation of logging companies / Regulation of logging companies
- Encourage use of GM trees which grow faster.
- 2 - Encouraging Carbon neutral / sustainable logging / encouraging companies to replant trees
- Imposing fines for unsustainable behaviour / logging
- 3 - Creating nature reserves / protected areas
- Setting quotas for allowed trees to be felled
- Protecting endangered trees
- 4 - Seek alternative materials / use manufactured boards from wood waste / Recycle used wood
- Run government schemes like FSC (Forest Stewardship ~~Cert~~ ^{certified})
- 5 - Reuse / repurpose wood products so new ~~wood~~ timber is not required
- Import / Export restrictions on timber.
- 6 - Encourage / give subsidies for responsible forestry.



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Examiner Comments

A very good answer with MANY points made.

- 1 - taxation BP5 - use of GM trees BP8
- 2 - impose fines BP6
- 3 - manufactured board from wood waste is enough for BP3 i.e. don't waste any raw materials
- 4 - import/ export restrictions is BP4 5 - subsidies BP7



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Examiner Tip

Some candidates find it easier/ automatic to put a justification to a point they are making. Even though this is a 'state' command word question, marks will be awarded for two correct points within one answer.

(b) Countries that consume large quantities of timber have a responsibility to minimise deforestation.

State **six** ways that these countries can encourage the development of sustainable timber production and trading systems.

(6)

- 1 plant more trees
- 2 Replace the trees they've used
- 3 Recycle existing products made from timber.
- 4 Reuse old timber / wood to make new products.
- 5 use different materials other than timber
- 6 advertise how bad deforestation is so people stop ~~buy~~ buying the product until



ResultsPlus Examiner Comments

This response has not focussed correctly on the question asked. The only point scored is for the final answer (6) for BP10 relating to education. The wording is not ideal as it says 'advertise how bad it is', but this is enough to suggest 'educating about the dangers of'.



ResultsPlus Examiner Tip

It is really important to read both the stem and the question as they are designed to focus the candidates.

Question 4 (a)

The focus of this question was 'cleaner production' and NOT producing cleaner products. The answers should have been related to the actual process of production and how to make it as clean as possible.

Far too many answers were based on how the product could be made simpler (1 mark) so it could be recycled (0 marks). Make the product smaller (1 mark) so when it is thrown away it takes up less space in landfill (0 marks).

- 4 (a) Companies are constantly trying to develop new methods of production that are more environmentally friendly.

Explain **four** ways a company could modify its designs in order to achieve cleaner production.

(8)

1. Make the product from recycled materials.
2. Have the machines that make the product run by non polluting energy sources such as solar.
3. Make the product recyclable so the materials can be reused when the products are at the end of its life.
4. Have the product made from sustainable products.



ResultsPlus
Examiner Comments

This response only scored 1/8 for energy sources such as solar BP6, as it missed the point of the question almost completely. The majority of this answer is related to environmental issues in general and not to cleaner PRODUCTION methods.

- 4 (a) Companies are constantly trying to develop new methods of production that are more environmentally friendly.

Explain **four** ways a company could modify its designs in order to achieve cleaner production.

(8)

- 1 The design ~~of~~ of the product could be smaller and use less material / parts could be less related on material in order to reduce waste during manufacture.
- 2 Recyclable materials could be used for manufacture ~~so~~ that have been recycled, reducing the environmental impact of sourcing raw materials (scars landscape, finite resource).
- 3 Designs could be made that consist of fewer parts so that fewer processes have to be used to make the product, minimising energy usage.
- 4 Products could be designed to be produced from less energy-intensive processes / materials e.g. making something from plastic not metal means less heat is required to melt the material.



ResultsPlus

Examiner Comments

This response scored quite well, 5/8 covering several of the points in the mark scheme and making some justifications of those points:

- 1 - smaller/ less materials BP1 to reduce waste BP7
- 2 - no marks
- 3 - fewer parts is a repeat of BP1 but fewer processes BP10 and minimising energy usage BP6 both score a mark
- 4 - making something from plastic not metal is BP4 i.e. a change of material

Question 4 (b)

This question about EPOS was generally well answered with many candidates having a good knowledge (often firsthand) of the subject matter.

It required knowledge about automation of tills, leading to the ability to check trends and restock shelves.

(b) Give **four** ways in which electronic point of sale (EPOS) systems may improve a company's efficiency.

(4)

- 1 There will be less chance of human error occurring.
- 2 The stock will be kept on top of and it will know to ~~reorder~~ reorder when it becomes low.
- 3 ~~It is a lot quicker~~ It's a lot quicker process therefore not keeping customers waiting.
- 4 It shows the best selling items easily and the shop can then know the best sellers with no effort.



ResultsPlus Examiner Comments

This response covered the following points from the mark scheme:

- 1 - Human error BP3
- 2 - Stock kept on top of BP5
- 3 - A lot quicker BP2
- 4 - Shows the best selling items BP4

(b) Give **four** ways in which electronic point of sale (EPOS) systems may improve a company's efficiency.

- (4)
- 1 Easier for the consumer to access. This means that more product could be purchased making the sales more efficient
 - 2 It's easier to see what products are needed so it can reduce the chance of company not having enough increasing their efficiency
 - 3 Can use ~~system~~ ~~the~~ just in time ~~so~~ with it so materials arrive when they are needed/wanted so is more efficient
 - 4 Lean manufacture could be used along side it with will reduce the amount of waste/excess material need.



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Examiner Comments

- 1 - This is a very vague statement and does not really hit any point on the mark scheme
- 2 - See what products are needed BP4 (1) AND reduce chance of company not having enough BP5 (1). This is a little vague but shows an understanding of reordering before running out.
- 3 - This is a repeat of BP5
- 4 - This response is largely incorrect but does have another repeat of BP5

Question 5 (a)

This question was well answered with many candidates being able to score high marks with answers relating to accuracy, repetitive accuracy, speed, training and set-up costs.

*5 (a) Discuss the use of computer-aided manufacture (CAM) for the production of complex components.

(6)

The advantages of CAM for the production of complex components are that its much more accurate when compared to a human with repeated accuracy. This also means there's less waste material, making it more efficient. Other advantages is that CAM reduces labour cost as personnel aren't needed to do its job. Also being a computer it can run for much longer (24/7) and doesn't need a break. And its programmable.

However there are disadvantages to C.A.M. as it has a high set-up costs and due to doing someones job by replacing them C.A.M. will also increase unemployment and lowering worker moral.

Issues such as malfunction or electrical shortage means production is stopped. With high cost rates to repair and maintain the computers.



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Examiner Comments

This response is excellent as it covers a range of correct points, both advantages and disadvantages. Accurate BP1, repeated accuracy BP2, reduces labour costs BP5, 24/7 BP4. Set-up costs BP7, lower morale BP9.



ResultsPlus

Examiner Tip

It is often good to separate the pros from the cons in a discuss style question as it often helps the candidates to make sure they have BOTH - necessary for full marks.

*5 (a) Discuss the use of computer-aided manufacture (CAM) for the production of complex components.

(6)

~~For the answer~~

CAM will be good for the manufacture of complex components as they are repetitively accurate and will produce high quality parts. Also they have a very high speed of production meaning there is increased productivity levels. Using CAM means there is an increase in Health and Safety, you can remove humans from hazardous situations. Another benefit is that CAM production is that they reduce labour costs in that you do not need highly trained technicians to manufacture these complex components anymore. CAM production reduces the human error in production as well as working 24/7 as they don't need breaks like humans do, so they increase productivity of making complex parts.

CAM however will put people out of jobs - increase unemployment because there is a reduced need for manual skills of that of a highly skilled technician. CAM production has high setup costs and CAM production requires high maintenance. CAM production may be halted by updates.

CAD will be 100% accurate in making the designs because it is computer controlled, computers will not make errors.

Plan

Repetitive accuracy ✓	{	Increased ^{un} employment
Increased H+S ✓		High setup costs ✓
Spd of Production ✓		High maintenance. ✓
Complexity of designs x		
Save designs x		
Reduced labour costs ✓		
Reduces human error ✓		
24/7 ✓		



ResultsPlus

Examiner Comments

Another good answer which covers both pros and cons.
Repetitively accurate BP2, high speed BP4, increased H&S BP6, reduce labour costs BP5, reduces human error BP1. High set-up cost BP7.



ResultsPlus

Examiner Tip

It is only necessary for there to be EITHER 1 pro OR 1 con in an answer for it to score full marks, provided there are sufficient other correct answers.

Question 5 (b)

This question was designed to elicit answers relating to the ability of a CAQ system to MAINTAIN accuracy during production.

Many candidates covered this topic well and scored high marks. However far too many used accuracy as a positive of the system. This is given in the question so was not awarded a mark in the responses.

Very few candidates seemed to know or understand the automated nature of these systems and their ability to self-regulate.

(b) Describe how computer-aided quality (CAQ) control systems maintain accuracy during production.

(6)

CAQ control systems maintains accuracy during production because Product is tested to its highest ability to ensure its quality.

~~At~~ In manufacture materials are well controlled and proportioned to maintain the products quality during production.

The system ensures that correct materials are always used.



ResultsPlus
Examiner Comments

This answer only scored 1 mark for the fact that 'testing' is mentioned - BP2.

(b) Describe how computer-aided quality (CAQ) control systems maintain accuracy during production.

(6)

CAQ can maintain ~~quality~~^{accuracy} through quality control checks. CAQ control systems can use sensors which humans cannot such as x-rays or ultrasound. This means that more aspects of a product can be tested and therefore quality improves.

CAQ systems can detect a fault in production and either send an alert that something in the process needs to be altered or they can automatically alter the process. This means that faults with CAM can be quickly detected and corrected.

CAQ systems can rapidly process data given to them by sensors and analyse production. This means each product can be tested for accuracy ~~and~~ whereas humans would batch test. This means a high level of accuracy can be tested for each ~~product~~^{product}.



ResultsPlus
Examiner Comments

This is an excellent response covering the following points from the mark scheme:

QC checks BP2, X-rays or ultra sound BP3, detect a fault BP7, automatically alter BP9, rapidly process BP4, each product tested BP5.

Question 6

The question was focussed on the impacts on society of built-in obsolescence, which many candidates were able to do and score high marks, giving a coherent argument for and against the use of built-in obsolescence. However there were a significant number of candidates who just focussed on the throw-away nature of society and wrote about the various ways this ONE element of the subject could manifest itself i.e. waste going to landfill, more materials being needed so the environment being further scarred and the use of more finite energy supplies to make more products. This severely limited the possible marks which could be awarded.

6 Discuss the impacts of built-in obsolescence on society.

(10)

- Allows Companies to have Continuous profit stream as customers buy new products
- Reduces need to stock spare parts
- Encourages second hand market
- Encourages 'Throw away Culture'
- Easier to throw away and buy new product than repair
- New products are more reliable / should last for longer
- Results in lots of waste
- Less need to provide repair services
- Allows for limited/calculated warranties to be given
- Reduces after sales support need
- Products are designed with a predetermined lifespan
- Allows for easier lifecycle analysis as lifespan already known
- Products are usually not disposed of properly
- New products use more raw material so contribute to environmental damage / global warming
- Immoral of companies to use built-in obsolescence/tricking consumers
- ~~Reduces~~ Reduces need for stricter QC checks to be made

- Shorter product lifespan reduces length of QA after sales
- Unofficial repairs more common
- Official repairs can be more expensive than new product.
- Reduces product repair market size
- Allows greater profits over time for companies
- Generates more employment/keeps jobs safe as company always has demand for products ~~especially~~ especially new ones.
- Consumers get new features/design improvements faster as old products break
- Reduced need to market new product as users of old product will be expecting new products / lower marketing cost.



ResultsPlus Examiner Comments

This is a good answer covering many points from the mark scheme:

Continuous profit BP4 (1)

Customers buy new products BP11 (1) - this is tacked onto the previous mark awarded but suggests a want/ desire/ will to buy new. Any reference to buying new in this case is worth a mark. Reduces stock spare parts BP10 (1)

Encourages second hand BP9 (1)

Encourages throw away culture BP12 (1)

Less need to provide repair services BP16 (1)

Allows for calculated warranties BP1 (1) Generates more employment BP7 (1)

Consumers get new features BP3 (1)



ResultsPlus Examiner Tip

When answering a question in this manner, candidates should think points through before responding. This candidate seems to have written points as they came to mind and consequently has numerous repeat answers.

Question 7

This question was well answered by a large number of candidates as they put together a well structured argument of when and why a flexible manufacturing system may be chosen. These candidates scored well using such answers as: fast response to market demand, training, flexible staffing, increased market share, flexible routing and machine flexibility.

*7 Evaluate the use of flexible manufacturing systems (FMS).

(10)

Flexible manufacturing systems allow the business to change production depending on the demand of the product. FMS by nature is flexible, therefore if there is demand for the product to change then the production line can do so, either by rerouting the product to go to different machines that have been reprogrammed to do a different task.

For example the iPhone 6, 6+, 7 and 7+ share the same 'body' however the internal hardware has changed. A FMS can be redesigned to add the new hardware easily. Costs of production are reduced as new machinery isn't needed - it's reused.

If there is a problem with a machine or step/stage of production the software running the production can make changes to redirect the products/components while maintenance happens.

FMS can't react to major fluctuations in demand or major changes to a product.

If an injection moulder is used the colour can automatically be change in a short period of time.

Re organising / adjusting the production line

can increase efficiency as just in time (JIT) can be used. This allows for more space

in the factory as less stock is held before and after production. This extra space can allow for a more efficient production line as work load on machines is reduced.

The workplace may become a hazardous place as there are more machines. This can reduce employee numbers as they have been replaced. This can demotivate the remaining employees.

In order to use FMS the capital is needed to buy the machines and more spent on making the workplace a safe environment for humans.

The software needed to run and control the system is expensive and training needs to be done for the employees. This can be a time consuming ~~process~~ act and be very costly as business downtime is unknown.



ResultsPlus Examiner Comments

There are many good points made in this answer which come from the mark scheme:

Change depending on demand BP1 (1)

By rerouting BP8 (1)

Redesigned to add new hardware is NOT a reference to customising INDIVIDUAL designs/batches so was NOT awarded under BP4

Cost reduced as new machinery is not needed BP7 (1)

Can't react to MAJOR fluctuations BP11 (1) this MUST refer to a MAJOR change to score BP11

Allowing for more space in the factory BP3 (1) the reference to JIT means it hits the stock storage point

Reduce employee numbers BP9 (1)

Capital needed to buy machines BP10 (1) is enough to suggest a HIGH cost is needed

Training needed BP12 (1)

Paper Summary

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

- Make sure that candidates 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.
- Questions will come from **all** parts of the specification so ensure the specification is covered.
- Use technical language where appropriate.
- Use past question papers and mark schemes as part of the preparation for the exam.

Exam technique

- IF at all possible, do **not** go outside of clip with their answers.
- Think/plan before answering.
- Spend a moment reflecting if an example is required in a question to justify an answer.
- As a general rule, there are **two** lines given per mark awarded for an answer.
- There should be sufficient space in the answer booklet to score **full** marks without going onto a separate sheet.
- When answers are being word processed, 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, then the answers should ideally be on four separate lines. Also ACCURATE numbering of the questions is essential as the examiner has no other reference as to which question the response is intended for.
- The most common 'fault' is repeating facts in different words, which wastes time and often results in unnecessary extra pages being used.
- If an answer does exceed the space given, it is helpful to put some sort of indicator for the examiner.
- No summary is necessary at the end of the 'essay' style questions as these generally just repeat what has already been written earlier in the answer and therefore scores no further marks.
- Do NOT hand in sheets of notes attached to the answer script.

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>

Ofqual



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