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Examiners' Report June 2010

GCE Design and Technology 5GR02 01

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5GR02 01

The Principal Examiner and examining team were pleased to see a good standard of responses from candidates in this first year of the new examination. It was apparent that teachers had prepared their students sufficiently with the new template format of the exam.

It was impressive that the vast majority of candidates had at least attempted all the questions on the paper. Very few responses were simply left blank which suggests that teachers are encouraging their students to at least give 'educated guesses' and not simply give up when they encounter a difficult question.

Poor hand-writing and use of grammar continues to be a problem for the examining team when attempting to award marks. 'Benefit of the doubt' was given to students where appropriate.

Teachers should continue to encourage students to answer in concise sentences or even bullet points and to avoid long and repetitive responses, especially to extended-writing type questions such as 'evaluate'.

'Explain' style questions continue to cause problems for some candidates. Teachers should continue to thoroughly prepare their students for exams, especially the use of the following command words:

Give, State, Name (1 mark) - These type of questions will usually appear at the beginning of the paper or question part and are designed to ease you into the question with a single statement or short phrase for one mark.

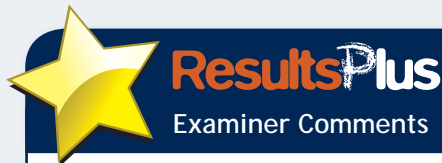
Describe, Outline (2+ marks) - These type of questions are straightforward. They ask you to describe something in detail. Some questions may also ask you to use notes and sketches, therefore, you can gain marks with the use of a clearly labelled sketch.

Explain, Justify (2+ marks) - These type of questions will ask you to respond in a little more detail - single statements will not get you full marks. Instead, you will have to make a valid point and then go on to justify it to gain full marks.

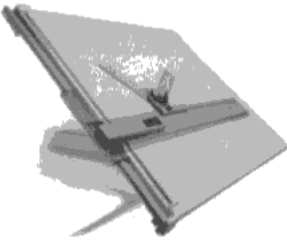
Evaluate, Discuss, Compare (4+ marks) - These type of questions are designed to 'stretch and challenge' you. They will be awarded the most marks because they require you to make a well balanced argument, usually involving both advantages and disadvantages.

Question 11(a)(i)

Candidates had obviously used a drawing board and were able to give a wide range of appropriate uses for one. The use of traditional drawing techniques are positively encouraged on this course along with computer aided design (CAD).

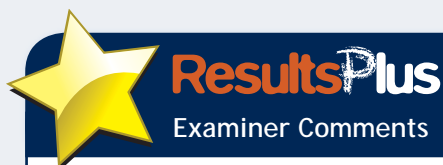


This candidate is obviously very familiar with using a drawing board for technical drawings.

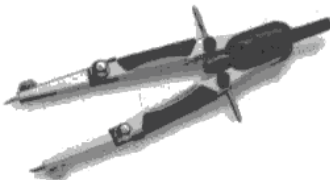
Tools/Equipment	Name	Use
	Drawing board	for doing graphic drawings, so such as isometric and planometric drawings. (1)

Question 11(a)(ii)

The majority of candidates were able to correctly give a use for a pair of compasses (shown as 'compass' on the actual paper for ease of access). The most popular response was obviously 'to draw circles with'.

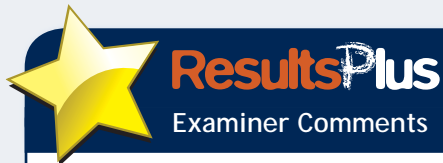


This question is worth 1 mark so a short response is required as illustrated here.

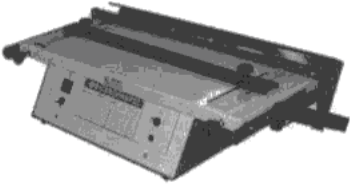
		ys. (1)
	Compass	used for drawing circles (1)

Question 11(a)(iii)

Many candidates were able to name the piece of equipment as a 'line bender' or 'strip heater'. The examining team did not accept simply 'bender' as a correct response.

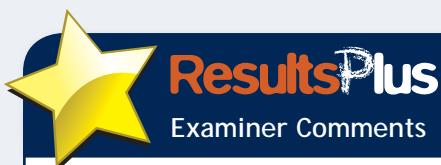


Although at first glance the response seems to state 'lime bender' it is obviously just the candidates handwriting at fault. Poor handwriting can sometimes cause examiners real problems.


	<p>lime bender</p> <p>(1)</p>	<p>Bending acrylic sheet</p>
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Question 11(a)(iv)

Many candidates simply re-arranged the given use to give the name of the piece of equipment - 'document binder' which was not specific enough to gain the mark.



This candidate has given the specific name for the binding machine. 'Document binder' is not specific enough for the mark.

	<p>Comb-binder.</p> <p>(1)</p>	<p>Binding documents</p>
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Question 11(b)(i)

The majority of candidates were able to give at least one reason for using the injection moulding process for the casing of the games controller. 'Cheap' continues to be awarded zero marks as it is not specific enough. 'Cheaper than XXXX because XXXX' is a more logical response.



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Examiner Comments

'Cheap to do' does not gain a mark here. You should always try to avoid the word 'cheap' as it is not specific enough at GCSE level.

1. cheap to do
2. and can be produces on a large mass.

Question 11(b)(ii)

Many candidates were able to gain full marks for this particular question. Benefit of the doubt was awarded when candidates gave a good reason but failed to correctly name a property. At least one mark could be awarded here.



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Examiner Comments

This is a typical candidate response experienced by the examining team. Many candidates obviously have experience of games controllers.

Property
Durable
Reason
It can withstand constant use, it will not break easily and it will last longer.

Question 11(b)(iii)

Candidates required a good understanding of the injection moulding process in order to complete the missing stages. Some were able to correctly identify the three stages but many were unable to describe the first stage of loading the polystyrene pellets into the hopper. Some got confused with the vacuum forming process.

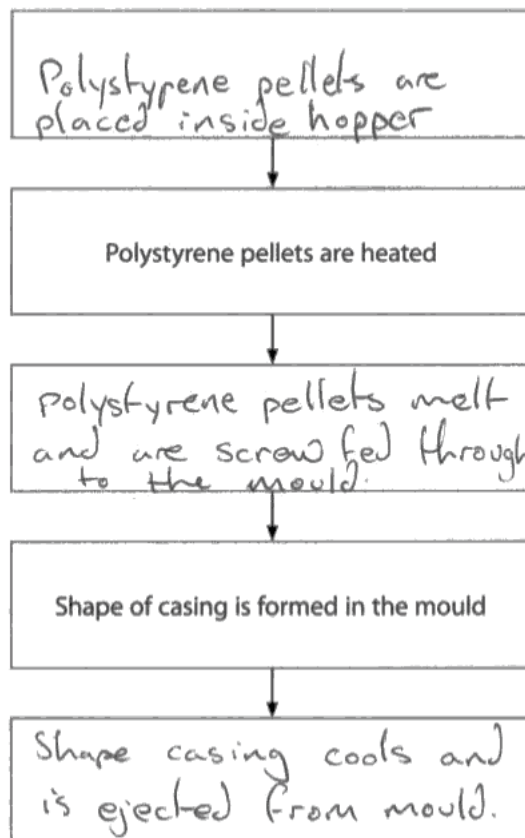
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Examiner Comments

This is an example of a good response. The candidate obviously has a detailed knowledge and understanding of the injection moulding process.

Some of the stages have been done for you.

(3)



Question 11(b)(iv)

Many candidates realised that Screenprinting is the only printing process in the new specification that is capable of printing on 3D objects. The others, such as offset lithography print onto flat materials. Several candidates stated 'pad printing' as outlined in the new GCSE Graphic Products textbook which, although not listed in the new specification, is also correct.



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Examiner Comments

If you think your initial response is incorrect then simply cross it out like this student has done and write in your new answer.

(iv) Name the printing process used to print the logo directly onto the rigid polystyrene casing.

(1)

~~embossing~~ screen printing

Question 11(c)(i)

Explain responses continue to cause problems for some candidates. Each valid point has to be justified in order to gain full marks. The majority of candidates demonstrated a good knowledge and understanding of the offset lithography printing process.



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Examiner Comments

This student's first response only gains one mark because it is not fully justified. Whereas their second response gains two marks because it is fully justified.

(i) Explain **two** reasons why the cover is printed using offset lithography.

(4)

1. Offset lithography can print using different types of ink on surface.

2. Offset lithography can print in high quality colours therefore the products cover is more advertising and appealing to the target market.

Question 11(c)(ii)

Many candidates were able to gain at least two marks for this question by giving one advantage and one disadvantage. Some candidates structured their response in a table headed advantages and disadvantages giving several statements under each heading. This was a clear and concise way of answering the question and enabled more than three points to be made.

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Examiner Comments

This candidate seems to have confused hot-foil blocking with lamination with their first comment. However, the next two comments are good examples of an advantage and a disadvantage.

- (ii) Parts of the computer game's cover use hot-foil blocking as a finishing technique.

Outline the advantages and disadvantages of using hot-foil blocking on the cover.

(3)

hotfoil blocking is a shiny clear cover
put on the top of your product, advantages
are, it makes the product aesthetically pleasing
disadvantages are it is expensive.

Question 12

A very well answered design question by the majority of candidates. Some of the designs were extremely creative and showed a well informed knowledge and understanding of materials and manufacturing techniques. Poor responses characteristically involved large amounts of irrelevant annotation that failed to address specification points.



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Examiner Comments

This student has successfully presented two different design ideas. The sketches and annotation clearly communicate their design intentions. Annotation clearly relates back to the given specification points.

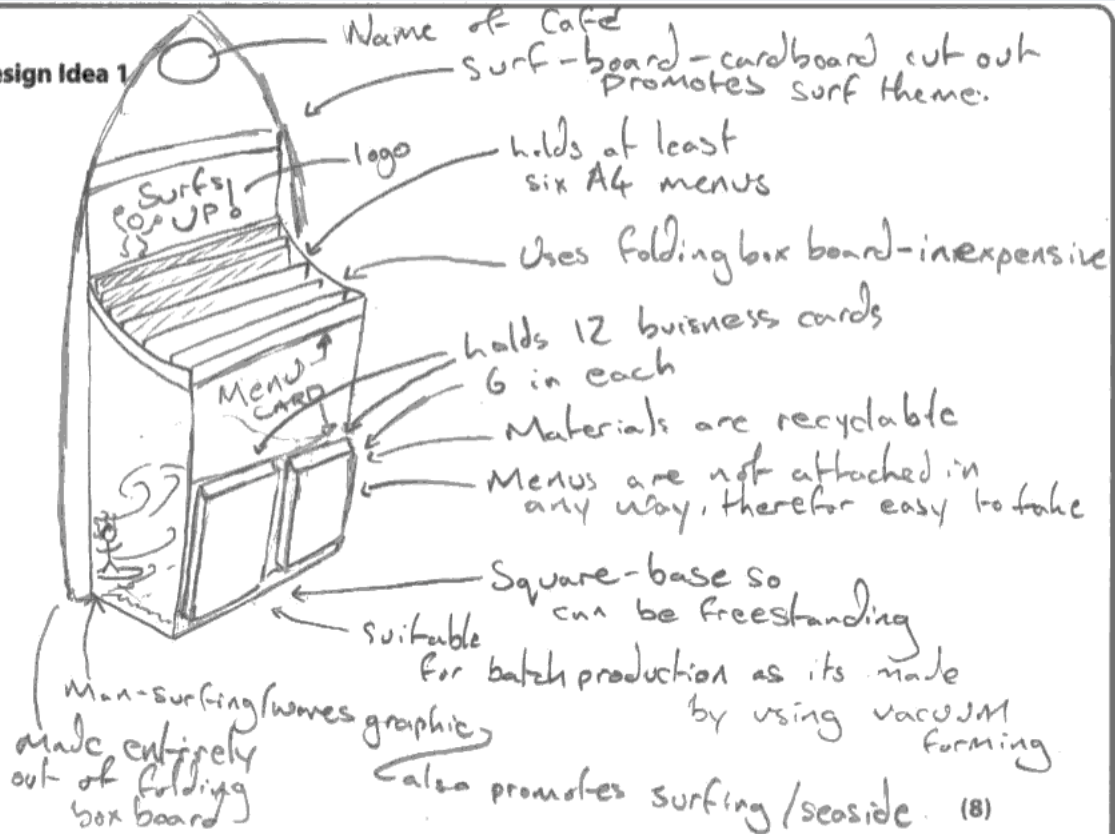


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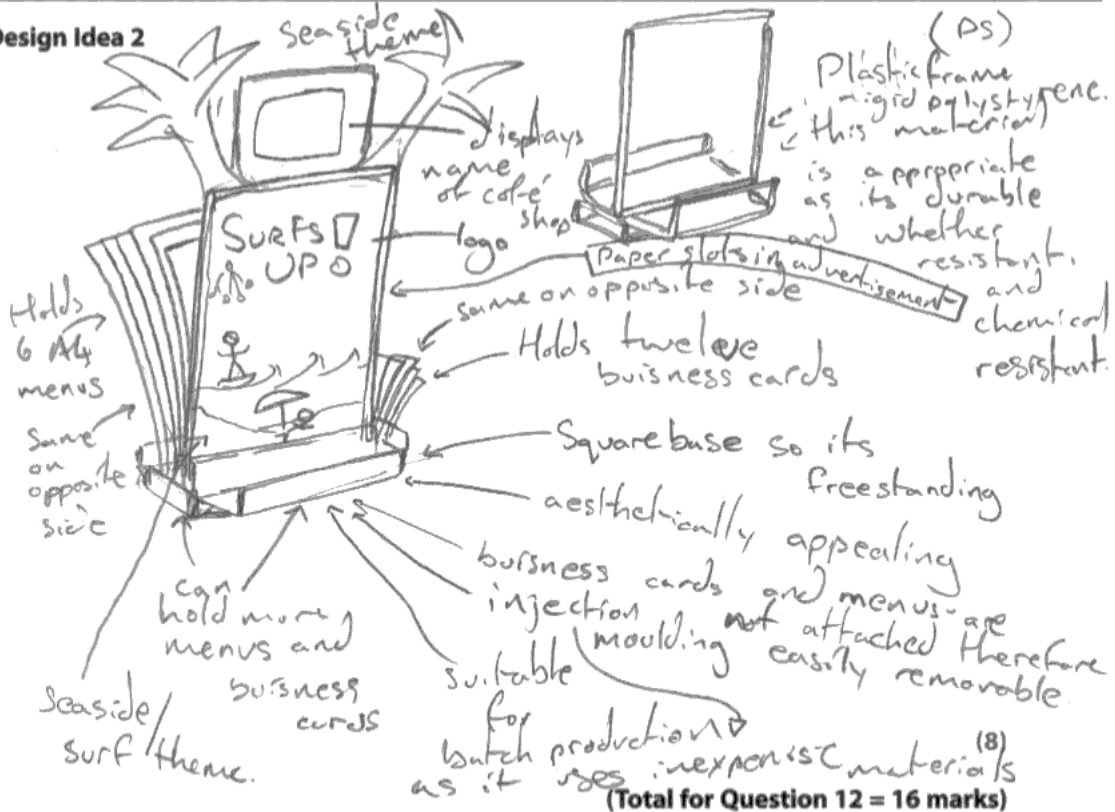
Examiner Tip

Use the specification points given as a checklist for each design. There will always be 8 points to satisfy for each design. Make sure you use a dark pencil or pen to sketch your designs. You don't need to shade or use colour.

Design Idea 1



Design Idea 2



(Total for Question 12 = 16 marks)

Question 13(a)

A generally well answered question with candidates correctly identifying and justifying at least one relevant property. Aesthetic, functional and mechanical properties were acceptable, however 'cheap' and 'being recyclable' are not acceptable responses.

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Examiner Comments

This student has given two good responses. The justification relates back to the actual product and does not simply give generic responses about properties of materials.

For each property, justify your answer.

(4)

Property 1

It's strong

Justification

So cannot be easily split open, this means it protects the product against damage.

Property 2

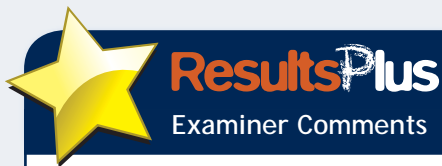
It is transparent

Justification

This enables the customer to see the product and all of its parts before buying.

Question 13(b)

A disappointing response to this question was observed by the examining team. Many candidates gave properties of polystyrene again and others simply described the vacuum forming process. This question asked candidates to apply their knowledge and understanding of vacuum forming to a specific product.

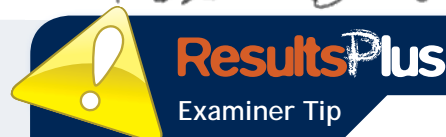


This student has failed to answer the question. We are asking 'why' vacuum forming was used. Instead, they have told us about the vacuum forming process and then about the material.

(b) Explain **one** reason why the vacuum forming process is suitable for manufacturing the PVC blister.

(2)

vacuum forming is when you mould plastic with a
mould, and pvc can be heated so its soft and
moulded into that shape ~~for~~ ~~go~~ you want.



Read each question carefully. You may want to use scrap paper to formulate your response and then copy it up onto the actual exam paper.

Question 13(c)

A generally well answered question with many candidates repeating appropriate properties of PVC and being able to gain some marks. Only a minority of candidates outlined the function of the backing card in providing a means of advertising the toy. The majority however, outlined the transparency of the blister so that customers could see the actual product before they bought it.



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Examiner Comments

This student has successfully explained how the product meets the given specification points. Their responses relate back to the product and are not generic.

(c) Explain why the blister packaging is successful at meeting the following specification points:

(i) advertising the product contained inside

(2)

The PVC would be transparent. The backing card could be printed on, therefore allowing the manufacturers to print attractive graphics on that advertise the product.

(ii) protecting the product contained inside.

(2)

The PVC is rigid and therefore provides good impact resistance and reduces risk of damage to product.

Question 13(d)

Generally disappointing responses to this extended-writing type question, lacking sufficient detail to gain more than half marks. It was apparent that many candidates did not fully understand built-in obsolescence and simply outlined recycling issues (as in the sample assessment material - specimen paper).

This question will always be worth six marks and will ask candidates to compare two similar products against an issue from the new specification.

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Examiner Comments

This student has correctly identified the main issue of re-use versus 'one trip' packaging. However, the remainder of the paragraph repeats this statement and therefore can not gain any additional marks.

packaging A can be reused to contain something else, this is environmentally friendly as packaging does not get discarded. Packaging B can only be used once therefore reinforcing the 'throwaway' culture. Packaging A can be used for multipurposes such as a picture frame. Packaging A has considered that it may be used in halves therefore being more useful. Packaging B has only one purpose which in the long-term will affect the environment and people's economy.

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Examiner Tip

Use scrap paper to practice your extended-writing responses. When happy with your effort simply copy up into best onto your exam paper.

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Examiner Comments

This response is well constructed and identifies several relevant issues. The use of specialist technical terminology is very good.

Package B has a built in obsolescence because once it is cut open, to obtain the product, it can not be put back in. This means that the packaging will have to be thrown away. Because packaging B has so much waste material, it promotes a 'throw away culture'. This means that it will end up in a landfill or being recycled which takes more energy. Either way it is bad for the environment.

On the other hand, package A does not have to be broken to enter, meaning it can be reused to hold the product (toy). This is far better for the environment as no more energy has to be used up to recycle it.

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Examiner Tip

Your Quality of Written Communication (QWC) could earn you an additional mark in extended-writing type questions.

Question 14(a)

The majority of candidates were able to gain at least two marks from this question by giving appropriate short responses. However, there were a significant amount of 'easier to do' responses which did not gain a mark. Again, 'cheaper' responses were unable to gain a mark as they were not fully developed i.e. 'cheaper because you don't have to pay skilled model makers'.

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Examiner Comments

'Easy to do' is not an acceptable response. Such responses should be avoided for all types of questions at GCSE as they are not specific enough to gain marks.

(a) Give **three** advantages of making the model using rapid prototyping rather than modelling using hand tools and equipment.

(3)

1. *Its quicker*
2. *Its easy to do*
3. *~~and it not to~~ gives a more ^{Precise} ~~precise~~ Finish.*

Question 14(b)

Many candidates had a good understanding of the importance of the development stage of the design process and were able to apply it to the architectural model. Candidates who did not gain full marks here failed to fully justify their response.

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Examiner Comments

This is an example of a well constructed response. The student has clearly understood the significance of the development stage of the design process and applied it to the product.

(b) Explain **one** reason for making an architectural model of a building at the development stage of the design process.

(2)

So that parts can be modified if necessary and new ideas can be developed. They can improve the design on the model before ~~it~~ has been built. ^{the real thing}

Question 14(c)

Many candidates were able to fully justify at least one advantage of virtual reality modelling by applying their knowledge of 3D CAD modelling. However, a significant amount of candidates did not fully realise the skills of the professional model maker in making a high quality model. The most effective application of virtual reality modelling in architecture is perhaps the ability to create 'walk throughs' which very few candidates seemed to pick up on.

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Examiner Comments

This student has made two valid points but has failed to justify either of them.

Explain **two** advantages of this type of modelling compared with traditional architectural modelling.

(4)

1. it gives you a better idea of what it will look like,
2. be easier to make changes to places were it need to be changed.

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Examiner Tip

Don't forget that explain responses require a valid point to be stated (1 mark) and then a justification (1 mark).

Question 14(d)

Candidates were divided into two clear groups here - those that were familiar with the stereolithography process and those that were not. Those that were gave some very detailed responses indeed. The quality of sketching could have been improved by many candidates.



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Examiner Comments

This student has obviously studied stereolithography but hasn't fully communicated their understanding. The sketch gets a mark and the laser annotation gets another. However, the remainder of the annotation is inaccurate.

In the space below, using notes and sketches, describe the stereolithography process.

(4)

Laser solidifies the plastic in the design of the CAD.

Computer to make changes to the design using DTP.

Molten Acetate is stored at the bottom ready for being solidified.

Net is used to slowly feed molten acetate up to be solidified.



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Examiner Tip

When a question states 'use notes and sketches' you must use both in order to gain full marks.

Question 14(e)

A better range of responses were evidenced for this extended-writing type question aimed at A* grade candidates. Most candidates were able to describe the advantages of email or videoconferencing but were unable to fully justify the benefits to the construction project in order to gain full marks. Many even overlooked the obvious time savings of the architect not having to travel to another country.



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Examiner Comments

This is an example of a typical student response for this question. They have identified a couple of issues and made a fair effort at a structured response.

Discuss the benefits of electronic communication between the architect, the client, and the construction company during the building project.

(6)

During the whole project some designs will be changed or faults could occur so using electrical communication you could tell them straight away.

Send messages of important criteria to a multiple number of people at the same time of the identical message.

Send complex designs on the computer fast and be edited by ^{the} people involved.

Send Photographs of the construction in progress and see how it is going.



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Examiner Tip

You can use bullet points to answer this extended-writing type question. However, make sure that each bullet point is fully justified and not simply a list.

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Examiner Comments

This is an example of an above average response. The student has successfully discussed several relevant issues and structured their response well. The quality of written communication (QWC) is very good.

Discuss the benefits of electronic communication between the architect, the client, and the construction company during the building project.

(6)

Using electronic communication, such as email, the architect can easily send ideas to the client and construction company. Because it is so fast, the architect knows what he needs to change quickly. This means that the whole process will be faster. Electronic communication is also better because you do not have to pay postal charges or for paper. Also by using paper, you would be using up natural resources.

Because the architect does not have to come to India to talk about the product, he can use email instead. The final product will be cheaper, because the architect does not have to charge for travel.

Also travelling by plane would not be economic and would waste fossil fuels and contribute to global warming with greenhouse gases.

Teachers and candidates alike are reminded that the structure of the exam will remain the same for next year. The great thing about this exam is that it is written to a template structure every year and that structure will not change (but obviously the questions will).

Each exam paper will be structured in the following way:

Questions 1-10 - 10 multiple-choice questions.

Question 11a - Completing a table by giving the missing names and uses of 4 different tools and pieces of equipment.

Questions 11b onwards - Knowledge and understanding of graphic products using structured short-answer questions based on a theme.

Question 12 - Designing products. Use annotated sketches to design 2 different ideas for a given design specification.

Question 13 - Analysing products. Structured short-answer questions and one extended -writing question based upon a specific product.

Question 14 - Knowledge and understanding of graphic products using structured short-answer questions and one extended- writing question.

You will be able to practice your exam skills and familiarise yourself with the structure by completing the two sample papers and past papers. Therefore, when you open up the paper on the examination day there will be no surprises. For example, you will automatically know that Question 12 is the design question and that this will be written in a way that you have already practiced several times over.

This candidate is obviously very familiar with using a drawing board for technical drawings.

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