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Examiners' Report June 2010

GCE Design and Technology 6GR02

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Introduction

It is pleasing to see that the standard of responses this year were on the whole very good. It is clear that the vast majority of candidates are well prepared for the exam and have a sound knowledge of the material. It is unfortunate that there are still some candidates who lack basic knowledge of Graphic Products and related subjects and are responding to questions with generic, generalised answers.

The paper is 90 minutes in length and it seems that the majority of candidates use their time well. Most responses are well answered and there is little evidence of candidates having to rush answers due to insufficient time.

Centres should note that the amount of space provided in the question paper, is more than we would expect any answer to take. Most candidates use this space wisely, however, some candidates still use additional pages. Centres should assist candidates during their exam preparation to write concisely. Examiners want to see that candidates know the material and can organise it effectively to answer the question set, rather than write as much as possible in the attempt that their response will gain some marks somewhere in the script.

The approach to individual questions is considered in the reports below. An example of a candidates response is given with some feed back for each question.

Centres should use this material and past papers in order to assist candidates in their exam preparation. Use of the mark scheme, which is available on the Edexcel website, will also assist candidates in their understanding of questions and typical responses.

Finally, it goes without saying, that candidates who read the question and respond with specifics, gain more marks than those who write "around" the subject with generic responses.

Question 1(a)

This is a knowledge based question that asks for the 'name' of a specific type of carton board. Single word or phrase answers are acceptable for this type of answer.

This is a commonly used packaging carton board and so centres are advised to ensure candidates are aware of these basic materials used within Graphic Products.

The candidate has clearly written the carton board type: folding boxboard.



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Examiner Comments
This response gained full marks

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Examiner Tip
Descriptions are not needed with this type of question.

Question 1(b)

This is a knowledge based "state" question, so a single word or single phrase would be acceptable. It is testing the students recall of printing processes relevant to carton board.

This question refers to a commercial printing process for printing colour images onto the packaging.

(b) State a suitable commercial printing process that would be used to colour print the graphics onto the packaging.

(1)

off set lithography -



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Examiner Comments

The vast majority of candidates answered this correctly; marks were awarded for the full name; "offset lithography" and for candidates who wrote "offset". A minority of candidates just wrote any printing method they could think of. This response gained full marks



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Examiner Tip

Write the full names of process rather than shortened versions.

Question 1(c)

This is a "give reasons" question, looking for candidates knowledge of materials. A simple phrase is satisfactory. Single word answers are not enough. TWO clear reasons are needed.

This question is asking for knowledge of post printing finishes; in this case varnish finishes.

(c) The packaging has been varnished after printing.
Give **two** reasons why the packaging has been varnished. (2)

- 1 To give the material slightly more water resistance when used around liquids such as milk.
- 2 To give the product a more aesthetically pleasing visual appearance.



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Examiner Comments

The candidate has clearly given two responses. Note the reference to "slightly more water resistant" rather than 'waterproof'. This response gained full marks



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Examiner Tip

The candidate has made the reference to the product and not just the material.

Question 1(d)

This is a "give reasons" question, looking for candidates knowledge of processes. Four simple phrases are satisfactory. Single word answers are not enough. Die cutting is a basic graphic products process, candidates must be made aware of this process for packaging and net cutting.

The question asks for FOUR reasons for using die cutting. Responses must be specific, i.e. writing "fast", "cheap" etc not good enough.

(d) The packaging is cut using the die cutting process.

Give **four** reasons why die cutting is used.

(4)

- 1 It creates a precise cut around the shape
- 2 It eliminates the risk of human error
- 3 It is quick to allow the product to be mass produced
- 4 It can do several sheets at once speeding up process.



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Examiner Comments

This is a strong answer, with specific information. Sentences are used and are not too long.

This response gained full marks.



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Examiner Tip

Candidates need to realise this is a commercial process and therefore responses should be related to mass produced, commercial packaging.

Question 1(e)

This is a "describe" question and so for full marks a suitable point must be made, with a relevant explanation. It is not sufficient to simply put two unrelated points.

This question asks for a description of how the BSI benefits the customer. The response must be a description (i.e. a factual point and explanation of that point) and must relate to the benefits it provides.

(e) The British Standards Institute (BSI) is one of the world's leading standards and quality services organisations.

Describe **one** way in which the work of the BSI benefits the consumer.

(2)

The manufactures have to abide by all BSI regulations. Meaning the consumer always gets the high quality and safer product outcome.



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Examiner Comments

This response gained full marks



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Examiner Tip

Ensure the response refers to both BSI and consumer.
Here the BSI regulations are referred to, as are product quality and safety.

Question 1(f)

This is an "explain" question and so for full marks 2 suitable points must be made, with relevant explanations.

It is not sufficient to simply put unrelated points.

The explain questions need a point with a relevant explanation. This question asks for the candidates understanding of TQM; it is expected that they will understand it is more than just QC testing.

(f) Explain **two** reasons why manufacturers of mass produced products use total quality management (TQM).

(4)

1 To ensure all the machines are working, so it doesn't disrupt the manufacturing process



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Examiner Comments

This response gained half marks as the candidate has not really grasped that TQM impacts all aspects of the manufacturing and commercial process.



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Examiner Tip

Some candidates lose marks as they only write the statement then don't really explain it. In this case the first point is not specific enough. Candidates are increasingly being generic in stating "check the machines"... they need to state what they are checking.

Question 2(a)

This knowledge based question asks for the 'name' of a specific type of drawing. Single word or phrase answers are acceptable for this type of answer.

Isometric is a common drawing method. This question asked for candidates knowledge of drawing types.

Figure 2

(a) Name the specific type of pictorial drawing used in Figure 2. (1)

Isometric



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Examiner Comments

This response gained full marks



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Examiner Tip

Candidates need to learn the basic drawing types: isometric, planometric, orthographic etc.

Question 2(b)

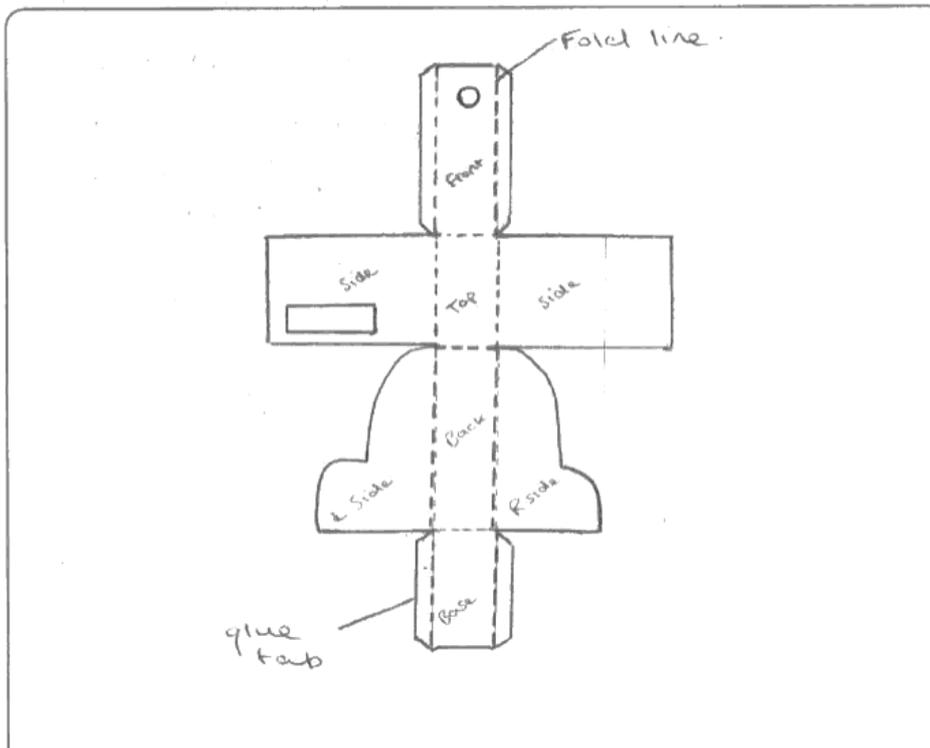
This question allows candidates to show their drawing skills whilst in an exam situation. Whilst the question asks for a "sketch", candidates should endeavour to draw as neatly as possible. In addition, they should ensure they have included all aspects of the drawing required from the question. Candidates need to practice drawing for AS exams.

The net is complex and requires the candidate to visualise the net shape and include details such as the fold and crease lines, hole and window etc.

(b) In the following box, draw the net (development) of the document folder shown in Figure 2.

Your sketch should clearly show all the folder's features, the fold/crease lines and glue tabs.

(5)



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Examiner Comments

This net is well answered and gains full marks, it is clearly drawn and labelled. The proportion of the net is maintained and there is clarity of drawing.



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Examiner Tip

Candidates should ensure their drawing is clear and well lined in. Candidates should not use colour or faint pencil lines.

Question 2(c)

This is an "explain" question and so for full marks TWO suitable points must be made, with relevant explanations.

It is not sufficient to simply put two unrelated points.

This question asks for candidates to explain advantages. Note the explanations must be relevant to using CAD rather than hand drawn methods. Generalised

(c) The document folder was designed using computer aided design (CAD).

Explain **two** advantages of designing the document folder using CAD rather than traditional hand-drawn methods.

(4)

- 1 It creates a much higher quality outcome rather than hand-drawn methods. It also is a lot easier to alter and change if needed.
- 2 Using CAD also allows the information and design to be sent via email to the manufacturing company cutting time down considerably.



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Examiner Comments

This response didn't attain full marks (3 marks); the advantage of being able to alter and change are valid but the idea that CAD is higher quality than hand drawn is not necessarily true. Advantage 2 gives a clear point and explanation so achieved 2 marks



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Examiner Tip

Candidates should be aware that in some cases computers are not always better than hand produced methods.

Question 2(d)

This is a "describe" question, meaning candidates should make a statement and explain it for full marks. In this case they should be giving an advantage and disadvantage. Candidates are being questioned on their knowledge of binding. Please note, it is not a compare question and so candidates are not required to compare binding types.

Comb binding is a simple binding method not to be confused with ring binding. It does necessitate a cheap and simple machine to assist the binding process.

(d) Loose page documentation stored within the document folder has been bound using a comb binder.

Describe **one** advantage and **one** disadvantage of using a comb binder rather than other methods of binding.

(4)

Advantage documents when needed can be removed from the binder as no glue is needed.

Disadvantage Comb binders are not very good at hold large quantities of paper due to stress or spindles.



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Examiner Comments

This is not a strong answer and only received 2 marks. The points given are not explained to be able to gain full marks.

Question 3(a)

This is a "give" question. Short phrases are expected, single word answers are not acceptable. Note that specific functional and aesthetic properties are required. Candidates who gave general properties did not gain full marks.

This question required specific responses and was related to the paper cover found within a DVD case.

(a) The DVD cover is printed on commercial coated paper.
Give **one** aesthetic and **one** functional property of coated paper. (2)

Aesthetic *can have high gloss, matt, satin or silk finishes to give a shiny aesthetic appearance.*

Functional *Smooth printing paper surface which enables colours to look of a high vibrant quality.*



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Examiner Comments

Some candidates answered this with general responses. Coated paper can be found in a whole range of finishes so candidates who simply stated it is "shiny" received no marks. In this case, the candidate stated a whole range of finishes and that it improved the aesthetics.

2 Marks awarded.



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Examiner Tip

Candidates should write full detailed answers.

Question 3(b)

This is a "state" question. So single word answers are acceptable.

Note whilst the correct spelling in any exam is important, for this type of question phonetic spellings were accepted.

(a) The DVD cover is printed on commercial coated paper.

Give **one** aesthetic and **one** functional property of coated paper.

(2)

Aesthetic *can have high gloss, matt, satin or silk finish to give a shiny aesthetic appearance.*

Functional *smooth printing ~~area~~ surface which enables colours to look of a high vibrant quality.*



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Examiner Comments

Answers of polyprop-e-lene etc were also accepted.



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Examiner Tip

Candidates should investigate and understand all polymers in the specification.

Question 3(c)

This is an "explain" question, requiring a valid point and a relevant explanation. It is not sufficient to write single word answers, or two unrelated points. Bullet points are also not acceptable.

Mass production is a key feature of graphic products and so should be recognised by all candidates.

Mass production is a key feature of graphic products in the commercial world and so all candidates should be aware of the main features of this type of production.

(c) Explain **one** feature of mass production.

(2)

Identical products, large quantities of identical products
 can be produced due to the highly automated CAD/CAM
 processes and technology which do not change whereas
 human manufacturing would have differences from product to product.



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Examiner Comments

This candidate has given a strong answer, with more points than marks available.



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Examiner Tip

Answering a question with concise detail is better than repetition and irrelevant comment.

Question 3(d)

This is a "state" question, so simple phrases are sufficient.

The question is trying to gather the students' understanding of commercial printing and manufacture as well as aspects of quality control.

The stages in the table reflect aspects of manufacture found in commercial printing. Quality control checks are found at each stage.

Stage of production	Quality control check
Preparation	-check that all materials are at the right measurements
Processing	-check that there is a colour consistency on the paper using colour bars.
Assembly	-check that the paper fits the DVD cover and it does so comfortably



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Examiner Comments

This is a satisfactory answer, gaining 2/3 marks. The responses in the processing and assembly stages are clear and gained marks.

The response of "check all materials" is not sufficiently concise to gain marks.

Question 3(e)

This is an "outline" question needing a paragraph answer. In this case three separate points are needed to gain full marks.

Pulp manufacture is a fundamental part of the course; the basis of all paper and card making, the question is asking for candidates understanding of the principle feature of manufacture.

Candidates are asked to select one pulp method.

Outline the key stages of **one** method of producing wood pulp.

(3)

Chosen method *chemical Pulp* - after de-barking, wood is cut into ~~small~~ fragments - larger fragments are mixed with an acid or alkali to separate lignin, and is then ground to a pulp. The ~~see~~ resulting pulp can only be used for products such as newspapers, due to low quality, so is bleached to be used for higher quality products. Fairly



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Examiner Comments

A strong answer. The candidate gives more than three points in a concise and clear answer.



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Examiner Tip

Use the process to structure answers; in this case tree preparation, pulp making, chemical additions. Use specific facts and technical terms.

Question 3(f)

This is a "describe" question and in this context requires a paragraph answer with three separate points.

The Fourdrinier process is at the core of paper and card manufacture and so graphic product students should have an understanding of its roll in paper and card manufacture.

This question provides students to write longer responses about an important aspect of the specification.

(f) Paper and card can be manufactured using the Fourdrinier process.

Describe the main stages of the Fourdrinier process.

(3)

Woodpulp is put on the conveyor belt.
The water is pressed and drains away, it
is then rolled out with a roller until
it is to the desired thickness, the
woodpulp now paper/board is then rolled
again with a heated roller.

Total for Question 3 = 14 marks



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Examiner Comments

Candidates should structure their answers based on the stages of the Fourdrinier process. In this case the candidate did not place enough factual information in the answer for good marks.



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Examiner Tip

This is a three mark question so ensure there are at least three points in the response to gain full marks.

Question 4(a)

This is a "give" question, looking for candidates knowledge of materials. A simple phrase is satisfactory. Single word answers are not enough. TWO clear properties are needed.

Ensure the response is related to the question. In this case the PET is used with milk, so answers that relate to stops "gas" etc gained no marks.

(a) Give **two** properties of PET that make it suitable for use as a milk container.

(2)

- 1 non-toxic so won't affect the tastes of the milk.
- 2 transparent so allows us to see into the container.



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Examiner Comments

This is a strong answer and gained full marks.

Question 4(b)

This is a "describe" question and in this context requires a paragraph answer with three separate points.

Understanding smart materials is essential in graphic products, but understanding how to relate it to the question context is equally important.

Simply "writing all you know about thermochromic materials" is not enough. The question asks for how the thermochromic material can enhance the milk container.

(b) Smart materials are increasingly used in products.

Describe how thermochromic film could be used to enhance milk container packaging.

(3)

It allows consumers to realized that if whether the milk is still cool or warming up. So that consumers will know when ~~it~~ ^{will} ~~they~~ it needs to be place back into the fridge. The colour will change ~~made of~~ ^{on} the thermochromic film as the temperature is changing.



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Examiner Comments

This is a strong answer. Ensure the answer links to the question.



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Examiner Tip

Don't allow answers to "go off the point". Keep them relevant to the question.

Question 4(c)

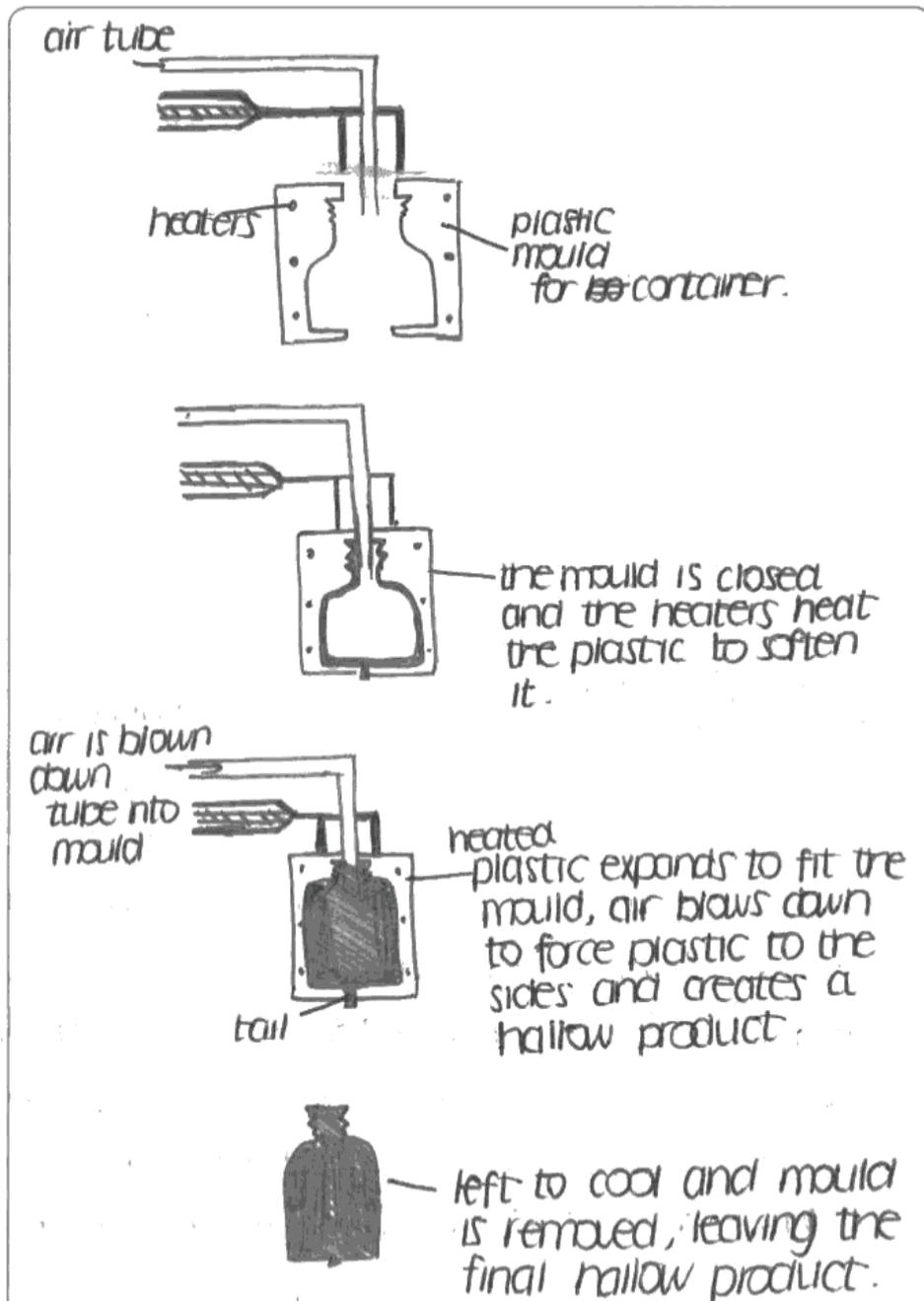
This type of question can be answered in many ways. However, the answer must include both drawings and annotation. Without either drawing or annotations full marks cannot be gained.

The mark scheme allows for candidates to answer this question in a number of ways. Detailed sequential drawings allow candidates to gain high marks.

(c) The milk container was produced using the blow moulding process.

Using annotated sketches describe the blow moulding process.

(4)





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Examiner Comments

A strong response gaining full marks. It is clear concise and detailed. Annotations are clear.



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Examiner Tip

Draw detailed drawings and take up all the space available.

Question 4(d)

This question allows the opportunity for candidates to write at length to show they have a sound understanding. In this case it is a "describe" question so requires five valid and detailed points within the answer.

This question is specifically about COSHH and how employers work within the COSHH framework. The description needs to be detailed and specific, concise answers are required.

(d) The Control of Substances Hazardous to Health (COSHH) regulations are an essential aspect of health and safety in the workplace.

Describe what employers must do to protect their employees from hazardous substances.

(5)

In the modern day society, there are many instructions and regulation the employers must follow as a part of the COSHH standards. The employers must provide safety equipment in the workplace for the employees, to reduce the chances of danger and impact. The employers must label all chemicals with a label of the COSHH standard required. This would allow the employees to know the type of liquid or chemical they are using, and follow the safety procedures of the COSHH standard. Another aspect the employers must do to protect their employees is placing warning signs, and the COSHH standard where required. This is so the employees know that the area, ~~the~~ tools cupboard or chemical based products requires attention of COSHH standards. The employers should also provide a COSHH standards booklet in the workplace, to allow the employees to read and refer to, so they know what safety measures need to be taken. A COSHH standards book is also provided, for the employees to fill out, in case of any danger, or problems occurred.

Total for Question 4 = 14 marks



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Examiner Comments

This is not a question about general health and safety and when candidates responded in that way they gained little or no marks.



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Examiner Tip

Get straight to the point of the answer, don't waste space with introductions. Break down answers into paragraphs; one main point per paragraph.

Question 5(a)

This question allows the opportunity for candidates to write at length to show they have a sound understanding. In this case it is a "describe" question so requires five valid and detailed points within the answer.

This question is specific in its theme and is asking for candidates to respond with reference to photo realism not just CAD. Whilst there are some similarities candidates who answered with generic responses did not gain high marks.

(a) The designer used computer modelling to create photo realistic images of the new mobile phone.
Describe how computer generated photo realistic images help the designer. (5)

The photorealistic images can allow the designer to see an accurate model of how the product could look. Also, the images can be sent easily to other designers or manufacturers ~~because of the~~ ^{because of the} ~~advancements in~~ ^{advancements in} email. Thirdly, the designer can zoom in and out ^{intricate} at the product so that he/she can see ~~intricate~~ detail.



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Examiner Comments

A weak response. Some detail given only gaining 2 marks.



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Examiner Tip

Get straight to the point with the answer and ensure the response is directly relevant.

Question 5(b)

This is an "outline" question requiring a single paragraph answer, with single points. This question allows students to answer in a concise way about a specific aspect of the specification.

The question is specifically about the use of LCD screens in mobile's. The response should be related to this application.

(b) The concept mobile phone uses a liquid crystal display (LCD).

Outline the benefits of using this type of display.

(3)

liquid crystal display allows the usage of high image quality to products like mobile phones, computer monitors and ipods. It also benefits because allows a higher level and a wider variety of colour pixels to be used on the product. It also benefits as LCD screens can allow the consumer to watch moving images (films/videos) in high quality in terms of colour, without distortion.



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Examiner Comments

This is a strong answer, with three clear markable points. The response is related to mobiles and gives concise answers.



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Examiner Tip

With a three point question ensure you have three clear points.

Question 5(c)

As an "evaluate" question the response MUST have the same number of points in the answer as marks available. It is essential for all evaluate questions that there is points for and against (pro's and con's) otherwise full marks cannot be attained.

This type of question allows candidates to write at length and really express their understanding of the topic (in this case; RFID).

(c) Radio frequency identification (RFID) will be built into the concept mobile phone.

Evaluate the use of RFID.

(6)

RFID is used on many products to reduce chances of being stolen from the shops as the transmitter sends signals to the transponder which means if the product hasn't been bought it will be detected by the transmitter which sets the alarm off. ~~This has~~ This has saved shops profits.

Although, RFID is on nearly all products and this can evade privacy as the transmitter can detect where the transponder (product) is all the time.

RFID can be used in the military which help track down people and find ^{the} lost. RFID also makes shopping quicker as it can be ^{the} scanned ~~can be scanned~~ which tells us all about the product so about the price, the content and the place where it ^{was} ~~came from~~ manufactured. This means the manufacturers can see how much they have sold in a particular area meaning they can manufacture more to meet the market demand.

^{RFID} Active responder is powered by battery and has a greater distance it can send signals but limits life

Passive responder is powered when needed but has a shorter distance it can send signals and but a longer life.

Total for Question 5 = 14 marks

TOTAL FOR PAPER = 70 MARKS



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Examiner Comments

This is a good response, it could be structured better. 6 marks.



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Examiner Tip

Plan the question before starting to ensure all aspects are covered and the answer is not jumbled and does have a clear structure. Make sure the pro's and con's are clear and easy to pick out

Grade Boundaries

Grade	Max. Mark	A	B	C	D	E	N	U
Raw mark boundary	70	49	43	37	32	27	22	0
Uniform mark scale boundary	80	64	56	48	40	32	24	0

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