WJEC 2014 Online Exam Review

GCE Design and Technology DT1 1111-01

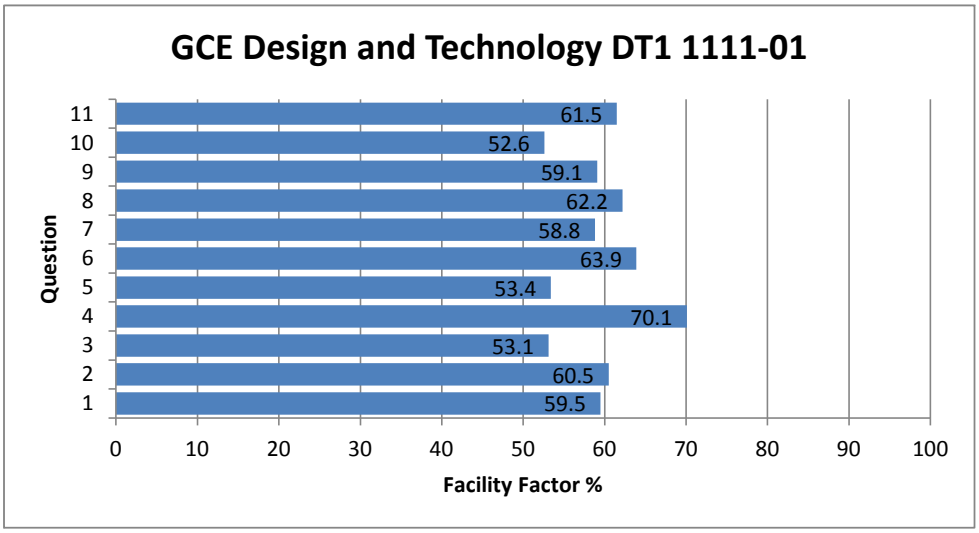
All Candidates' performance across questions

Question Title	N	Mean	S D	Max Mark	F F	Attempt %
1	773	4.8	2	8	59.5	32.9
2	1764	4.8	2.1	8	60.5	75
3	1818	4.2	1.8	8	53.1	77.3
4	2019	5.6	1.6	8	70.1	85.8
5	814	4.3	1.5	8	53.4	34.6
6	1527	5.1	1.7	8	63.9	64.9
7	1194	4.7	1.7	8	58.8	50.7
8	1739	5	1.8	8	62.2	73.9
9	762	17.7	6.1	30	59.1	32.4
10	542	15.8	5.6	30	52.6	23
11	1043	18.5	5.6	30	61.5	44.3

3

5

10



SECTION A

Answer **five** *questions from this section.*

This section is designed to demonstrate your **breadth** *of knowledge in Product Design.*

Each question carries 8 marks.

3. Patents, Copyrights, Registered Trade Marks, Registered Design and Design Rights are distinct intellectual property rights granted by the Intellectual Property Office.

Describe the features and protection provided by **two** of the above intellectual property rights.
2 × [4]

Question number
Rhif y Cwestiwn

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Section A

Q3.) The intellectual property office granted distinct intellectual property rights to the designe and inventor of the prodcut. A patent is an example of an intellectual propety right which pictects the designes and their designs from being copied. Inventos also use it as a form of legal protection as legal action can be taken if someone is attempting to copy the patent. However, the designe must prove that the design is theirs and it must be new / secretive and be able to be industrially made. A patent pictects the designes invention for 20 years, but it is expensive for new designers. It is a hugely succesful form of pictection but designes need to be aware that product information is made public to allow technological developmet to be taken by others. Registeed trade marks are another form of pictection for the designe as they pictect the brands reputation, Symbols and Logos It is an important marketing and practical tool as any sign can be represented graphically. It cost £200 to be renewed and if renewed will offer the designer ~~[illegible]~~ pictection forever. Therefore I feel that both Patents and Registered Trade Moks are both extremly succesful and efficient forms of pictection that offer intellectual picpetyrights. to the designer.

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1

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(5).

Question number *Rhif y Cwestiwn*

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Section A

3) Patent is a legal right for designers, it is granted by the intellectual property office. The Patent cover a new idea that has never been seen before. The skills used to make it ~~was~~ could be new and not used by another artist before. Lastly, the idea must be physically possible. Most patent are mecanical objects. For a patent to last 20 years the company must renewed it every year. The patent protects ~~eap~~ companies from other people copying them An example of this is lego they have a patent for there brick: the material used and the way they fit together, To "give the satisfying click". ~~James Dyson~~ Another example is James Dyson he won a 5 year legal battle *Armrys. As the copied one of his ideas ~~from~~. A patent can be sold, lincensed or lent out to ~~other~~ people

~~Trademark~~ Registered trademark is also a legal right, granted by the intellectual property office. The resgistered trademark covers the ~~words~~, symbol or words. for a company, it protect ~~this~~ them from being copied by other people. The oldest trademark is the red bass triangle. The registered trademark can distiguish between to similar products ~~from from each other~~ e.g. coke and pepsi

x against

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1 1 1 1 1 1 1 (6)

Question number

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3) When a product is Copyrighted it means that the individual product cannot be used by anybody else without the owners permission. It states a clear ownership of the product and entitles the person to press charges on anybody who copyies their work and claims it to be their own. A Copyright will cost money for the owner to enforce and does only last a certain amount of years until it wares off and must be claimed by copyright again to enforce the same features as before.

Design rights states the ownership of a design whereas a Copyright is used on a number of different things. A Design right entitles the person who enforces it with protection on their products designs no the product itself. This is done in the early stages of designing to prevent anybody stealing your designs and claiming them to be theirs.

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(2)

5. Both solid modelling and performance modelling are used in the development of products.

(a) Describe **two** benefits of solid modelling to the designer. 2 × [2]

(b) Describe **two** benefits of performance modelling to the manufacturer. 2 × [2]

Question number

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5a	A solid model can benefit a designer as they can relate it to the shape size and weight of the product before they manufacture the finished product. It can show them changes they may need to make before further manufacturing.
b	A performance model can show the manufacture if their product ~~works properly~~ functions properly and if there is any problems which need fixed before they produce large amounts of it. They will show the manufacturer exactly how well it works

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(3)

Question number

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5a) Benefits of solid Modelling to the Designer:

- The designer can show solid models, for example of an office chair, to the target user in order to gain feedback on areas such as aesthetics, or ergonomics which the user can test the product against. This will help identify where the product needs further improvement.
- Solid modelling can also be used by the designer to test the function of a product, for example mechanisms, such as those to lift seat heights in an office chair, and also to test anthropometrics for example whether the backrest is the correct length for a person to sit in.

Solid modelling involves creating a 3D physical model of a product or component.

b) Benefits of performance modelling to the manufacturer:

Performance modelling, for example rapid prototyping or selective lasers sintering, used in the development of the Dyson DC11 vacuum cleaner, involves using CAD & CAM to generate models, and pre-production prototypes.

- The manufacturer can use a performance model to carry out tests on the product, for example testing materials for strength & toughness as well as other properties.
- The manufacturer can also use it for tests in the Quality Control process, to check the quality of appearance & dimensions and tolerances, to ensure that the product meets the specification before going into manufacture.

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5a) Solid modelling can allow the designer to assess the shape and form of the product, allowing them to determine whether the aesthetic design regarding shape and form produces the desired emotional ~~response~~ response.

Also, the solid model can be placed in the products intended environment. This allows the designer to determine if the product is the correct shape and size to suit its environment, or whether changes are needed.

b) Performance modelling means that the manufacturer does not need to run a full scale production test to ensure the product performs, instead a specific element of performance can be tested - saving time and money.

Furthermore, a performance model can help a manufacturer determine if a production process needs to be done in a specific way to ensure final product performance. If this was not done as performance modelling prior to full scale production then it would be costly to change processes mid-production.

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7

SECTION B

Answer **one** *question from this section.*

Your answer should be substantial and show the **depth** *of your knowledge in Product Design.*

Each question carries 30 marks.

10. Fashion, style and trends are important factors in the development of products, such as the continuous development of mobile technology.

Discuss this statement in relation to a **different** product or range of products. [30]

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Question number

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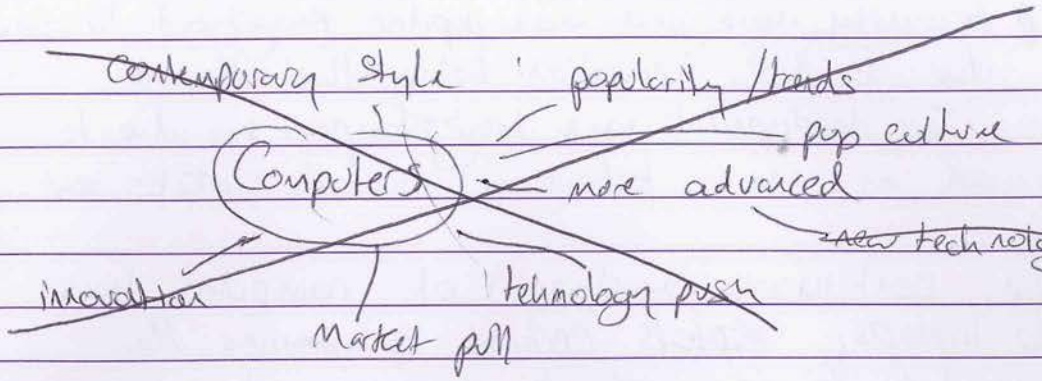

Computers these days focus very much on innovation, ~~trying~~ to with designers trying to come up with new ways to set up trends. Technology is key in making a product succesful in modern day society. With pop culture forcing the the market to keep selling new products with ~~better innovation and more technology~~. current styles and fashionable ~~company~~ companies making for top sales.

A style, such as contempory, ~~or~~ or proffesionalism ~~creates~~ is an important factor in the development of new technology. This is because of the demand ~~on market~~ on technology from market pull. ~~The market~~ The modern market craves for styles popular in society as they know that that is what ~~sells~~ people want to buy. The demand for this means that manufacturers also need to bring out ~~better technologies~~ ~~technologies~~ more advanced technologies so that people don't keep getting the same with every computer they buy.

One particular big trend at the moment is the popularity of ~~the~~ ~~Ap~~ Apple softweres Mac computer. Technology on these machineres need to be high in order to match the large ~~ess~~ amount of customers expectations on them. Due to Mac's being a large trend means the customers are expecting bigger and better technological advancements in Apples next product. This expectation forces Apple into doing this and developing their designs further.

A specific innovation and technological advancement in computers is the invention of ~~laptops~~ labtops. Laptops

Question number		Leave Blank
	are becoming more and more popular throughout the years due to their innovation being that they are portable. This development was brought upon due to the demand on newer technology from the markets needs.	
	The continuous development of computers has led to laptops, ~~laptops~~ certain companies then incorporated the use of touch screen technology. This then became the norm in peoples lives. This technology then brought upon tablets. Small, portable hand held devices which play the role of a computer. They have set trends due to their unique style which has became extreamly popular today.	

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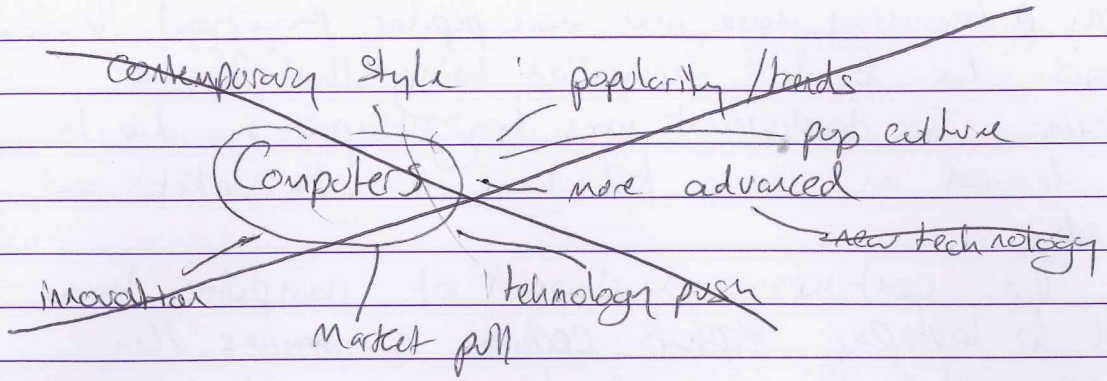

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10

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10

Fashion, style and trends contribute significantly to the development of products; computers formerly were replaced once every 6-10 years, however recently this has decreased to once every 2-5 years, as consumers buy thinner laptops with new styles to follow trends. However fashion is not the only important factor in the development of products, with developments in materials technology, the introduction of smart materials, economical processes and the environment also acting as significant factors in product development.

Fashion trends are certainly an important factor in the development of products; smartphones are replaced annually for newer versions with often superficial developments, and over 12 million phones are thrown away annually. The importance of fashion in design development is highlighted by the use of planned or built-in obsolescence, Products such as iPods have glass backings and screens; these are brittle and break easily when dropped, and it is often cheaper to replace the product instead of its components, encouraging consumers to replace products with newer more fashionable versions more frequently. The significance of fashion in product development is highlighted by General Motors (GM), whose chairman observed that style trends fuelled developments as early as the 1920s; General Motors then became the first company to produce new styles of cars with a different aesthetic annually, with the cars being famously displayed by Vogue magazine as a 'fashion accessory'.

However product developments are not only based on fashion: unlike GM, who annually update their aesthetic; German and Scandinavian car designers such as Volvo

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make developments to increase their products' quality and durability, ensuring that their products ~~are~~ are long-lasting. Because of this high quality Volvo's secondary used ~~car~~ car market is almost as large as ~~the~~ its market buying new models, through approved used dealerships.

Furthermore, developments are not only made based on fashion but also on developments in materials technology. In 1982 the Lotus Bike was produced using Carbon fibre, a modern material; this ~~was a strong~~ produced a far lighter, thinner frame for the bicycle compared to the existing aluminium frames, and could be made from one central ~~of~~ mould rather than using the time-consuming process of welding aluminium parts together. In this development ~~was~~ the most important factors were fitness for purpose, and materials development, with the bike allowing Britain to win the 1982 Olympics due to the streamlined shape and light weight frame increasing speeds, rather than its aesthetic. Further developments with ~~the~~ bicycles use a similar principle.

The more significant developments in products such as kettles have emerged due to developments in processes, ~~technolo~~ and with the invention of modern and smart materials. The development of the ~~plastic~~ plastic Acetal allowed the kettle's heating element to be placed inside the kettle & and in contact with the water rather than in a second ~~compartment~~ compartment, making the kettle more efficient. The emergence of plastics, which can be injection moulded, have caused significant developments in kettle design as they allows products to

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be produced in large batches with several moulds, and allow improvements in ease of use: handles can be made more esgonomic through injection moulding so they can further aid the user. Whilst developments in the aesthetic of the kettle have emerged such as ~~Sta.~~ Phillipe Stark's AEG kettle, these have sometimes been quite unsuccessful. Stark's kettle did not have a plastic handle, instead using stainless steel, so ~~but~~ users would burn themselves on the handle; ~~the~~ whilst the futuristic aesthetic was attractive and today iconic, it was an ineffective design, with users finding it difficult to fill the kettle. Developments have instead been ~~to~~ primarily focussed on ease of use and safety, with smart materials such as thermochromatic pigment being introduced in recent Russel Hobbs kettles; allowing the pigment changes colour when the water is heated, so the user knows when they ~~fill~~ water is already ~~boil~~ hot and does not ~~unnecessarily~~ reheat the water, thus saving energy. ~~and~~

The consumer also cares about the environment, resulting in a market pull for more efficient products such as the Dyson airblade hand dryer, which uses significantly less energy than ordinary hand dryers to dry hands. Shape memory Alloys (SMAs) are being introduced into phone components to allow them to be recycled easily: ~~for~~ when heated slightly, springs will ~~pop~~ revert to an original unwound shape and pop out the screen in ~~case~~ the 'self-destructing' phone, so ~~and~~ that components can be removed easily. This development is mainly due to the consumer's interest in the environment

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rather than due to fashion styles or trends.

Whilst fashion, style and trends are important factors in the development of products, there are ~~not quite as~~ other significant as factors such as the developments in materials technology, efficient processes and the market's interest in the environment that are just as important in the development of products, ~~as~~ if not more, as the most significant developments emerge due to new technology such as the use of carbon fibre in the Lotus bike.

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