

# **GCSE**

# **Design and Technology**

General Certificate of Secondary Education

Unit A554: Designing Influences

# **Mark Scheme for June 2011**

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# A554 Mark Scheme June 2011

Question			Expected Answer			Mark	Additional information
1	(a)	(i)	Design Lid Different colours Non breakable Screw on lid Spout / teat Stable Transparent Squat Twist & lock lid Two handles Handles Rubber handles / grips	Use / function Changes colour Easy to fill Easy to use Non drip Non spill See the contents Comfortable / easy to hold Slow release / small amounts of liquid	Ergonomics / Hygiene Correct sized handles / teat Easy grip Easy to clean Hygienic Lightweight Shaped spout Soft to touch/hold Washable Easy to drink from	[3]	Do not reward: Light, plastic, "the shape".  Do not reward "Ergonomic" on its own – look for a specific point made eg size of handles.  One words responses acceptable.  1 x [1] x 3 for any correct responses.
	(b)	(i)	Once the drink hareturn [1] The changed color Thermochromic pour The process is reconstructed.	will change colour [1] as cooled down, the original colour will our is a warning to parents / child [1] blastic (the cup) is temperature sensitive [1] eversible [1] boint up to [2] or 1 mark for point plus		[2]	Do not accept:  the plastic may go soft or change shape or expand thermoplastic – it must be a product that reacts (changes) to the environment/stimulus.  Do <b>not</b> reward answers that are derived from the question: "changes will occur / happen"

Question	Expected Answer		Additional information	
(ii)		[2]	NB The question is about "smart materials" so answers other than reference to thermochromic inks/plastics will be rewarded.  1 mark for each point up to [2] Do not reward extended / explanation or other details just the points.  Reward one piece of clothing unless specific details given.  The list is not exhaustive. Reward any correct product using "smart" materials.  Do not reward "materials" Smart oil / grease / gels it needs a product.	
(c)	Example 1: The use of temperature changing crystals [1] when added to a woman's bra [1] can sense rises in temperature [1] and hence can be used as an early indicator of breast cancer [1].  Example 2: Photochromic lenses [1] that darken when exposed to UV light [1]. Filter lenses provide [1] UV protection [1].  Both examples have four points which are rewardable which includes an example product. but maximum of three [3] will be given.  Award [1] for the example (product / process) plus up to 2		The modern technologies can refer to: Processes Manufacturing techniques Smart materials or Modern materials.  An answer such as: Quartz crystals are naturally occurring but because they give off a charge [1] when a pressure is added they can be used as detonators [1] gains no reward. This statement is not about new technologies nor about opportunities.  Answers may be directed at the consumer but will reflect the opportunities for designers or manufacturers.	
	for explanation (even if no example given).  Total	[3] [10]		

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Question		Expected Answer		Additional information
2	(a)	Source of energy Renewable Non renewable Nuclear fuel Sunflower oil Coal Natural gas Rechargeable battery		The question is about the "energy".  The rechargeable battery seems questionable. However the question is about the energy and not how the technology has achieved it. ie there is a lot of non-renewable activity when producing wind turbines but the energy provided is actually "renewable".  Do not reward Nuclear fuel: given answer.
		reconargeable battery see comments	[4]	Do not reward Nuclear ruel, given answer.
	(b)	Wind turbines usually operate 75-90% of the time [1] because the wind is not always blowing [1]. Also the turbine needs maintenance [1] and so will have downtime [1].  Moving parts such as gears [1] moving parts always cause some <i>friction</i> [1] which in turn causes a loss of energy [1].		This part of the question is about "energy production" and <b>not</b> about any environmental impact.
		[1] mark any of the above individual points up to [3].	[3]	
	(c)	Generators are often in "wind farms" [1] are not seen as attractive / they are visual pollution / eyesore / blot on the landscape [1] Lack of capacity of generators [1] to meet the huge demand of the UK The numbers needed would be prohibitive because of space [1] noise pollution [1] Lack of suitable geographical locations [1] with sufficient, regular wind [1] to operate them successfully [1] mark any of the above individual points plus [0-2] marks for explanation / detail.  OR [1] mark for up to two points of any of the above [0-2] ie mix and match for [0-2] plus [1] for further detail/		Look for the negatives and <b>not</b> the positives.  Do not reward [3] for a "list" of points.
		explanation.  Total	[3] [10]	

Question	Expected Answer		Additional information	
3 (a)	Allows ball to be hit harder / you can hit the ball harder Allows bigger / head / sweet spot Better / different materials (* example No. 1) Better / longer reach (* example No. 2) Better balance Better distribution of pressure / shock Ergonomically designed Less warping Lower cost of strings More adjustable – re tension of strings More aerodynamic More comfortable More consistent strings More durable strings More shock absorbent Stronger Tension without warping	Mark	Additional information  Any point [1] mark each different points total [0-3].  Do not reward part (b) from content written in part (a). The explanation is rewarded in part (b) when written in part (b) only.  Do not credit reference to Aesthetics.  Do not accept: lump on end of handle (spot the difference).  Do not reward "lightweight" its has been given.	
(b)	Thinner frame / rim / neck.  An explanation of two different points that justify the choice in part (a)  Point 1: Better / different materials One mark [1] for a simple explanation such as: the material allows different profiles for the head [1].  Two marks [2] for a detailed explanation such as: the material allows different profiles for the head [1] which allows for a more lightweight structure [1].  Point 2: Better / longer reach One mark [1] for a simple explanation such as: shorter players find it difficult to reach some shots [1].  Two marks [2] for a detailed explanation such as: shorter players find it difficult to reach some shots [1] New materials can allow longer handles [1].	[3]	If the point given in (a) is incorrect eg cheap in part (a) but a clear explanation is given the marks can be awarded accordingly.  Allow other explanations of lightweight ie you can use them longer, easier to transport.  Do not accept reference to splinters. The explanation requires a point to be explained and/or the reason why the feature is successful.  For your information: Originally laminated wood followed by steel, aluminum, carbon fibre composites were introduced, and other materials were added to the composites, alloys (boron), ceramics, glass fibre, titanium and graphite  Originally the strings used natural gut, but the vast majority of strings are now nylon or polyester synthetic. Some users consider the natural string to be more responsive, providing a better "feel" (therefore not a rewardable modern improvement) but synthetic is favored for its much superior durability, consistency, as well as much lower cost.	

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Question	Expected Answer	Mark	Additional information
(c)	Part (c) can refer to any product and is <b>not</b> restricted to tennis rackets or "Design Classics".  Example 1: The style has been very influential style (adopted by many other countries) [1], The <b>London underground map</b> [1] is easy to read / follow by non-English speaking traveller [1].  Example 2: Using simple lines [1] and new materials [1] <b>The Wassily chair</b> [1] still influence designs and designers today [1]. (reward [3] marks maximum no matter how much detail is given).  Reasoning needs to be given before the example can be rewarded. Just saying "Wassily chair" without qualification gains no marks.	[3]	The question is about a "product" not a "design classic" so reward accordingly.  Reward any product which has not fundamentally changed over the years.  For example:  A ruler [1] has not changed over the years. Because it has to have a straight edge to draw lines [1] and measurements indicated to measure [1].
	Total	[10]	

#### **Question 4 overarching comments:**

## 4a Continuous prose – question marked for quality of written communication [6 marks]

Bullet Point list maximum of 2 marks

Only one Trend Setter must be referred to.

#### Level 1 (0 - 2 marks)

Basic analysis showing some understanding of the Trend Setter being influential.

There will be little or no use of specialist terms.

Answers may be ambiguous or disorganized.

Errors of grammar, punctuation and spelling may be intrusive.

If reference to "Iconic Product" only provided then maximum of 2 marks.

#### Level 2 (3 - 4 marks)

Adequate analysis, showing reasonable understanding of the Trend Setter being influential.

There will some use of specialist terms, although these may not always be used appropriately.

The information will be presented for the most part in a structured format.

There will be occasional errors in grammar, punctuation and spelling.

Reference to the trend setter other than the iconic product required for access to this level or level 3.

#### Level 3 (5 - 6 marks)

**Thorough analysis**, showing a <u>detailed</u> understanding of the meaning of the Trend Setter being influential.

Specialist terms will be used appropriately and correctly.

The information will be presented in a structured format.

The candidate can demonstrate the accurate use of grammar, punctuation and spelling but with some minor errors.

#### 4a

#### Marcel Breuer



Taught at the Bauhaus in the 1920s. Pioneered the design of tubular steel furniture. Innovative and experimental wooden furniture Influential architect and designer Clear understanding and user of the "form follows function" principle First to use tubular steel in furniture Pioneer of Minimalism Experimenter with bent and formed plywood Commissioned for numerous monumental civic structures [with some of the more notable being The UNESCO World Headquarters (Paris) The Whitney Museum of American Art (NYC) The University of Massachusetts Campus Centre in Amherst the headquarters of The Departments of HUD and HEW in Washington D.C. St. John's Abbey (Minnesota) and The Atlanta-Fulton Central Branch Public Library (Atlanta).] Residential commissions [The Wolfson House Breuer House and The Frank House.1 Concept of 'binuclear' house with separate wings for different functions (bedrooms / kitchen) Distinctive butterfly roof and use of concrete.

### 4b Wassily Chair

Used tubular steel available in both a folding and a non-folding versions Black and white fabric available

Pulled taught and held in tension with springs at rear Post war version that replaced the fabric with black leather straps

Wire-mesh fabric version produced later
Revolutionary in the use of the materials (bent tubular
steel and canvas) and methods of manufacturing
Only made possible by the development of the
process for making seamless steel tubing
Influencing other designs today
Influenced on modern day sun beds and garden
chairs.





Pioneering French fashion designer Single-handedly launched a fashion empire Fans make pilgrimages to her Paris apartment She borrowed from menswear and introduced vogue sportswear and bell bottom pants [accept jeans] for women

Steered women away from the fussy frilly corseted styles of post World War I and towards understated elegance simplicity and comfortable chic

Created a new look for women in the 20th century

Named in *Time's* one hundred most influential people of the twentieth century

One the most important figures in the history of twentieth century fashion.

Creating clothes that were primarily comfortable.

Made fashion more affordable and accessible A Modernists

A handbag is still seen as a landmark purchase for women of increasingly younger ages The Chanel No.5 scent is the best selling in the

The Chanel No.5 scent is the best selling in the world

Costume jewelry rather than showing off wealth The interlocking Cs of Coco Chanel remain one of the ultimate brand insignia

Coco Chanel's bobbed hair bright red lips and outspoken manner also broke the mould.

This smoking outspoken woman

Had relations with the English industrialist [Arthur "Boy" Capel - who lent her the money to buy Rue Cambon - Igor Stravinsky and the second Duke of Westminster Hugh "Bendor" Grosvenor the richest man in Europe.]

Currently the brand could not be more alive with watches, beauty fragrance, women's wear and new stores.

# 4b The Flapper





Flapper is the style but accept references to Flapper dress and other elements of the "Flapper style"

The costume history image in our minds of a woman of the 'Roaring Twenties' is actually likely to be the image of a flapper.

Flappers did not truly emerge until 1926 Flapper fashion embraced all things and styles modern.

A fashionable flapper had: short sleek hair, a shorter than average shapeless shift dress, a chest as flat as a board, wore make up and applied it in public, smoked with a long cigarette holder, exposed her limbs and epitomised the **spirit of a reckless rebel** who danced the nights away in the Jazz Age.

#### 4a

#### **William Morris**

English architect furniture and textile designer Artist and writer Socialist

Associated with the Pre-Raphaelite Brotherhood and the English Arts and Crafts Movement.

He founded the *Oxford and Cambridge Magazine* an outlet for his poetry and a forum for development of his theories of hand-craftsmanship in the decorative arts.

Profound impact on the decoration of churches and houses in the 20h century

Morris's chief contribution was as a designer of repeating patterns for wallpapers and textiles many based on a close observation of nature. He was also a major contributor to the resurgence of traditional textile arts and methods of production.

Morris was an important figure in the emergence of socialism in Great Britain Founded the Socialist League in 1884 He devoted much of the rest of his life to the Kelmscott Press which he founded in 1891.

#### 4b

# Block Printed Wall Paper

Inspired from nature,

Reinstated the use of indigo dying,

Used vegetable dyes

Repeat patterns

Reproduced and mass produced

(Laura Ashley)

Powerful

Tasteful

Designs brought drab rooms to life Hand carved from wooden blocks.

Hand crafted

Reintroduction of hand techniques





4a

L.E.D



A **light-emitting diode** (**LED**) is an electronic light source.

The The first LEDs became commercially available in late 1960s and were red.

At the time they were used as replacements for incandescent indicators

Also used in seven-segment displays firstly in laboratory and electronics test equipment then in a wider range of home appliances such as TVs radios telephones calculators and even watches. Unfortunately at the time they were not powerful enough to illuminate a certain area.

All early devices emitted low-intensity red light but modern LEDs are available across the visible ultraviolet and infra red wavelengths with very high brightness

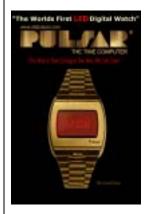
LED's present many advantages over traditional light sources including lower energy consumption longer lifetime improved robustness smaller size and faster switching They are relatively expensive and require more precise current and heat management than traditional light sources.

The compact size of LED's has allowed new text and video displays and sensors to be developed.

Their high switching rates are useful in communications

4b

**Pulsar Watch** 



In the year 1972 the first Pulsar watch was made public by the Hamilton Watch Company Pulsar Watch a division of Seiko Watch Corporation is among the leading watch brands worldwide.

Pulsar watches are extremely elegant, classy and sparkling.

They are wrapped up in contemporary designs by the mean of an eternal appeal.

The stunning thick range includes watches for almost all ages of people and their taste.

Through the production of modern timepiece watches it has set up a unique customer category for its brand.

By following the same line of parent Seiko Pulsar persists to innovate captivate and shine. The expertise and novelty through which it was created mesmerized some contemporary press reports to shower a huge amount of praise on it.

At that time it was the first of its kind incorporating digital display and electronic quartz.

In the midst of a light emitting diode it got a new space-age look.

Incorporated the LED the first watch of its kind to do so.

Used in James Bond Live and Let Die movie – became the must have design icon of the period.

The LED were heavy power consumers hence the batteries ran down very quickly. Initially very expensive mass production techniques and the development of the LCD display led to the miniaturisation or electronics

#### 4b One of the first 'ethnic' convenience foods. 4a Easy to produce therefore convenience foods are time saving. Rode on the wave of the 1970s food Suited the change in families and the rise of the **Convenience foods Vesta Curry** revolution which introduced European an working 'single' woman. Asian food to the British diets. The development of new preservatives and drying and storage techniques led to a rise in dried (desiccated) and pre-packed ready to eat foods. Coincided with change in the nuclear family and the stay at home mother. More women went out to work people began to marry later in life and so the convenience food was born. The rise of Britain as a multi-cultural society also led to an greater interest in 'foreign cuisine'.

The specification (a), ideas (b), development (c) and conclusion (d) **MUST** relate to the Trend setter and / or Iconic product.

Parts (a), (b) (c) and (d) MUST link so the design work is progressive.

If parts do not link reward positively the progressive parts until they differ in direction and then do not reward any more unless a subsequent part returns to the original direction of the design activity.

One mark for each key specification point – no marks awarded for points identified in or from the question. (0-4)

[4]

Each point must relate **specifically** to the design situation.

Examples:

**Magazine rack**: Must be easy to remove and replace magazines.

Blouse or Shirt: Must have tassels for decoration.

Wrist Watch: Must be easy to read the time

**Moisture sensor**: Must have a warning signal when battery is low.

Convenience food

**Product**: Must include suitable nutritional content

Not acceptable examples:

Must hold magazines
Must not have wheat in it

Easy to use Needs to be safe

Must sense the moisture (but accept "when water is

present"

A Specification point is a **positive** statement about the form, the function, user requirements, or constraints of the situation.

The specification points should inform the design activity.

Do not accept **generic points** such as: good quality, strong, aesthetically pleasing, light/lightweight, bright, eye catching, colourful, bold, comfortable, environmentally friendly, recyclable, **without appropriate qualification.** 

Examples: Bold (0)

Bold colours to attract attention from a distance (1).

Comfortable (0)

Comfortable to wear (1)

Do not accept 'no' points:

no sharp edges, not too big, not too heavy, not too costly (cheap), no small/loose bits, no wheat.

The specification (a), ideas (b), development (c) and conclusion (d) **MUST** relate to the Trend setter and / or Iconic product.

Parts (a), (b) (c) and (d) **MUST** link so the design work is progressive.

If parts do not link reward positively the progressive parts until they differ in direction and then do not reward any more unless a subsequent part

returns to the original direction of the design activity.

5b	Initial ideas  One sketched idea  No accompanying notes	(1)	When awarding marks for addressing the specification points marks can be awarded in (b) irrespective of the quality of the candidates specification points according to the formula on the left hand column.  One word responses are labels and do not get rewarded.
	One sketched idea with notes OR Two or more ideas drawn with no notes	(2)	Notes are complete statements that can explain, justify, exemplify or quantify a feature even if grammatically incomplete: eg black polyester with white rayon stitching.  Dimensions on a drawing and weights or quantities of ingredients will qualify as a note.
	Two or more ideas drawn with notes	(3)	Ideas refers to:  1. whole solutions or parts of a solution. 2. conceptually different thinking. or 3. variations on a theme.
	A range of 'ideas' drawn, with notes, addressing at least two specification points,	(4)	Different refers to  1 variety of thinking 2 alternative ideas 3 different from each other
	A range of 'different ideas', with notes, addressing at least two specification points, And a creative approach to designing  Total marks available	(5) [5]	1. may be explicitly evidenced in the notes. 2. implicitly evidenced in the idea. 3. the two specification points need to be evidenced only once each, in any of the notes or the ideas.  Creative approach to designing is judged in the context of an examination situation with strictly limited time. Do the ideas impress you enough for just ten minutes work from a 16 year old?

The specification (a), ideas (b), development (c) and conclusion (d) **MUST** relate to the Trend setter and / or Iconic product. Parts (a), (b) (c) and (d) **MUST** link so the design work is progressive.

If parts do not link reward positively the progressive parts until they differ in direction and then do not reward any more unless a subsequent part returns to the original direction of the design activity.

(1)

(2)

### 5c Development of ideas – must reflect the product focus

One solution may be presented in more than one view: top and front, inside and outside.

One solution showing an idea from the initial ideas Minimal development/improvement No notes

One solution showing an idea from the initial ideas Minimal development/improvement With notes

**One solution** showing an idea from the initial ideas **Some** development/improvement

Supporting developmental sketches

With notes which refer to the design need and / or their specification (3)

Clear development of an idea

Supporting developmental sketches

With notes which refer to the design need and at least one of their specification points (4)

Clear development of an idea using range of development sketches With notes which refer to the design need and two of their specification points minimum (5)

Total marks available [5]

A reminder of the Trend setters and Iconic products.

"Marcel Breuer" and the "magazine rack" must be considered.

The "Blouse or Shirt" and "1920's 'flapper' style" must be considered

The "William Morris styled" and 'wrist watch' must be considered.

The "moisture sensor" and the "LED" must be considered. A system must be shown for this response or there is a natural capping at [2]

No marks to be awarded for aesthetic developments. Where there is clear development without a system design, **1 – 2 marks** may be awarded according to specification points.

The "convenience food" and "wheat intolerance" must be considered.

Candidates need to show <u>some</u> understanding that "<u>wheat intolerance" includes</u> allergic reactions to many different proteins found in wheat <u>and related cereal</u> grains.

ie they can't just substitute another cereal instead of wheat. It's the Gluten which is often the problem.

Notes reference speciation points need to be explicit

The specification (a), ideas (b), development (c) and conclusion (d) **MUST** relate to the Trend setter and / or Iconic product. Parts (a), (b) (c) and (d) **MUST** link so the design work is progressive.

If parts do not link reward positively the progressive parts until they differ in direction and then do not reward any more unless a subsequent part

#### returns to the original direction of the design activity. Final proposal Do not reward vague comments such as "It Look at the information/graphics on the page for 5d, and any detail from 5c if needed: meets specification point 1". We need to know how. A simple solution with limited detail/notes (1) Plus: Notes and associated sketches showing how the design meets spec point 1 (1) eg the strap is made from stitched fabric, which will not irritate the wrist **Accept** justified points related to the candidates' own specification, even if not Plus: Notes and associated sketches showing how the design meets spec point 2 (1) rewarded in 5(a). eq The tassels are made of silk which indicates quality and the reflection of the flappers clothina (1) Plus Notes and associated sketches showing how the design meets spec point 3 eq The different coloured LED's indicate the unlocked and locked mechanism Candidates should show relevant details for manufacture: Plus Notes and associated sketches showing how the design meets spec point 4 (1) eg It should not have any wheat or other cereal content materials/ingredients/components. sizes / dimensions / quantities, **Details** indicating something specific about materials and / or manufacture. (1) methods / joining / mixing techniques, tool(s) / equipment Total marks available [6] for the award of the 6th mark.

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