OCR
RECOGNISING ACHIEVEMENT

GCSE

Design and Technology

General Certificate of Secondary Education **A554**

Unit 4: Designing Influences

Mark Scheme for June 2010

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

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General advice to Assistant Examiners on the procedure to be used

YOU WILL BE REQUIRED TO MARK PRACTICE AND STANDARDISATION SCRIPTS BEFORE STARTING TO MARK LIVE SCRIPTS.

1 The schedule of dates for the marking of this paper is very important. It is vital that you meet these requirements. If you experience problems then you must contact your Team Leader (Supervisor) without delay.

2 An element of professional judgement is required in the marking of any written paper. Candidates often do not use the exact words which appear in the detailed sheets which follow. If you are in doubt about the validity of any answer then consult your Team Leader (Supervisor) by phone, the messaging system within scoris, or e-mail.

3 Question 4 has a 'Level of Response' mark scheme. Any details about these will be in the Additional Guidance.

4 If an answer has been crossed out and no alternative answer has been written then ignore the crossed out answer.

5 In addition to the award of 0 marks there is a NR (No Response) option in scoris (the hash key is a short cut).

Award 0 marks

- if there is any attempt that earns no credit (including copying out the question)

Award NR (No Response)

- if there is nothing written at all in the answer space
  OR
- if there is any comment which does not in any way relate to the question being asked (eg 'can't do', 'don't know')
  OR
- if there is any sort of mark which is not an attempt at the question (eg a dash, a question mark)

6 **The *Comments* box** will be use by your PE to explain their marking of the practice scripts. Please refer to these comments when checking your practice scripts.

Any questions or comments you have for your Team Leader should be communicated by phone, via the scoris messaging system, or e-mail.

7 **Annotations in scoris**

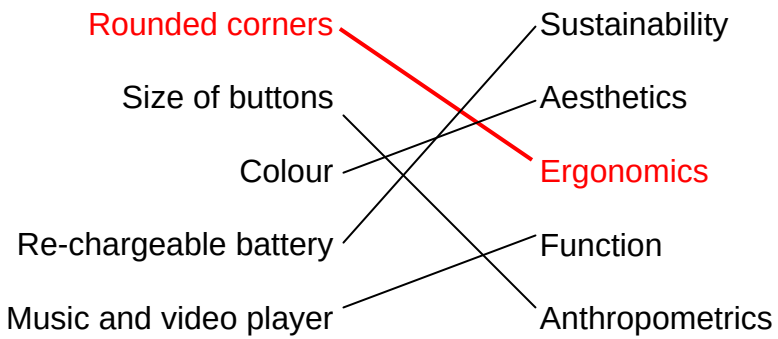
The following annotations are available:
✓ = correct response
BoD = benefit of the doubt given **(used very sparingly)**

Highlighting is also available to highlight any particular points on the script.

8 Please send a brief report on the performance of candidates to your Team Leader (Supervisor) by the end of the marking period. The Assistant Examiner's Report Form (AERF) can be found on the RM Cambridge Assessment Support Portal.

Your report should contain notes on particular strength displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.

Question	Expected Answer	Marks	Additional Information
1 (a)	Answers – to **Sell, Protect** and **Communicate** **Sell** – advertise, make attractive to customers **Protect** - store eggs safely, individually, keeps eggs separate, lid to hold secure / stop falling out, rigid, (cones equals structure / rigid), **Communicate** – provide information such as sell by date, place of production, use by date Easy to remove one egg at a time, labelled with statutory information, easy to pick up and carry, lightweight, stackable, easy to open, easy to close, stable, fit different size eggs	**[3]**	One word answers *might* be acceptable from the list on the left (**sell – protect – communicate**) but clarification / qualification is needed Do not accept (unless clarified): ergonomics, strong, hard, recyclable, keep fresh, holds eggs, holds 6, 12, etc. number of eggs, light, aesthetically pleasing, durable, environmentally friendly, cheap, ease of manufacture, soft material
(b) (i)	A monocoque structure is: **All in one**, no individual frames, made from one piece – it has no framework / bracing / cross members therefore the **structural strength** comes from the outer shell / casing of the product, made from one If “shell” is used an explanation is required	**[2]**	1 mark for each point or 1 mark for point plus detailed explanation Do not accept “shell” structure, Filing cabinet has cross members Explanation must include strength comes by virtue of it’s one piece design
(b) (ii)	Car, tins/cans, hairdryer, wellingtons, crocs, shoe box, cup/mug, a bag, glasses case, igloo, egg, aircraft body, scooter, canoe/kayak, laptop case, bottle, carton, box, blister (pack), inflated balloon, mini cooper, envelope / folder	**[2]**	Do not accept any product with a frame component such as bicycle, bed, plastic chair, garden seat. Do not credit repeats e.g. shoe box and toy box- award only once
(c)	Answers should refer to: Renewable / replenishable source, reuse / recycle / replace Use of recyclable materials, can be taken back to farms etc for re-use / refill, Negative reference to styrene boxes can be rewarded	**[3]**	Relevant points up to two marks (1 point each) plus 1 for explanation <u>OR</u> One point plus two marks for detailed explanation / exemplification / qualification
	Total	**[10]**	

Question	Expected Answer	Marks	Additional Information
2 (a)		[4]	**ERGONOMICS HAS BEEN GIVEN TO THEM – DO NOT REWARD** If more than 1 line / arrow to a descriptor do not reward
(b)	Lower unit cost, speed of production, (time = money), need to meet demand, mass production can lead to lower labour costs because unskilled workers/automation is used,	[3]	Do not accept cheap to mass produce
(c)	Demand, technology push and market pull. Fashion is one cause of obsolescence, Fashion trends often dictate choices of colour and shape for example retro designs, streamlining (1950s). Material development leads to technological obsolescence as dose miniaturisation of components replaced by the use of new semi conductor technology. Planned obsolescence	[3]	Relevant points up to two marks (1 point each) plus 1 for explanation OR One point plus two marks for detailed explanation / exemplification / qualification Example: Fashion influence the design of portable electric products because styles change [1] and consumers will want products that reflect the current of emerging styles [1] in terms of shape, colour or decoration [1] Example: Obsolescence is when a product is no longer wanted or needed [1] because something more desirable is available [1]. New micro technology has resulted in miniaturisation [1] of the circuits so products can become smaller, thinner, more compact and also multifunctional [+ 1 for explanation NOTE: maximum 3 marks]
	Total	**[10]**	

Question	Expected Answer	Marks	Additional Information
3 (a)	New materials with various different properties, improved weight / strength ratio, easier to ride, improvements in ergonomics, better suspension – more comfortable, more attractive / colourful, use of bright paints, adjustable (including seat) - (hence better riding position), more gears, improved brakes, quick release mechanism, softer hand grips, improved lighting (LED's), pneumatic tyres, comfortable seat, less prone to rust (materials), fold up bikes,	[3]	Do not accept "spot the differences" between the images: brakes / two brakes, thicker tyres, bike stand, stronger, lightweight (given), smaller frame / wheels, more straightened handle bars, mudguards, thicker frame, secure, safer (unless clarified), also bell or horn
(b)	An explanation of **two different** points that justify the choice in part (a)	[4]	**You can** reward explanations from the features in the spot the difference list part (a) **One mark** for a simple explanation **Two marks for a detailed explanation** such as: The explanation requires a point plus a reason why the feature is successful. Example: More gears to make it easier for the rider [1] to cope with different gradients Better brakes so they stop the bicycle more quickly [1] so that it is safer for the rider in busy traffic [1] Do not accept speed of production.
(c)	Advances in technology related to: materials especially plastic moulding/use of advanced materials such as carbon fibre, aluminium alloys. Improvements in mechanism technology – derailleur gears, fashion, different uses, competition	[3]	Answers must relate specifically bikes 1 mark any of the above each plus 0-2 marks for detailed explanation. **OR** 1 mark for up to two of the above plus 1 for explanation
	Total	**[10]**	

Question 4 overarching comments:
Irrespective of what "tick" response candidates have done, positively reward the content of 4 (a) and 4(b)
Question 4 (a) and 4(b) may use different trend-setters and / or iconic products from the current list.
N.B. Trend setter / iconic product must be selected from the list given in question i.e. not trend- setter / iconic product of their own or from a previous OCR Product Design Theme.

Avoid giving credit for information gleaned from the examination paper, e.g. Sir Alec Issigonis designed the mini cooper.

4a	**Continuous prose – question marked for quality of written communication (Look for reasoned argument) [6 marks]** Bullet Point list maximum of 2 marks **Only <u>one</u> Trend Setter must be referred to.** Where the candidate talks about the product in part (a) up to 4 marks can be carried over to (b) and not awarded in part (a). Up to 2 marks if talking about iconic product in part (a) maximum. See Practice script 616006628 for award of 2 marks for 4a and 2 marks potentially carried over **Level 1 (0 - 2 marks)** **Basic analysis** showing **<u>some</u> understanding** of the meaning of influential in the context of the chosen iconic product. Can provide an explanation which makes some reference to design innovation and function. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of grammar, punctuation and spelling may be intrusive. **One general point made (1)** **Two general points made (2)** **Level 2 (3 - 4 marks)** **Adequate analysis**, showing **<u>an</u> understanding** of the meaning of influential in the context of the chosen iconic product. Can provide an explanation which makes adequate reference to design, innovation and function. 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. **Two general points well made (3)** **Two specific points well made (4)** **Level 3 (5 - 6 marks)** **Thorough analysis,** showing a **<u>clear</u> understanding** of the meaning of influential in the context of the chosen iconic product. Can provide a clear explanation which makes detailed reference to design, innovation and function. 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. **Two specific points about the trend setters influence well made (5)** **High quality argument made of the trend setters influence (6) [Maximum 6 in total]**

<table>
<tr><td>See initial instructions for marking 4a The influence of the Trend Setter</td><td colspan="2">Only <u>one</u> Trend Setter must be referred to.
Where the candidate talks about the product in part (a) up to 4 marks can be carried over to (b) and not awarded in part (a). Up to 2 marks if talking about iconic product in part (a) maximum</td></tr>
<tr><td></td><td>Points</td><td>Legacy / impact</td></tr>
<tr><td>4a
Sir Alec Issigonis
 </td><td>Alec Issigonis set the scene for the design of new cars. His emphasis on the function of vehicles led to ‘mini’ designs beyond the cars, he was even credited with inspiring the mini skirt. Embodied the 60s revolution. His transverse engine design and maximisation of space was revolutionary.
[0-6]</td><td>His greatest legacy was the mini which he designed during the late fifties. Innovative space saving designs including front wheel drive and transverse engine became the model for all small car designs of the future.

Also responsible for the Morris Minor car</td></tr>
<tr><td>4b Mini Cooper
2 different points clearly explained:
1 mark for each point plus
1 mark for each justification.
[0-2 + 0-2]</td><td colspan="2">Only <u>one</u> Iconic Product must be referred to.
View parts (a) and parts (b) a whole and reward:
Where the candidate talks about the product in part (a) up to 4 marks can be carried over to (b) and not awarded in part (a)</td></tr>
<tr><td>4b

The Austin Mini</td><td colspan="2">Almost all small front-wheel-drive cars developed since have used a similar configuration
The Mini was designed with sliding windows in the doors, thus allowing for storage pockets to be fitted in the space where a winding window mechanism would have been. Issigonis is said to have sized the resulting storage bins to take a bottle of his favourite Gordon's Gin

The boot lid was designed with the hinges at the bottom so that the car could be driven with it open to increase luggage space. On early cars the number plate was hinged so it swung down to remain visible when the boot lid was open. Although it has to be mentioned that this design was later discontinued as it was discovered that exhaust gasses could leak into the cockpit while the boot was open.
The Mini was designed as a monocoque shell with welded seams that are visible on the outside of the car running down the A and C pillars, and between the body and the floor pan showing where the joins are. To further simplify construction, the car had external door and boot hinges.

All of these novel and elegant technical innovations resulted in a car with minimum overall dimensions yet maximised space for both passengers and luggage.</td></tr>
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<tr><td></td><td>Points</td><td>Legacy / impact</td></tr>
<tr><td>4a Andy Warhol</td><td>In the sixties Warhol started painting daily objects of mass production like Campbell Soup cans and Coke Bottles. Soon he became a famous figure in the New York art scene.
From 1962 he started making silk screen prints of famous personalities like Marilyn Monroe and Elizabeth Taylor</td><td>Andy Warhol art was the first to remove the difference between fine arts and the commercial arts used for magazine illustrations, comic books, record albums or advertising campaigns. Famously said "When you think about it, department stores are kind of like museums".
Associated with the Pop Art movement – screen prints became mass produced all around the world – the most famous being Marilyn Monroe.
The pop artist not only depicted mass products but he also wanted to mass produce his own works of pop art.
Warhol's favorite printmaking technique was silkscreen. His first one was called Sleep and showed nothing else but a man sleeping over six hours.
Warhol's activities became more and more entrepreneurial. He started the magazine Interview and even a night-club. In 1974 the Factory was moved to 860 Broadway. In 1975 Warhol published The philosophy of Andy Warhol. In this book he describes what art is: "Making money is art, and working is art and good business is the best art."</td></tr>
<tr><td colspan="2">4b Campbell’s soup painting
2 different points clearly explained:
1 mark for each point plus
1 mark for each justification
[0-2 + 0-2]</td><td>Only <u>one</u> iconic product must be referred to.
View parts (a) and parts (b) a whole and reward:
Where the candidate talks about the product in part (a) up to 4 marks can be carried over to (b) and not awarded in part (a)</td></tr>
<tr><td> </td><td colspan="2">Simple, bold use of colour, reproduced as silk screen prints, characterised the pop art movement
Instantly recognisable, an iconic design because it has transcended time and fashion</td></tr>
</table>

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<tr><td>4a Infra - red light emission</td><td>Points</td><td>Legacy / impact</td></tr>
<tr><td></td><td>Wireless, small / compact, invisible light spectrum, Rapidly developed into other applications</td><td>Used extensively for signalling application and light emitting/receiver circuits. Low cost applications proved ‘invisable light spectrum. Low energy consumption makes them perfect for applications such as remote control switching circuits. Hubble telescope, night vision cameras, military application, range finders nights sights, measuring devices (spirit levels),halogen hobs, heated paint drying, lasers</td></tr>
<tr><td>4b TV Remote control
2 different points clearly explained:
1 mark for each point plus
1 mark for each justification
[0-2 + 0-2]</td><td colspan="2">Only <u>one</u> Iconic Product must be referred to.
View parts (a) and parts (b) a whole and reward:
Where the candidate talks about the product in part (a) up to 4 marks can be carried over to (b) and not awarded in part (a)</td></tr>
<tr><td> </td><td>A symbol of 80’s decadence. Superseded the cable remote which was its forerunner. Used infra technology to provide flexible, reliable low cost/low energy solution</td><td>At first had a novelty value now seen as an essential part of TV experience. Couch potatoes, effect, health issues, encourages laziness, channel hopping, easier to relax
Most households now own four or more remote controllers for different devices, and there is an increasing demand for universal remote controls.

More recently, with the increasing introduction of multiple satellite channels, DVD recorders, home cinema systems, games consoles and PC connections, manufacturers are using an even more complex combination of remote and onscreen displays and controls.

Unfortunately the majority of TV and DVD remote controls have become over-complex and extremely confusing. As a result many people find them very difficult and annoying to use.</td></tr>
</table>

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<tr><td>See initial instructions for marking 4a The influence of the Trend Setter</td><td colspan="2">Only <u>one</u> Trend Setter must be referred to.
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<tr><td>4a Yves St Laurent</td><td>Points</td><td>Legacy / impact</td></tr>
<tr><td> </td><td>Characterised the loose fitting flowing clothes of the hippy movement. Dominated by ‘peace’, flower power and freedom of the individual. The clothes represented the antithesis of the austere/formal clothes of the 50’s which represented conformity ‘to the system.</td><td>The peasant look killed the space age look. Yves Saint Laurent's gypsy collection was gay, colourful, soft and exotic. In 12 months the space age look disappeared and was replaced with flower power, hippies and a return to earth lifestyle. Students wore long flowing hair and faded denim jeans with army surplus shirts and combat jackets at anti-war rallies. The no make-up look and swirling psychedelic patters became popular. Afghans and Kaftans</td></tr>
<tr><td>4b Kaftan</td><td colspan="2">Only <u>one</u> Iconic Product must be referred to.
View parts (a) and parts (b) a whole and reward:
Where the candidate talks about the product in part (a) up to 4 marks can be carried over to (b) and not awarded in part (a)</td></tr>
<tr><td> </td><td colspan="2">The Kaftan a symbol of the 60’s and 70’s hippy movement. A time of heightened interest in eastern mysticism and eastern culture. Clothes were flowing breaking with tradition and representing freedom.</td></tr>
</table>

See initial instructions for marking 4a The influence of the Trend Setter	**Only <u>one</u> Trend Setter must be referred to.** Where the candidate talks about the product in part (a) up to 4 marks can be carried over to (b) and not awarded in part (a). Up to 2 marks if talking about iconic product in part (a) maximum	
4a Vegetarianism	Points	Legacy / impact
	Vegetarianism is the practice of a diet that excludes meat (including game and slaughter by-products), fish (including shellfish and other sea animals) and poultry. There are several variants of the diet, some of which also exclude eggs and/or some products produced from animal labour such as dairy products and honey. The 60s saw a rise in vegetarianism as part of the revolution of the 60s and the anti-establishment attitudes. The rise in vegetarianism led to a range of new vegetarian products including interest in pulses such as lentils.	Changed peoples attitudes to food. Led to new recipes – demand led companies to develop meat substitutes such as soya.
4b Nut Loaf	**Only <u>one</u> Iconic Product must be referred to.** View parts (a) and parts (b) a whole and reward: Where the candidate talks about the product in part (a) up to 4 marks can be carried over to (b) and not awarded in part (a)	
	The concept of a nut loaf is almost a bad joke. Many of the early recipes for these vegetarian baked loaves in the 70's, when vegetarianism began to become a popular trend, were terribly bland. The addition of dates and other varieties of nuts led to a richer variety of tastes.	The nut roast was seen as the vegetarian equivalent of the Sunday Roast or Christmas Day lunch. Unlike many other vegetarian dishes, its size and solid form enabled it to be used as a 'centrepiece' on the table. Its colour and shape had the appearance of a joint of meat. As such it provided vegetarians with an acceptable alternative to a joint of meat for festive occasions

5a	One mark for each key specification point – no marks awarded for points identified in the question. (0-4) **[4]** Each point must relate **specifically** to the design situation. **Examples**: **Pen Holder**: *Must be easy to remove and replace pens*. **Shoulder Bag**: *Must have flowers, hearts and love decorations*. **POS Display**: *Must be a biodegradable or recyclable material* OR *Must be easy to assemble and take apart(flat pack)* **Intruder Alarm**: *Must have a warning signal when battery is low*. **Vegetarian Product**: *Must include at least four **fresh** vegetables* OR *Must contain a meat/protein alternative*. **Not acceptable examples:** Must hold pens Must be tasty Easy to use Needs to be safe	A Specification point is a **positive** statement about the form, the function, the user requirements, or the constraints of the situation. Together with the design need, the specification points should inform the design activity. Do not accept one/two word **generic points** such as: good quality, strong, aesthetically pleasing, light/lightweight, bright, eye catching, colourful, bold, comfortable, environmentally friendly, recyclable, **without appropriate qualification.** Example: *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 meat or fish. No reward for points extracted from the content of the question: e.g. 1970's 'hippy' style, Issigonis style.

5b	**Initial ideas** **One** sketched idea **No** accompanying **notes**	**(1)**	**When awarding marks for addressing the specification points marks can be awarded in (b) and(c) irrespective f the quality of the candidates specification points** **A note about notes and labels:** **One word** labels can identify and name, features on a sketch: e.g. base, aluminium, pattern, seam. **Two and three word** labels can qualify the feature: e.g. handle of wood, stable base. **Notes** are complete statements that can explain, justify, exemplify and quantify the feature: e.g. 3mm red acrylic will be used for the sides and top. Dimensions on a drawing and weights or quantities of ingredients come under the heading of notes. ***Different ideas*** refers to 1. whole solutions or parts of a solution. 2. conceptually different thinking. 3. not just variations on a theme. Addressing specification points 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 15 yr old?
	One sketched idea **with notes** **OR** **Two or more** ideas drawn with **no notes**	**(2)**	
	Two or more ideas drawn **with notes**	**(3)**	
	A **range** of *'**different ideas**'* drawn, **with notes,** addressing at least **two specification points,**	**(4)**	
	A **range** of '***different ideas'***, **with notes,** addressing at least **two specification points,** **And a creative approach to designing**	**(5)** **[5]**	

5c	**Development of ideas – <u>must</u> 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** **(1)** **One solution** showing an idea from the initial ideas **Minimal** development/improvement **With notes** **(2)** **One solution** showing an idea from the initial ideas **Some** development/improvement **Supporting** developmental **sketches** **With notes** which refer to design needs and / or their specification points **(3)** **Clear development** of an idea **Supporting** developmental **sketches** **With notes** Link to at least **two** specification **points** **(4)** A **range of development sketches** **With notes** Link to at least **three** specification **points** **(5)**	In this part, candidates must address the requirements of the "**design need in the situation**" If **both** requirements of the design need are not met the maximum available is **two marks**. <u>Example 1:</u> Both "**Issigonis**" and the "**pen holder**" must be considered. <u>Example 2:</u> The "**shoulder bag**" and "**1970's hippy style**" must be considered <u>Example 3:</u> The "**POS display**" and '**Andy Warhol calendar'** must be considered. <u>Example 4:</u> The "**intruder alarm using infra red emission**" and the "**electronic system**" must be considered. A system must be shown. No marks to be awarded for aesthetic developments. Where there is clear development without a system design, **1 – 2 marks** <u>may</u> be awarded according to specification points. <u>Example 5:</u> The "**vegetarian**" and "**teenagers**" must be considered. Candidates need to show <u>some</u> knowledge of carbohydrate, fat and protein appropriate for a vegetarian meal. Where there are **no** creditable specification points in 5a maximum available is **two marks**. To move beyond **two marks** there must be evidence on the page of **developmental activity/decision making.**

5d	**Final proposal** Look at the **drawing** on the page for **5d,** and any **detail from 5c:** A simple solution with limited detail/notes (1) A solution with **details** of one or more bullet points from the list of materials/parts/sizes/tools/etc.(2) **(2)** Look at the **writing** on the page for **5d:** **Notes** and associated sketches showing how the design meets spec point 1 **(1)** e.g. *the POS display is made from corrugated card, which can be put in the green recycling bin, or it can be allowed to biodegrade.* **Notes** and associated sketches showing how the design meets spec point 2 **(1)** e.g. *the holes for holding the pens are 10mm diameter and 50mm deep, so the pens will fit in and be easily removed and replaced.* **Notes** and associated sketches showing how the design meets spec point 3 **(1)** e.g. *the strap for the shoulder bag is 80mm wide and it is made of very soft leather so it will be comfortable to wear on the shoulder.* **Notes** and associated sketches showing how the design meets spec point 4 **(1)** e.g. *the main course is stir fry using carrots, onions, mushrooms and broccoli so that makes up the four fresh vegetables.* **[6]**	Candidates should show relevant **details** for manufacture: • materials/ingredients/components. • sizes / dimensions / quantities, • methods / joining / mixing techniques, • tools / equipment, **Accept** justified points related to the candidates' **own specification,** even if not rewarded in 5(a), and/or any points given to the candidates in the **design need** of the actual question. If solution in 5(d) has no relationship with 5(c) then only award a maximum of 4 marks available against the specification.

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