

## **GCSE**

### **Design and Technology: Product Design**

Unit **A554**: Designing Influences

General Certificate of Secondary Education

### **Mark Scheme for June 2017**

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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.

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## Annotations

Annotation		Meaning
		Blank Page – this annotation <b>must</b> be used on all blank pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response.
		Green Tick - Creditable point
		Seen - Use to indicate that an answer has been seen. Only to be used where no credit is given.
L1	Level 1	Use in banded mark scheme responses only
L2	Level 2	Use in banded mark scheme responses only
L3	Level 3	Use in banded mark scheme responses only

Question			Answer / Indicative Content	Mark	Guidance
1	(a)	(i)	<p><b><u>Hand</u></b> Ergonomic/fit hand/ hand held/comfortable handle Grip able/non-slip Left and right handed</p> <p><b><u>Function</u></b> Removes thinly the skin of vegetables Good evacuation of peel Ease of rotation around vegetable curves/agile Tip to dig out bruised or sprouting eyes Safe to use/ blade in middle and not on edge/ tip is rounded Does not corrode/stainless steel Sharp blade Pointed end to dig out potato eyes Size- able to remove certain amount</p> <p><b><u>Maintenance</u></b> Washable/easy to clean Dishwasher safe Durable/long lasting/hard wearing Waterproof Means to hang/store/fit in draw Simple/ 2 part</p>	3	<p>Award 1 mark for each correct answer</p> <p>Do not accept: Strong, Lightweight, aesthetics, sharp, safe, handle or blade on their own unless qualified.</p> <p>Do not accept <b>Peels Vegetables</b> (in question).</p> <p>Accept peels easily</p>
1	(b)		<p>Up to two marks for an explanation e.g.:</p> <p>Ridged/textured/non-smooth surface(1) good grip(1) Provides good grip (1) even when wet (1). Good grip(1) doesn't slip/holds firmly(1) Doesn't slip(1) no cuts to hand(1) Surface to latch on to(1) Improves control(1)</p>	2	<p>Do <b>not</b> credit any references to: Cost/cheapness of the string Looks/aesthetics/colour/appeal of the string</p>

Question		Answer / Indicative Content	Mark	Guidance
1	(c)	<ul style="list-style-type: none"> <li>• Certified tests/registered – flame resistant</li> <li>• Details of how to store the product</li> <li>• Information about maintenance</li> <li>• End of life disposal information</li> <li>• Age appropriate warnings/dangers</li> <li>• Instruction for safe use of the product/how not to use/hazards</li> <li>• Contacts for faulty products</li> <li>• Ingredients – protects for dietary/allergy requirements</li> <li>• Identifying genuine brands - fake dangerous products</li> </ul>	2	<p>Award 1 mark for each correct answer</p> <p>Allow suitable alternative answers</p>
1	(d)	<ul style="list-style-type: none"> <li>• Set up standards of quality for products</li> <li>• Prepare and promote the adoption of British Standards across manufacturers</li> <li>• Revise, alter and amend standards constantly as circumstances change, reliable and up-to-date</li> <li>• Standards are for voluntary use and do not impose any regulations</li> <li>• BSI documents include: specifications, methods, vocabularies, codes of practice, guides</li> <li>• Refers to laws and regulations of standards where compliance is compulsory</li> <li>• Tests and compliance, test for CE certification.</li> </ul>	3	<p>1 mark each for up to two of the given points (2) plus 1 mark for discussion/exemplification/explanation/justification.</p> <p><b>OR</b></p> <p>1 mark for any one of the given points plus up to 2 marks for <b>detailed</b> exemplification/explanation/discussion/justification.</p> <p>Maximum of two marks for three or more separate creditable points</p>
2	(a)	<p>Look e.g.</p> <ul style="list-style-type: none"> <li>• Bright, primary colours that appeal to children, interesting shapes, contrasting colours, shiny, textured</li> <li>• symmetrical/curvy/simplistic/large /attractive/ bold numbers</li> </ul> <p>Smell e.g.</p> <ul style="list-style-type: none"> <li>• Natural hardwood smell, synthetic plastic smell</li> </ul> <p>Touch/feel e.g.</p> <ul style="list-style-type: none"> <li>• Texture of hardwood, smooth feel of moulded</li> </ul>	3	<p>Award 1 mark for each correct answer</p> <p>Allow suitable alternative answers</p> <p>Large/big on its own = 0 marks, unless qualified</p> <p>No marks for coloured plastic numbers/hands, in question.</p>

Question			Answer / Indicative Content	Mark	Guidance
			plastics, pleasure of holding numbers, satisfying feel of fitting the numbers into the recesses. <ul style="list-style-type: none"> <li>Smooth-easy turning hands</li> </ul>		
2	(b)	(i)	Green	1	
2	(b)	(ii)	Purple or Orange	1	
2	(c)		<ul style="list-style-type: none"> <li>Addition of handle/peg, easier to get hold of</li> <li>Clock on stand and can be pushed out from back</li> <li>Picked out using picker</li> <li>Recess or finger holes for child to get fingers into grip the numbers</li> <li>Numbers slightly raised, so fingers can pull number out</li> <li>Clock faces without recesses(1) using velcro and magnets(1)</li> </ul>	2	Reward a viable modification (1) and an explanation of <b>how/why</b> the modification will allow the child to remove/replace the numbers (1) more easily.
2	(d)		<ul style="list-style-type: none"> <li>Less waste accumulating in landfill - reduction of smells and possibility of toxins escaping into rivers and harm to wildlife</li> <li>Reduce air pollution - better quality of air</li> <li>Less emission of toxins from products – safer to use</li> <li>Stop toxins entering the food chain – healthier and safer food</li> <li>Reduce the waste going into the landfills – sustain finite materials</li> <li>Easily biogradable materials, such as paper, card, wood, natural fabric fibre – encourage regeneration</li> <li>Reduce the use of materials which are unable to be recycled/reused/biodegradable</li> <li>Make the product energy efficient</li> </ul>	3	1 mark for each of two points (2) plus 1 mark for exemplification/explanation/discussion/justification of one of the points.  <b>OR</b>  1 mark for any one of the given points plus up to 2 marks for <b>detailed</b> (two or more additional statements of support) exemplification/explanation/discussion.  Maximum of two marks for three or more separate creditable points  Do not credit: better for the environment, environmentally friendly, eco-friendly, etc.


Question		Answer / Indicative Content	Mark	Guidance
		<ul style="list-style-type: none"> <li>• Consumers have become more aware of environmental issues</li> <li>• Eco/environmental products in fashion</li> </ul>		
3	(a)	<ul style="list-style-type: none"> <li>• Adjustable- Zoom/re-size function, Fonts can be changed, Able to read in different light conditions, brightness</li> <li>• No need for additional lighting</li> <li>• Slim-easy to store</li> <li>• Store large number of books on memory</li> <li>• Easy purchase books on internet/research information</li> <li>• Easy to share with friends</li> <li>• Read landscape or portrait, page flat/easy to turn pages/no stiffness of new book spine</li> <li>• Video/animation/sound</li> <li>• Ebooks cost less than paper</li> <li>• Less clutter in home</li> <li>• Connectivity with other devices</li> <li>• Ebook always in good condition</li> <li>• Searchable/Highlight - key words/phrases</li> </ul>	3	<p>1 mark each for up to 3 different benefits.</p> <p>Accept simple three/four word statements, as in given answers.</p> <p>Do not accept:</p> <ul style="list-style-type: none"> <li>• less paper used, good for environment</li> <li>• Lighter to carry not necessarily lighter than a book</li> <li>• Less likely to get water damage/rip</li> <li>• Portable - not necessarily more portable than a book</li> <li>• Easier to read</li> </ul>
3	(b)	<ul style="list-style-type: none"> <li>• Small battery can be make product slimmer, more attractive/aesthetic, customer preference</li> <li>• Larger battery -less space for components- hence bigger</li> <li>• Size of product battery, must fit into hands</li> <li>• Easy storage/carry due to size, in bag/case, pocket</li> <li>• Not heavy to hold</li> <li>• Lightweight/slim easy to carry around, more ergonomic</li> <li>• If too small, battery will last short time between charges</li> </ul>	2	1 mark each for up to two different reasons.



Question		Answer / Indicative Content	Mark	Guidance
3	(c)	<ul style="list-style-type: none"> <li>• Gender/family differences in perception of colour</li> <li>• Greater choice for consumers</li> <li>• Sell more/ increase sales</li> <li>• Consumers will want in other colours</li> <li>• Fashion/trends</li> <li>• Match other furniture clothing environments</li> <li>• Personal preferences</li> <li>• Marketing opportunity/broaden target market</li> <li>• Cultural/gender sensitive colours</li> </ul>	2	1 mark each for up to two different reasons.
3	(d)	<ul style="list-style-type: none"> <li>• Social media, e.g. Facebook/Twitter/Snapchat</li> <li>• Email marketing</li> <li>• Loyalty and referral</li> <li>• Web community and reviews</li> <li>• Telemarketing</li> <li>• Web data collection</li> <li>• Mobile marketing</li> <li>• Popup advertising</li> <li>• Video marketing/ movement</li> <li>• Vendor data analysis</li> <li>• Events &amp; Webinar</li> <li>• Personalisation &amp; chat</li> <li>• Free apps with adware</li> <li>• Search &amp; social ads</li> <li>• Advertisement/electronic bill boards</li> <li>• Television/popup/celebrities</li> </ul>	3	<p>1 mark for each of up to two of the 'examples' plus 1 for discussion/explanation/justification/exemplification</p> <p><b>OR</b></p> <p>1 mark for any one of the 'examples' plus up to 2 marks for <b>detailed</b> (two or more additional statements of support) explanation/discussion/justification.</p> <p>Potential customers are emailed with special offers(1), having expressed interest in similar products(1) previously from an earlier purchase(1)</p> <p>Popup adverts spring up(1) when browsing the internet(1), targeting potential customers(1).</p> <p>Collection of customer details (1) and preferences/lifestyles(1), selling of information to interested third parties(1)</p> <p><b>Do not credit answers</b> that explain the advertising and marketing of new technology. This question is asking for an explanation of the new ways that advertising and marketing on digital technologies</p>





Question	Answer / Indicative Content	Mark	Guidance
4 (a)*	<p><b>Candidates may continue their answer at the bottom of the sheet or at the bottom of the next sheet or onto an additional page. Examiners must check for any additional creditable points.</b></p> <p>Continuous prose – question is marked for quality of written communication.</p> <p>Only <u>one</u> Trend Setter must be referred to.</p> <p>If the answer relates only to the Iconic product then only award Level 1.</p> <p>There is no credit for mention of the Trendsetter by name or the name of the Iconic Product, as these are given in the question.</p> <p>Bullet points or list/sequence of discrete points maximum of level 1.</p> <p><b>Typical connectives that may be used to link points of discussion:</b>  so that, because, therefore, however, although, but, consequently, alternatively, whenever, besides, moreover, since, whereas, despite.</p>	6	<p><b>Level 3 (5 to 6 marks)</b>  Detailed understanding of the influence of the Trend Setter. Specialist terms used appropriately and correctly. Information presented in structured format. Accurate use of grammar, punctuation and spelling with few minor errors.</p> <p>Range of well made points that mostly relate to the Trendsetter and with reasoned explanations through discussion and justification</p> <p><b>Level 2 (3 to 4 marks)</b>  Reasonable understanding of the influence of the Trend Setter. Some use of specialist terms, not always used appropriately. Information presented for most part in a structured format. Occasional errors in grammar, punctuation and spelling.</p> <p>Range of points adequately made with some relationship to the Trendsetter, with explanations and some justification</p> <p><b>Level 1 (1 to 2 marks)</b>  Some understanding of the influence of the Trend Setter. Little or no use of specialist terms. Answers ambiguous or disorganized. Errors of grammar, punctuation and spelling. Limited range of points made with some relation to the Trendsetter and with limited justification</p>

Question	Answer / Indicative Content	Mark	Guidance
4 (b)	<p>Content of answer refers to creditable points about the <b>influence</b> of the Iconic Product with reference to aesthetics and/technology. These may be discrete points referring to different aspects of the Iconic Product, or they may be linked points that discuss, explain, exemplify, qualify or describe one aspect of the impact or influence.</p> <p>Answers must relate to <b>what</b> was so different about the Iconic Product and or <b>why</b> the Iconic Product has been so influential.</p>	4	<p>Quality of written communication is <b>not</b> assessed in this part of Question 4.</p> <p>This can be a different Iconic Product to that of the Trendsetter chosen in part (a).</p> <p>There is <b>no credit</b> for mention of the Trendsetter by name or the name of the Iconic Product, as these are given in the question.</p> <p>Some answers may provide more than two creditable points for each or either reason. Credit the points wherever they are presented.</p> <p><b>Typical connectives that may be used to link points of discussion:</b> so that, because, therefore, however, although, but, consequently, alternatively, whenever, besides, moreover, since, whereas, despite.</p>

<p>4 (a) (b)</p>	<p><b>OPTION 1 (a) Folding tubular steel products</b></p> <ul style="list-style-type: none"> <li>• Development of the modern day welded steel pipe can be traced back to the early 1800s.</li> <li>• In 1815, William Murdock invented a coal burning lamp system. To fit the entire city of London with these lights, Murdock joined together the barrels from discarded muskets.</li> <li>• An early notable method for producing metal tubes quickly and inexpensively was patented by James Russell in 1824. In his method, tubes were created by joining together opposite edges of a flat iron strip.</li> <li>• Comelius Whitehouse developed a better method for making metal tubes. This process, called the butt-weld process is the basis for our current pipe-making procedures.</li> <li>• The most important innovation was introduced by John Moon in 1911. The continuous process method in which a manufacturing plant could produce pipe in an unending stream.</li> <li>• In 1895, the first plant to produce seamless tubes was built. As bicycle manufacturing gave way to auto manufacturing, seamless tubes were still needed for gasoline and oil lines. This demand was made even greater as larger oil deposits were found.</li> <li>• Steel indoor/outdoor furniture has been popular since 1920s.</li> <li>• Around 1925, Marcel Breuer, the Bauhaus furniture designer and architect, began working with tubular steel, having been impressed with the light weight and strength of the handlebars of a bicycle. The resulting furniture designs by Breuer and others using this material are some of the most important of the period. Wassily chair.</li> <li>• Production of products for the home such as electric irons and ironing boards, waffle makers, radios and, by 1949.</li> <li>• By the 1950s, in addition to tubular steel, furniture was produced using aluminum.</li> <li>• Hollow section, gives it high strength to weight ratio</li> <li>• Easy to bend/shape/machine/form/drill</li> </ul>	<p>6 4</p> <p><b>OPTION 1 (b) Maclaren B-01 buggy</b></p>  <ul style="list-style-type: none"> <li>• The book Century Makers lists the Maclaren buggy as one of the hundred clever things we take for granted which have changed our lives over the past century.</li> <li>• Before Owen Maclaren’s ground-breaking 1965 design, prams were huge pieces of hardware that were difficult to manoeuvre and at odds with a new, informal era when women worked and few people had servants.</li> <li>• The first Maclaren B-01 buggy was inspired by a visit from his daughter and her baby.</li> <li>• Seeing his daughter struggle with his granddaughter’s pushchair, Maclaren was inspired to design a buggy that was easier-to-use and flexible.</li> <li>• With his knowledge of lightweight, collapsible structures he designed his first buggy in 1965.</li> <li>• The beauty of the new design was its light aluminium frame that weighed only six pounds</li> <li>• developed a structure that could comfortably carry a child and then fold into a space only a little bigger than a folded umbrella.</li> <li>• 3-D folding mechanism that collapsed the buggy.</li> <li>• He invented a new generation of baby transportation and revolutionised the industry.</li> </ul>
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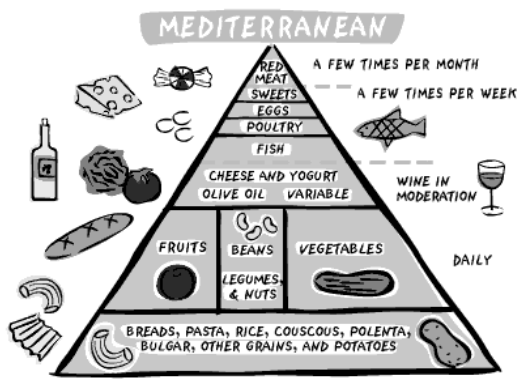

		<ul style="list-style-type: none"> <li>Minimalistic</li> </ul>	
4	(a) (b)	<p><b>OPTION 2 (a) Programmable components</b></p>  <ul style="list-style-type: none"> <li>Many electronic devices on the market, such as microwaves and car engines, are now designed using components that can be <i>programmed</i> to function in different ways.</li> <li>The advantage is that the same key component used in one product can also be used in something completely different.</li> <li>This reduces costs, as expensive customised integrated circuits do not need to be designed and manufactured for every new product.</li> <li>A <i>microprocessor</i> is a multi-function programmable device. Microprocessors enable computers to work, and they can also be used to control many types of electronic system.</li> <li>An alternative type of programmable component is the <b>microcontroller</b> or <i>PIC</i>.</li> <li>Microcontrollers are essentially single-purpose microprocessors, and they enable designers to use the same device to control a wide range of situations, while being cheaper than a computer control system.</li> <li>The rate at which the PIC works is controlled by an internal <i>clock</i>.</li> <li>Systems in a car are controlled either by a single microprocessor controlling a number of different functions at once, or by a series of microcontrollers, each controlling specific functions such as fuel consumption.</li> </ul>	<p><b>OPTION 2 (b) PIC microcontroller</b></p>  <ul style="list-style-type: none"> <li>PIC is a family of modified Harvard architecture microcontrollers made by Microchip Technology, derived from the PIC1650 originally developed by General Instrument's Microelectronics Division.</li> <li>The name PIC initially referred to <i>Peripheral Interface Controller</i>. The first parts of the family were available in 1976; by 2013 the company had shipped more than twelve billion individual parts, used in a wide variety of embedded systems.</li> <li>Early models of PIC had read-only memory (ROM) or field-programmable EPROM for program storage, some with provision for erasing memory.</li> <li>All current models use Flash memory for program storage, and newer models allow the PIC to reprogram itself.</li> <li>The hardware capabilities of PIC devices are Low-power and high-speed.</li> <li>The manufacturer supplies computer software for development known as MPLAB, assemblers and C/C++ compilers, and programmer/debugger hardware under the MPLAB and PICKit series.</li> <li>PIC devices are popular with both industrial developers and hobbyists due to their low cost, wide availability, large user base, extensive collection of application notes, availability of low cost or free development tools,</li> </ul>

				serial programming, and re-programmable Flash-memory capability.
4	(a) (b)	<p><b>OPTION 3 (a) <i>Trouser suit</i></b></p> <ul style="list-style-type: none"> <li>• A woman's suit of clothing consisting of trousers and a matching or coordinating coat or jacket.</li> <li>• The pantsuit was introduced in the 1920s, when a small number of women adopted a masculine style, including pantsuits, hats, and even canes and monocles.</li> <li>• However, the term, "trouser suit" had been used in Britain during the First World War, with reference to women working in heavy industry.</li> <li>• During the 1960s trouser suits for women became increasingly widespread. Designers such as Foale and Tuffin in London and Luba Marks in the United States were early promoters of trouser suits.</li> <li>• In 1966 Yves Saint-Laurent introduced his Le Smoking, an evening pantsuit for women that mimicked a man's tuxedo. Whilst Saint-Laurent is often credited with introducing trouser suits, it was noted in 1968 that some of his pantsuits were very similar to designs that had already been offered by Luba Marks, and the London designer Ossie Clark had offered a trouser suit for women in 1964 that predated Saint Laurent's 'Le Smoking' design by two years.</li> <li>• In Britain a social watershed was crossed in 1967 when Lady Chichester, wife of the navigator Sir Francis Chichester, wore a trouser suit when her husband was publicly knighted by Queen Elizabeth II.</li> <li>• Trouser suits were often deprecated as inappropriately masculine clothing for women.</li> <li>• Until 1993, women were not permitted to wear Trouser suits on the United States Senate floor. In 1993, Senators Barbara Mikulski and Carol Moseley Braun wore trousers onto the floor in defiance of the rule, and female support staff followed soon after, with the rule being amended later that year by</li> </ul>	6 4	<p><b>OPTION 3 (b) Ossie Clark Trouser suit</b></p> <ul style="list-style-type: none"> <li>• 60's fashion icon, Ossie Clark is one of Britain's most influential designers.</li> <li>• The only first-class degree graduate among his batch from the Royal College of Art in 1965, Clark became a celebrated designer after his graduation collection was immediately featured by the British Vogue.</li> <li>• Heavily influenced by his love for music, art and Hollywood glamour, Clark's designs involved the use of different prints and decorations.</li> <li>• English fashion designer who was a major figure in the Swinging Sixties scene in London and the fashion industry in that era.</li> <li>• Clark is now renowned for his vintage designs by present-day designers.</li> <li>• Clark is compared to the 1960s fashion great Biba and influenced many other designers, including Yves Saint Laurent, Anna Sui and Tom Ford.</li> <li>• Manolo Blahnik has said of Ossie Clark's work: "He created an incredible magic with the body and achieved what fashion should do—produce desire."</li> <li>• Ossie Clark and Ossie Clark for Radley clothes are highly sought after, and are worn by well known models such as Kate Moss and Naomi Campbell.</li> <li>• Ossie Clark satin and chiffon trouser suit in 'Botticelli' print, 1969.</li> <li>• Ossie Clark is well known for his use of muted colours and moss crepe fabric.</li> <li>• Clark made many stage costumes for Mick Jagger, the Beatles, Marianne Faithfull and Liza Minnelli, among others.</li> <li>• Fashion designers influenced by Ossie Clark include</li> </ul>

		<p>Senate Sergeant-at-Arms Martha Pope to allow women to wear trousers on the floor so long as they also wore a jacket, thus allowing trouser suits, among other types of clothing.</p> <ul style="list-style-type: none"> <li>• Hillary Clinton, who is well known for wearing trouser suits, once referred to her presidential campaign staff as "The Sisterhood of the Traveling Pantsuits".</li> <li>• Until 1993, women were not permitted to wear Trouser suits on the United States Senate floor. In 1993, Senators Barbara Mikulski and Carol Moseley Braun wore trousers onto the floor in defiance of the rule, and female support staff followed soon after, with the rule being amended later that year by Senate Sergeant-at-Arms Martha Pope to allow women to wear trousers on the floor so long as they also wore a jacket, thus allowing trouser suits, among other types of clothing.</li> <li>• Hillary Clinton, who is well known for wearing pantsuits, once referred to her presidential campaign staff as "The Sisterhood of the Traveling Pantsuits" (in her August 26, 2008 speech at the Democratic National Convention), a play on <i>The Sisterhood of the Traveling Pants</i></li> </ul>		<p>Anna Sui, John Galliano, Christian Lacroix, Dries Van Noten, Malcolm Hall, Clements Ribeiro, Marc Jacobs, Gucci and Prada. The label Ghost, known for its diaphanous gowns, has also been influenced by Ossie Clark.</p> <ul style="list-style-type: none"> <li>• Original Ossie Clark pieces have been considered collectors items since the start of the 1990s, especially those designed by Clark/Birtwell.</li> <li>• The square cut, mini-shift dresses that projected an adolescent, coltish figure, all knees and elbows, gave way to a sinuous shapeliness that celebrated female curves.</li> <li>• The typical Clark gown boasted the sensuousness of the female form: the arched small of the back, the rounded haunch, an impossibly long neck, a rangy thigh, all slip-sliding against satin or matte jersey.</li> </ul>
<p>4</p>	<p>(a) (b)</p>	<p><b>OPTION 4 (a) <i>Laminated packaging materials</i></b></p>  <ul style="list-style-type: none"> <li>• Attention continued to revolve around milk packaging, and several of the company's staff were engaged with the problem for some time. In February 1944</li> <li>• Ruben Rausing wanted a concrete proposal. Erik Wallenberg started to investigate the possibilities of creating a packaging of cylindrical form. Out of those attempts grew a geometrical figure – a tetrahedron.</li> <li>• Erik Wallenberg arrived at the brilliant idea of applying</li> </ul>	<p>6 4</p>	<p><b>OPTION 4 (b) <i>Tetra Pak</i></b></p>  <ul style="list-style-type: none"> <li>• In Sweden Ruben Rausing started the packaging company Åkerlund &amp; Rausing with Erik Åkerlund.</li> <li>• The capital injection came mainly from Erik Åkerlund, While Ruben Rausing took responsibility for the ideas and the management of the company.</li> <li>• In spring 1933 Ruben Rausing was sole owner of the company.</li> <li>• Ruben Rausing started to build up a packaging industry, which considerably contributed to the restructuring of Swedish retailing, a modernisation,</li> </ul>

	<p>the tetrahedral form to packaging, and Ruben Rausing had the insight, courage and will to back the idea.</p> <ul style="list-style-type: none"> <li>• Answers had to be found to the questions of how the packaging would be formed, filled and sealed, and what packaging material would be able to provide fluid-tight packaging. There was no prior experience to build upon.</li> <li>• The conceptual basis for machine design would become</li> <li>• Harry Järund's great contribution to Tetra Pak's success.</li> <li>• Harry Järund also developed a suitable distribution case.</li> <li>• He solved the issue by designing a six-sided basket for 18 packs. That became his first patent, to be followed by many more. The packaging shape – the tetrahedron – was established, as was the transportation packaging.</li> <li>• In September 1952 the first Tetra Pak machine was delivered to Lund Dairy Association.</li> <li>• In November of the same year the dairy started to sell cream in one-decilitre tetrahedron formed packages.</li> <li>• The idea of forming, filling and sealing packaging from a paper tube has been attributed to Ruben Rausing.</li> <li>• This means that the whole process could take place without interruption, if the paper web is continuously formed into a cylinder, which is then fed with fluid using a measuring device.</li> <li>• The big problem was to obtain the correct amount in each packaging unit because milk foamed upon filling.</li> <li>• Ruben Rausing - "One day at lunch at home I was talking with my wife about this. Suddenly she said 'Why don't you continuously fill milk into the tube and then seal it through the milk?' I said that that would be a brilliant idea, if it could be used. It would result in packages completely filled, without air, and oxygen has a damaging effect on milk.</li> <li>• I made a cylinder, filled it with milk and separated away a number of tetrahedrons using hot sealing clamps. Some</li> </ul>	<p>which led to self-service, convenience shopping and supermarkets.</p> <ul style="list-style-type: none"> <li>• A primary objective was to replace bulk selling of unpacked goods with consumer adapted packaging for flour, sugar and salt.</li> <li>• Another product, which was both perishable and demanded a lot of management, was milk.</li> <li>• How could bulk milk and the unpractical glass bottle be replaced?</li> <li>• Ruben Rausing had a strong ambition to create something new.</li> <li>• His fundamental idea was to rationalise the distribution of groceries by means of practical consumer packaging and proper packaging for transportation.</li> <li>• During the 1930s Åkerlund &amp; Rausing grew so much that the operation moved into new premises to permit expansion.</li> <li>• The idea of the continuous filling process was created, but there was not yet any filling machine.</li> <li>• To demonstrate the function he built a simple prototype model. The moving parts comprised cogwheels and bicycle chains on which wooden sealing jaws were affixed.</li> <li>• Four months after the demonstration the first machine was ready in September 1946.</li> <li>• In the USA a laminating technique had been developed that could be adapted to packaging material for fluid-filled packaging.</li> <li>• The first tetrahedron machine could at last be installed in Lund's dairy in September 1952.</li> <li>• Thanks to their own efforts, Tetra Pak had a free license to the manufacturing process.</li> <li>• Materials development did not just include plastic coating.</li> </ul>
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	<p>of us tasted the milk and couldn't detect the slightest burnt taste."</p>	<ul style="list-style-type: none"> <li>Paper also had to be rigid but formable at the same time. It had to have a uniform thickness, not give out smell or taste, withstand damp and moisture, provide the best possible protection against light, have a very flexible surface and be suitable for lamination.</li> </ul>
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Question	Answer	Marks	Guidance
<p>4 (a) (b)</p>	<p><b>OPTION 5 (a) Mediterranean diet</b></p>  <ul style="list-style-type: none"> <li>Dietary data from the parts of the Mediterranean region enjoy the lowest recorded rates of chronic diseases and the highest adult life expectancy.</li> <li>The healthfulness corroborated by more than 50 years of epidemiological and experimental nutrition research.</li> <li>The Mediterranean diet emphasizes:             <ul style="list-style-type: none"> <li>Eating primarily plant-based foods, such as fruits and vegetables, whole grains, legumes and nuts.</li> <li>Replacing butter with healthy fats, such as olive oil.</li> </ul> </li> </ul>	<p>6 4</p>	<p><b>OPTION 5 (b) Pizza</b></p>  <ul style="list-style-type: none"> <li>The introduction of tomatoes to Italian cuisine in the 18<sup>th</sup> and early 19<sup>th</sup> centuries finally gave us the true modern Italian pizza.</li> <li>Even though tomatoes reached Italy by the 1530's it was widely thought that they were poisonous and were grown only for decoration. However the innovative (and probably starving) peasants of Naples started using the supposedly deadly fruit in many of their foods, including their early pizzas.</li> <li>Since that fateful day the world of Italian</li> </ul>



Question	Answer	Marks	Guidance
	<ul style="list-style-type: none"> <li>• Using herbs and spices instead of salt to flavor foods.</li> <li>• Food from plant sources, including fruits and vegetables, potatoes, breads and grains, beans, nuts, and seeds.</li> <li>• Emphasis on a variety of minimally processed and, wherever possible, seasonally fresh and locally grown foods.</li> <li>• Olive oil as the principal fat, replacing other fats and oils.</li> <li>• Total fat ranging from less than 25 percent to over 35 percent of energy, with saturated fat no more than 7 to 8 percent of energy (calories).</li> <li>• Daily consumption of low to moderate amounts of cheese and yogurt.</li> <li>• Twice-weekly consumption of low to moderate amounts of fish and poultry and up to 7 eggs per week.</li> <li>• Fresh fruit as the typical daily dessert; sweets with a significant amount of sugar and saturated fat consumed not more than a few times per week.</li> <li>• Red meat a few times per month, lean versions preferable.</li> <li>• Regular physical activity at a level which promotes a healthy weight, fitness and well-being.</li> <li>• Moderate consumption of wine, normally with meals.</li> </ul>		<p>cuisine would never be the same, however it took some time for the rest of society to accept this crude peasant food.</p> <ul style="list-style-type: none"> <li>• Once members of the local aristocracy tried pizza they couldn't get enough of it, which by this time was being sold on the streets of Naples for every meal.</li> <li>• As pizza popularity increased, street vendors gave way to actual shops where people could order a custom pizza with many different toppings.</li> <li>• By 1830 the "Antica Pizzeria Port'Alba" of Naples had become the first true pizzeria and this venerable institution is still producing masterpieces.</li> <li>• The popular pizza Margherita owes its name to Italy's Queen Margherita who in 1889 visited the Pizzeria Brandi in Naples.</li> <li>• The Pizzaiolo (pizza maker) on duty that day, Rafaele Esposito created a pizza for the Queen that contained the three colors of the new Italian flag. The red of tomato, white of the mozzarella and fresh green basil, was a hit with the Queen and the rest of the world.</li> <li>• Neapolitan style pizza had now spread throughout Italy and each region started designing their own versions based on the Italian culinary rule of fresh, local ingredients.</li> <li>• Easy to eat</li> <li>• Minimal ingredients</li> <li>• Organic ingredients</li> </ul>

Question			Answer	Marks	Guidance
					<ul style="list-style-type: none"> <li>• Fresh and natural ingredients</li> <li>• Salt replaced by spices and herbs</li> </ul>
			<b>TOTAL</b>	<b>10</b>	

<b>5</b>	<b>(a)</b>	<p><b>Specification</b></p> <p>Specification contains statements that <b>could relate to any item.</b> (0)</p> <p>Specification that may be <b>vague/incomplete or repeated</b> from the question(1)</p> <p>Specification that gives <b>limited design requirements</b>(2)</p> <p>Adequate specification that gives <b>some key design requirements</b> (3)</p> <p>Detailed specification gives <b>key design requirements</b> (4)</p>	<b>4</b>	<p>“It must be colourful” VAGUE</p> <p>“It must use a range of bright colours” ADEQUATE</p> <p>“It must use bright colours such as orange and turquoise” DETAILED</p> <p><b>Picnic table</b> - <i>Compact, easily folded up, lightweight, stable, wiped clean, weatherproof for outdoor use</i></p> <p><b>Trouser suit</b> – <i>easy to put on for child, breathable keep cool, able to move freely for dancing, easy fit range of sizes</i></p> <p><b>Easy carry disposable drinks device</b> – <i>Flat pack, holds 4 drinks, recyclable/biodegradable, one hand carry</i></p> <p><b>Mediterranean menu for a school</b> – <i>low fat/low salt, high in nutrition, appetising colour/aroma, easy to eat with hands or cutlery</i></p> <p><b>Cat feeding device</b> – <i>dispense exact amount per day, water and food tray, secure storage container, keep stored fresh, detect food in tray</i></p>
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	(b)	<p><b>Initial ideas</b></p> <p>Only <b>one</b> sketched solution with <b>no</b> accompanying notes (1)</p> <p><b>One</b> sketched solution <b>with</b> accompanying notes (2)</p> <p><b>Two or more</b> solutions with <b>no</b> accompanying notes (3)</p> <p><b>Two or more solutions</b> with accompanying notes (4)</p> <p>A <b>range</b> of different ideas that <b>broadly address</b> the specification points (5)</p> <p>A <b>range</b> of different ideas showing a creative approach that <b>fully address</b> the specification points (6)</p>	6	<p><b>Marks can be awarded for addressing the specification points irrespective of the quality of the candidate's specification points given in (a).</b></p> <p><b>One word</b> labels can identify and name, features on a sketch: e.g. base, aluminium, pattern, seam.</p> <p><b>Two and three word</b> labels can qualify the feature: e.g. handle of wood, stable base.</p> <p><b>Notes</b> 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.</p> <p>Dimensions on a drawing or sizes stated, and weights or quantities of ingredients come under the heading of notes.</p> <p><b>Different ideas</b> refers to:</p> <ol style="list-style-type: none"> <li>1. whole solutions or parts of a solution.</li> <li>2. conceptually different thinking.</li> <li>3. not just variations on a theme.</li> </ol> <p><b>Addressing specification points:</b></p> <ol style="list-style-type: none"> <li>1. may be explicitly evidenced in the notes.</li> <li>2. implicitly evidenced in the idea.</li> <li>3. specification points need to be evidenced only once each, in any of the notes or the ideas.</li> </ol> <p><b>Creative approach</b> 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?</p>
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	(c)	<p><b>Development of ideas – <u>must</u> reflect the product focus</b></p> <p>Presents limited improvements/developments of ideas with little if any consideration of materials and construction. Developed idea does not fully address the design need. <b>(0-2 Marks)</b></p> <p>Presents some improvements/developments of ideas with some consideration of materials and construction. Developed idea addresses some requirements of the design need. <b>(3-4 Marks)</b></p> <p>Presents detailed improvements/developments of ideas with thorough consideration of materials and construction. Developed idea fully meets the requirements of the design need. <b>(5-6 Marks)</b></p>	6	<p><b>In this part candidates must address the requirements of the “<i>design need in the situation</i>”.</b></p> <p>If <b>both</b> requirements of the design need are not met the maximum available is <b>3 marks</b>.</p> <ol style="list-style-type: none"> <li>1. Picnic table, compact <b>and</b> easily transported</li> <li>2. Automatic feeding device <b>and</b> for period of a holiday.</li> <li>3. Trouser suit for a young child <b>and</b> 60’s themed party</li> <li>4. Easy carry disposable drinks device <b>and</b> summer event.</li> <li>5. Healthy Mediterranean menu <b>and</b> suitable school lunch.</li> </ol> <p>For an automatic feeding device, <b>a system</b> (circuit or block diagram) must be shown. Where there is clear development <b>without a system design up to 3 marks</b> can be awarded.</p> <p><i>Candidates should show <b>any</b> (not all) relevant <b>details</b> for manufacture:</i></p> <ul style="list-style-type: none"> <li>• <i>materials/ingredients/components.</i></li> <li>• <i>sizes / dimensions / quantities,</i></li> <li>• <i>methods / joining / mixing techniques,</i></li> <li>• <i>tools / equipment,</i></li> </ul> <p>To obtain full marks candidates must consider their own specification.</p>
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	(d)	<p>Evaluation contains vague statements that could relate to any item. <b>(0 marks)</b></p> <p><b>Limited</b> evaluation of <b>how</b> their design meets their specification at a superficial level. <b>(1 Mark)</b></p> <p><b>Reasonable</b> evaluation considering <b>how</b> their design meets the specification. Most specification points addressed. <b>(2-3 Marks)</b></p> <p><b>Detailed</b> evaluation of <b>how</b> their design meets their specification. Fully addresses all specification points. <b>(4 Marks)</b></p>	4	<p><b>Accept</b> justified points related to the candidates' <b>own specification</b>, even if the points attracted no reward in 5(a).</p> <p><b>Look for</b> mention of specific features of the developed final idea (e.g. made of aluminium tube) and justified reference to specification (e.g. so it is lightweight and easily transported).</p>
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