



GCSE

Design and Technology: Product Design

Unit **A554**: Designing Influences

General Certificate of Secondary Education

Mark Scheme for June 2016

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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 must 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.

Question		Answer	Mark	Guidance
1	(a)	<p>Protect</p> <p>Non- absorbent/Waterproof/Protective surface Edge protectors Clip/locks hold shut Curved corners Hardback Strong/durable Keeps papers in side/secured/nothing falls out/organise Keeps papers flat/nothing creased/damaged</p> <p>Size</p> <p>A4/fit paper/amount paper Hole punch Quantity of paper Hole- finger to pull Wide- stable/stand/balance/stands up Sturdy/stiff structure</p> <p>Aesthetics</p> <p>Patterned/Colourful Label Logo Modern Attractive Aesthetically pleasing</p> <p>Other requirements</p> <p>Mechanism Rings-hold paper Lightweight Easy to hold/carry/file away Easy to remove and replace papers Open and close Cover paper for privacy</p>	3	<p>Award 1 mark for each correct answer</p> <p>Do not reward: Size, shape, colour as one word answer</p>
	(b) (i)	Lever	1	<p>The only correct answer</p> <p>Do not reward: locking mechanism, hook, rotator</p>

Question		Answer	Mark	Guidance
	(ii)	Add handle to end of lever/ Addition of Increase length of bend in lever Lengthen lever Smoothen end of the lever Position of lever upwards- easier to press Grip on handle/larger surface area/curved end Handle/loop/larger end/rubber end/shaped grip/press button to open/longer bar. Increase distance from pivot so less force is needed	1	Award 1 mark for any correct answer Do not reward: Answers which do not modify the mechanism, eg. Make less stiff. When open folder, clips open too.
	(c)	Find out/Evaluating impact of total energy/materials used and environmental release of pollutants(2) Cradle to grave raw material extraction, materials processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling(2) Make a more informed decision in designing/manufacture: <ul style="list-style-type: none"> • change materials/manufacturing to reduce impact • reliable products • eliminate planned obsolescence • to save energy • ensure as many parts as possible can be recycled/ designed to be reused • how long it will last/ durability/ longer life/ sustainable • easier to separate the materials • using recycled materials • reduce need to send to landfill/ end of life considerations • reduce parts • repairable • biodegradable 	2	Points must relate to how analysis informs designer to make products more sustainable. 1 mark each for up to two of the given answers (2) OR 1 mark for any one of the given answers plus up to 1 marks for exemplification/explanation/discussion. Environmentally friendly is too vague for credit.

Question		Answer	Mark	Guidance
(d)		<p>Answers should refer to the mechanism:</p> <ul style="list-style-type: none"> • Make a working model from a CAD program and sent to 3D printer/ • Easy storage and retrieval of data/easy to share • Produce the complicated parts of mechanism/can repeat identical components • Intricate parts can be made fast • Speed of producing complex working prototypes • Making model inform development of idea /prototyping can help to evaluate a design • Accurate/precise prototypes can be made which fit together • Help to inform modification of mechanism/quick changes can be made • Allow for experimentation through mock ups • Check for improvements, then edit and reprint 	3	<p>1 mark each for up to two of the given answers (2) plus 1 mark for discussion exemplification/explanation/discussion.</p> <p>OR</p> <p>1 mark for any one of the given answers plus up to 2 marks for detailed exemplification/explanation/discussion.</p> <p>Maximum of two marks for three separate creditable points</p> <p>Because they allow you to design intricate parts quite fast (1). It means you can produce one and make improvements (1) to the design on the computer and reprint (1).</p> <p>Do not reward: Making and manufacture 3D printing for quantity production of products The designer can see it in 3D</p>
			Total	10

Question		Answer	Mark	Guidance
2	(a)	<p>Reasons include:</p> <p>So that they can sell more products Catches the eye on display. To keep up with current fashions Associate different colours with different seasons Cost of changing colour is less than designing a new style Different colours associated with teams Neon colours for health and safety Suit peoples preferences/Appeal to different tastes Attract a wider audience/Appeals to both genders Greater choice/variety/people like different colours Customers like style in different colours</p>	2	<p>1 mark for each point 2 x 1 marks</p> <p>Do not accept Answers without a reason e.g. easy/quick/inexpensive/cheaper.</p>
	(b)	<p>Reasons related to advantages for the manufacturer include:</p> <p>lower raw material costs lower labour cost supply large supply of available labour easy access to raw materials access to markets where the goods are sold friendly government policies/less labour laws and regulation cheaper cost of production/lower set-up costs lower end costs increase profit</p>	3	<p>1 mark for each relevant point related to the manufacturer</p> <p>Do not accept -one word answers without clarification – e.g. cheap/quick/easy - advantages to the workers or the country - advantages to consumers</p> <p>3 x 1 Marks</p>
	(c)	<p>Answers should refer to:</p> <p>Customer recognises/remembers/knows/trusts the brand, develops loyalty to brand Stop counterfeit production, recognition of fake goods</p>	2	<p>1 mark each for up to two of the given answers (2)</p> <p>OR</p>

Question		Answer	Mark	Guidance
		<p>Added feature to garment, adds to the styling of the garment</p> <p>Advertises brand in public</p> <p>Helps to create a trend/fashion/peer pressure creates demand</p>		1 mark for any one of the given answers plus up to 1 marks for exemplification/explanation/discussion.
(d)		<p>Answers should refer to :</p> <p>Generating increased sales/promotion of the brand/exposure to wider target market (1) with any of the following:</p> <ul style="list-style-type: none"> • Association with a winner in the sports world publicises product/brand • To the followers of the sports person it appears that they recommend/endorse/like the product • Emphasise the features of their product • Following trends and fashion • Aligning their product with the same ethos/standards of the sports person • Enter global markets around the world which sports person belongs • Product seen as best on market/trusted • Seen on TV aids exposure to market • Aspire to be like sports person 	3	<p>1 mark each for up to two of the given answers (2) plus 1 mark for discussion exemplification/explanation/discussion.</p> <p>OR</p> <p>1 mark for any one of the given answers plus up to 2 marks for detailed exemplification/explanation/discussion.</p> <p>Maximum of two marks for three separate creditable points</p> <p>Example Famous sports people have many fans (1), brands exploit this (1) showing them using/demonstrating their product (1).</p> <p>Using current successful sports people makes the brand appear modern (1) and keeping up with trends and fashion (1).</p> <p>Do not accept Reference to a specific professional alone attracts no marks</p>
		Total	10	

Question		Answer	Mark	Guidance
3	(a)	<p>Answers relating to the user</p> <p>Self-explanatory to how to open</p> <p>No skill required / Ring pull</p> <p>Can top easily fits back into can for safe disposal</p> <p>Less dangerous – no jagged edges</p> <p>Ring pull slightly raised for easy lifting</p> <p>No equipment needs to be bought/no cost of buying a tin opener</p> <p>Easier/inclusive/accessible to open can/less effort required/opened anywhere on go/convenient</p> <p>Faster to open/quicker/less fuss</p> <p>Safer/less hazardous/less likely to cut self/lid does not fall into can</p>	3	<p>Accept one word answers.</p> <p>Do not accept</p> <p>Answers relating to the traditional can opener</p>
	(b)	<p>Answers relating to the manufacturing of the can</p> <p>Will cost more because of extra materials and processes</p> <p>Will take longer because of more processes – e.g. scoring top of can, press forming ring pull, riveting ring pull</p> <p>More tooling – e.g. variety of dies for forming, scoring blanking/stamping</p>	4	<p>Explanation of two different implications of producing a modern can opener for the manufacturer.</p> <p>2 x 2 Marks for identifying the material/process (1) and explaining the implication on the manufacturer (1).</p> <p><i>Extra processes to make the ring pull(1), incurring higher cost of tooling(1)</i></p> <p><i>Higher cost of using an increased amount of material(1) making production more complicated(1)</i></p> <p>Do not accept - Answers relating implications for the user</p>

Question		Answer	Mark	Guidance
3	(c)	<p>Answers should refer to:</p> <p>Designing for sustainability of packaging</p> <p>Undertaking a Life Cycle Analysis</p> <p>Reduce environmental impact of materials used/Reduce quantity of packaging.</p> <p>Reduce ecological footprint/landfill</p> <p>Reduce use of synthetic polymers</p> <p>Reduce the use of multi-layered films</p> <p>Design to be recyclable/disassembled/recycled/reused/biodegradable/glass milk bottles</p> <p>Stronger/durable – longer lasting materials</p> <p>Sustainable packaging</p> <p>Using organic proteins which makes packaging biodegradable, whilst producing an air proof barrier</p> <p>Moulded pulp using recycled newsprint to form package components.</p> <p>Straw based packaging which are biodegradable</p> <p>Printing using Bio-inks</p> <p>Potato starch packaging - biodegrades very quickly.</p>	3	<p>1 mark for up to two of the 'examples' plus 1 for discussion OR 1 mark for any one of the 'examples' plus up to 2 marks for detailed explanation/discussion.</p> <p>Example</p> <p>Using dairy-based films composed of proteins (1) which are biodegradable (1), offering better oxygen barriers (1).</p> <p>Carry out a Life Cycle Analysis (1) identifying unsustainable materials (1) such as multi layered plastic and foil film potato crisp packaging (1).</p> <p>Using a moulded egg box (1) to protect six eggs (1) which is easily recycled or bio degradable (1).</p> <p>Using Soy ink (1) to print and able to break down with the rest of the packaging (1) instead of oil based non-biodegradable ink (1).</p> <p>Do not accept</p> <p>Preservation of food contents</p> <p>Re-sealable unless for reuse</p>
		Total	10	

Question		Answer	Mark	Guidance
4	(a)	<p>Level 3 (5 to 6 marks) <i>Detailed understanding of the influence of the Trend Setter.</i> <i>Specialist terms used appropriately and correctly.</i> <i>Information presented in structured format.</i> <i>Accurate use of grammar, punctuation and spelling with few minor errors.</i></p> <p>Range of well made points that mostly relate to the Trendsetter and with reasoned explanations through discussion and justification</p> <p>Level 2 (3 to 4 marks) <i>Reasonable understanding of the influence of the Trend Setter.</i> <i>Some use of specialist terms, not always used appropriately.</i> <i>Information presented for most part in a structured format.</i> <i>Occasional errors in grammar, punctuation and spelling.</i></p> <p>Range of points adequately made with some relationship to the Trendsetter, with explanations and some justification</p> <p>Level 1 (1 to 2 marks) <i>Some understanding of the influence of the Trend Setter</i> <i>Little or no use of specialist terms.</i> <i>Answers ambiguous or disorganized.</i> <i>Errors of grammar, punctuation and spelling.</i> Limited range of points made with some relation to the Trendsetter and with limited justification</p>	6	<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 2 marks</p> <p>Typical connectives that may be used to link points of discussion: so that, because, therefore, however, although, but, consequently, alternatively, whenever, besides, moreover, since, whereas, despite.</p>

Question		Answer	Mark	Guidance
	(b)	<p>Content of answer refers to creditable points about the influence 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 what was so different about the Iconic Product and or why the Iconic Product has been so influential.</p>	<p>4 x 1</p> <p>4</p>	<p>Quality of written communication is not 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 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>Some answers may provide more than two creditable points for each or either reason. Credit the points wherever they are presented.</p> <p>Typical connectives that may be used to link points of discussion: so that, because, therefore, however, although, but, consequently, alternatively, whenever, besides, moreover, since, whereas, despite.</p>
		TOTAL	10	

Question		Answer	Mark	Guidance
4	(a) (b)	<ul style="list-style-type: none"> • OPTION 1 (a) Michael Thonet (2 July 1796 — 3 March 1871) was a German-Austrian cabinet maker. • In the 1830s, Thonet began trying to make furniture out of glued and bent wooden slats. • His first success was the Boppard layer wood chair in 1836. • Thonet gained substantial independence by acquiring the Michelsmühle, the glue factory that made the glue for this process, in 1837. However, his attempts to patent the technology failed. • Thonet's essential breakthrough was his success in having light, strong wood bent into curved, graceful shapes by forming the wood in hot steam. • This enabled him to design entirely novel, elegant, lightweight, durable and comfortable furniture, which appealed strongly to fashion - a complete departure from the heavy, carved designs of the past - and whose aesthetic and functional appeal remains to this day. • The Arts and Crafts Movement of the 19th Century believed in the manufacture of hand crafted products, made by craftsmen, often as single items / one offs. • Thonet believed in the mass manufacture of quality furniture, on a production line, using semi and unskilled workers. • The Thonet Company manufactured for a world market and fifty million No 14 Chairs were sold before 1930. • Flatpack • Stackable for Café culture • Innovative design and construction • Steam bentwood parts, considerably reduce construction time • Simple jointing techniques (mainly screws) • Simple but elegant design • Designed so that a minimum number of parts are needed. • Absolute minimum waste of materials • Designed with distribution to retailer in mind • Easy to assemble • Quality materials used • At the Koblenz trade fair of 1841, Thonet met Prince Klemens Wenzel von Metternich, who was enthusiastic about Thonet's furniture and invited him to the Vienna court. In the next year, Thonet was able to present his furniture and his chairs in particular, to the Imperial Family. 	6 4	<p>OPTION 1 (b)</p>  <ul style="list-style-type: none"> • The No. 14 chair is widely regarded as a design classic. It earned a gold medal when it was shown at the 1867 World Exposition in Paris. • The design was a response to a requirement for cafe-style chairs. The seat was often made of woven cane or palm, because the holes in the seat would let spilt liquid drain off the chair. • It has been praised by many designers and architects, including Le Corbusier, who said "Never was a better and more elegant design and a more precisely crafted and practical item created." • Thonet's No. 14 was made of six pieces of steam-bent wood, ten screws, and two nuts. The wooden parts were made by heating beechwood slats to 100 degrees Celsius, pressing them into curved cast-iron moulds, and then drying them at around 70

Question	Answer	Mark	Guidance
	<ul style="list-style-type: none"> • In 1849 he again founded an establishment of his own, the <i>Gebrüder Thonet</i>. • In 1850 he produced his <i>Nr 1</i> chair. • The World's Fair in London 1851 saw him receive the bronze medal for his <i>Vienna bentwood chairs</i>. This was his international breakthrough. • At the next World's Fair in Paris 1855, he was awarded the silver medal as he continued to improve his production methods. • In 1856 he was able to open up a new factory in Koryčany, Moravia. Its extensive beech woods were of great significance to his enterprise. • The 1859 chair <i>Nr. 14</i> - better known as <i>Konsumstuhl Nr. 14</i>, coffee shop chair no. 14 - is still called the "chair of chairs" with some 50 million produced up until 1930. It yielded a gold medal for Thonet's enterprise at the 1867 Paris World's Fair. • As Michael Thonet died 1871 in Vienna, the <i>Fa. Gebrüder Thonet</i> had sales locations across Europe as well as Chicago and New York. • Today, a museum in the factory in Frankenberg, Hesse showcases the firm's history and the Thonet design. • The <i>Museum of Applied Arts, MAK Vienna</i> hosts the largest collection of original Thonet chairs in Austria. 		<p>degrees Celsius for 20 hours. The chairs could be mass-produced by unskilled workers and disassembled to save space during transportation</p> <ul style="list-style-type: none"> • In 2009, the chair was redesigned by James Irvine, an English designer, and retailed from Muji, a Japanese company. Roland Ohnacker, managing director of Thonet, stated that the aim was "to help 18 to 35 year-olds enter the Thonet brand world. • Chair No 14, today known as 214, is still produced by Thonet.

Question		Answer	Mark	Guidance
4	(a) (b)	<p>OPTION 2 (a)</p> <p>IBM</p> <ul style="list-style-type: none"> • In 1911 IBM was first incorporated in New York as the Computing-Tabulating-Recording Company. In 1911 Hollerith's company merged with Computing Scale Co. of America and International Time Recording Co. to form Computing-Tabulating-Recording Co. • The company manufactured and sold products ranging from commercial scales and industrial time recorder to meat and cheese slicers, tabulators and punch cards. • IBM refers to the decades between 1939 and 1963 as the 'Era of Innovation'. During this period the company's product line expanded significantly. • In 1952, the company started large-scale work on electronic computing, producing the 701, the first large-scale computer to be manufactured on a large scale, and in 1964 introduced compatible computers - transforming the industry of different machines running the same software. • In 1981 it released its own personal computer, the IBM PC. It outsourced its software and processor hardware to Microsoft and Intel respectively. • In 1985 IBM introduced local area networks (LAN), which permitted PC users to exchange information and share printers and files within a building or complex. • In the 90's it emphasised the use of business mainframes and moved away from personal computing. Focussing the company towards business software and specialist microchip production. In 1991 IBM introduced personal computers (PCs) for small businesses, schools and homes. For first time, IBM collaborated with Intel and Microsoft to produce PCs. • In 1997, IBM's Deep Blue became the first computer to beat a reigning world champion at chess. • Today IBM's strength lies in its combined expertise in solutions, services, products and technologies. 	6 4	<p>OPTION 2 (b)</p> <p>IBM 350 RAMAC</p> <ul style="list-style-type: none"> • The size of an average 128Kbps MP3 file, in the physical space that could hold two commercial refrigerators. • The IBM 350 was only used by government and industrial users, and was obsolete by 1969. • The IBM 305 RAMAC was the first commercial computer that used a moving-head hard disk drive (magnetic disk storage) for secondary storage. • The system was publicly announced on September 14, 1958, with test units already installed at the U.S. Navy and at private corporations. • RAMAC stood for "Random Access Method of Accounting and Control", as its design was motivated by the need for real-time accounting in business. • The first RAMAC to be used in the U.S. auto industry was installed at Chrysler's MOPAR Division in 1957. It replaced a huge tub file which was part of MOPAR's processing system. • The 305 was one of the last vacuum tube computers that IBM built. • It weighed over a ton.

Question	Answer	Mark	Guidance
			<ul style="list-style-type: none">• The IBM 350 disk system stored 5 million alphanumeric characters• Average time to locate a single record was 600 milliseconds.• Production ended in 1961; the RAMAC computer became obsolete in 1962.• During the 1960 Olympic Winter Games in Squaw Valley (USA), IBM provided the first electronic data processing systems for the Games.

Question		Answer	Mark	Guidance
4	(a) (b)	<p>OPTION 3 (a)</p> <p>Pineapple – Debbie Moore</p>  <ul style="list-style-type: none"> • Owner and founder of Pineapple Dance Studios • Turned a derelict pineapple warehouse into Pineapple Dance Studios, opened in 1979 • In 1982, first woman to float a company on the London Stock Exchange • Took Pineapple back into private ownership in 1988 after raising money for expansion • First woman to list her company on the London Stock Exchange. • Responsible for bringing dance to the masses • Vision to offer every form of dance to all abilities, from absolute beginner to advanced professional • Dance is a fantastic form of exercise • Break down the elitist barriers around dance and making it accessible for all. • Revolutionised fashion by making dance wear mainstream • Created a dance DVD for autistic children • Pineapple. I have 20,000 square ft of studio and 120 teachers • Pineapple has a license with Debenhams to do womens and childrens wear globally and has licenses with different companies to sell accessories • Strictly Come Dancing, “anybody can be taught because you just need to feel the music and let go” • With her Hepburn range she became the first to produce outerwear using Cotton/Lycra. 	<p>6</p> <p>4</p>	<p>OPTION 3 (b)</p> <p>Lycra dance wear</p> <ul style="list-style-type: none"> • Material developed that forms many of today's wardrobe • Changed the way women dressed, previously only shiny nylon available for dance wear • Cotton lycra developed with DuPont • Leotards and footless tights developed out of the new fabric • Women started to wear leggings in the street • Structured pieces designed to be functional and flattering, whilst emphasising the female form. • First fashion and lifestyle dance brand to cut leotards in a way which emphasised waists and necklines and designing tracksuit bottoms to flatter hips and legs • Stretchable/flexible • Comfortable • Body hugging

Question		Answer	Mark	Guidance
4	(a) (b)	OPTION 4 (a) Milton Glaser <ul style="list-style-type: none"> Milton Glaser (b.1929) is among the most celebrated graphic designers in the United States. His presence and impact on the profession internationally is formidable. Immensely creative and articulate, he is a modern renaissance man — one of a rare breed of intellectual designer-illustrators, who brings a depth of understanding and conceptual thinking, combined with a diverse richness of visual language, to his highly inventive and individualistic work. He co-founded the revolutionary Pushpin Studios in 1954, founded New York Magazine with Clay Felker in 1968, established Milton Glaser, Inc. in 1974, and teamed with Walter Bernard in 1983 to form the publication design firm WBMG. Throughout his career, Glaser has been a prolific creator of posters and prints. He has had the distinction of one-man-shows at the Museum of Modern Art and the Georges Pompidou Center. Glaser also is a renowned graphic and architectural designer with a body of work ranging from the iconic logo to complete graphic and decorative programs for the restaurants in the World Trade Center in New York. Portfolio includes a portrait of Bob Dylan enclosed in the singer's greatest hits album, the design of <i>New York</i> magazine which he founded in 1968, and the visual identity of the restaurant in the World Trade Center. He was selected for the lifetime achievement award of the Cooper Hewitt National Design Museum (2004) and the Fulbright Association (2011), and in 2009 he was the first graphic designer to receive the National Medal of the Arts award. Glaser is an influential figure in both the design and education communities and has contributed essays and granted interviews extensively on design. As a Fulbright scholar, Glaser studied with the painter, Giorgio Morandi in Bologna, and is an articulate spokesman for the ethical practice of design. He opened Milton Glaser, Inc. in 1974, and continues to produce a prolific amount of work in many fields of design to this day. 	6 4	OPTION 4 (b) “ <i>I Love New York</i> ” Logo <ul style="list-style-type: none"> One of the most widely distributed and imitated images in the world, the “<i>I Love New York Logo</i>”—consisting of an upper-case “I,” followed by a red heart symbol, and then the upper-case letters “N” and “Y,” set in the rounded slab serif typeface American Typewriter. Created by graphic designer Milton Glaser and first used in 1977 to promote the city and state. Let's dive into the history behind the creation of this iconic logo. New York was going through hard times in the 1970s. Tourists stayed away from New York as a result of the negative publicity that followed. Advertising firm Wells Rich Greene was asked to create a tourist-friendly campaign to encourage visitors to The Big Apple. During a meeting, Glaser pulled a crumpled piece of paper out of his pocket with a doodle he'd done during a recent cab ride. On the back

Question	Answer	Mark	Guidance
	<ul style="list-style-type: none"> Among many awards throughout the years, he received the 2004 Lifetime Achievement Award from the Smithsonian Cooper-Hewitt, National Design Museum, for his profound and meaningful long-term contribution to the contemporary practice of design. Milton Glaser is represented in the permanent collections of the Museum of Modern Art, New York; The Israel Museum, Jerusalem; The Chase Manhattan Bank, New York; the National Archive, Smithsonian Institute, Washington, D.C.; and the Cooper Hewitt National Design Museum, New York. 		<p>of an envelope, he had scribbled the logo that we know today, and after the concept hit a nerve for Wells Rich Greene, he proceeded to develop it further, stacking the characters and determining the typeface.</p> <ul style="list-style-type: none"> Today, the New York State Empire State Development (ESD), New York's chief economic development agency, holds the trademark to the "I Love New York" logo, and licenses its use. According to a 2011 British Telegraph newspaper article, official merchandise, such as t-shirts and mugs emblazoned with Glaser's design, generates more than \$30 million a year, and the ESD receives a significant portion of the profits.

Question		Answer	Marks	Guidance
4	(a) (b)	<p>OPTION 5 (a)</p> <p>Meat Analogue</p> <ul style="list-style-type: none"> Meat analogues use either naturally occurring ingredients (e.g. soya bean) or fermentation technology to manufacture a food which has been altered to perform a particular function, i.e. act as an alternative to meat. Meat analogues are food products that are made to have similar texture, colour, taste and form as meat. They can be considered to be meat substitutes or meat alternatives because they provide a good source of protein. Some people choose not to eat meat because of a variety of ethical, social and value issues and obtain all their protein from other sources. In recent years, manufacturers have produced many meat-like products, called 'meat analogues', which mimic the sensory properties of meat and can be used to replace or extend meat in traditional products, e.g. textured vegetable protein, myco-protein and tofu. Many of these analogues are also fortified with vitamins and minerals, e.g. vitamin B12 and iron. The main function of meat analogues is to replace meat in the diet, although they may also be used as a bulking agent to extend real meat products. In addition to the protein, meat analogues usually contain flavours, spices, and wheat gluten. Sometimes a product may also contain other grains, eggs, and dairy ingredients. A good source of high-quality protein, providing some of all the essential amino acids. Another advantage of meat analogues over meat is that they are a source of fibre because they are made from plant or fungi sources. 	6 4	<p>OPTION 5 (b)</p> <p>Quorn</p> <ul style="list-style-type: none"> Quorn is a major meat substitute product within the UK and Ireland. The brand was launched in 1985 by Marlow Foods (a joint venture between Rank Hovis McDougall and ICI). Quorn is intended to replicate the taste and texture of meat. All Quorn foods contain mycoprotein as an ingredient, which is derived from the <i>Fusarium venenatum</i> fungus and is grown by fermentation using a process similar to the production of beer or yoghurt. The fungus culture is dried and mixed with egg albumen, which acts as a binder, and then is adjusted in texture and pressed into various forms. Additionally, the carbon footprint of Quorn Frozen Mince in the UK is claimed to be 70% less than that of beef. Quorn is produced as both a cooking ingredient and a range of ready meals. It is sold (largely in Europe, but also in other parts of the world) as a health food and an alternative to meat. After switching to using free-range eggs as an ingredient, the Vegetarian Society gave the product its seal of approval.
		TOTAL	10	

Question		Answer	Marks	Guidance
5	(a)	<p>Specification Specification contains statements that could relate to any item. (0)</p> <p>Specification that may be vague/incomplete or repeated from the question(1)</p> <p>Specification that gives limited design requirements(2)</p> <p>Adequate specification that gives some key design requirements (3)</p> <p>Detailed specification gives key design requirements (4)</p>	4	<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>
	(b)	<p>Initial ideas</p> <p>Only one sketched solution with no accompanying notes (1)</p> <p>One sketched solution with accompanying notes (2)</p> <p>Two or more solutions with no accompanying notes (3)</p> <p>Two or more solutions with accompanying notes relate to some of the specification points (4)</p> <p>A range of different ideas that broadly address the specification points (5)</p>	6	<p>Marks can be awarded for addressing the specification points irrespective of the quality of the candidate’s specification points given in (a).</p> <p>One word labels can identify and name, features on a sketch: e.g. base, aluminium, pattern, seam.</p> <p>Two and three word labels can qualify the feature: e.g. handle of wood, stable base.</p> <p>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.</p> <p>Dimensions on a drawing or sizes stated, and weights or quantities of ingredients come under the heading of notes.</p> <p>Different ideas refers to:</p> <ol style="list-style-type: none"> 1. whole solutions or parts of a solution. 2. conceptually different thinking. 3. not just variations on a theme. <p>Addressing specification points:</p> <ol style="list-style-type: none"> 1. may be explicitly evidenced in the notes. 2. implicitly evidenced in the idea. 3. specification points need to be

Question		Answer	Marks	Guidance
		<p>A range of different ideas showing a creative approach that fully address the specification points</p> <p style="text-align: right;">(6)</p>		<p>evidenced only once each, in any of the notes or the ideas.</p> <p>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?</p>
	(c)	<p>Development of ideas – <u>must</u> reflect the product focus</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. (0-2 Marks)</p> <p>Presents some improvements/developments of ideas with some consideration of materials and construction. Developed idea addresses some requirements of the design need. (3-4 Marks)</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. (5-6 Marks)</p>	6	<p>In this part candidates must address the requirements of the <i>“design need in the situation”</i>.</p> <p>If both requirements of the design need are not met the maximum available is 3 marks.</p> <p>1.An item of public seating in the style of Michael Thonet. 2.A wearable activity tracking device that records and stores data. 3.A garment to wear on holiday in the style of ‘Pineapple – Debbie Moore’. 4.A 3D promotional display for the ‘UK City of Culture 2017’ in the style of Milton Glaser. 5.A lunch time snack that incorporates a meat analogue.</p> <p>For tracking device, a system (circuit or block diagram) must be shown. Where there is clear development without a system design up to 3 marks can be awarded.</p> <p><i>Candidates should show any (not all) relevant details for manufacture:</i></p> <ul style="list-style-type: none"> • <i>materials/ingredients/components.</i> • <i>sizes / dimensions / quantities,</i> • <i>methods / joining / mixing techniques,</i> • <i>tools / equipment,</i>

Question		Answer	Marks	Guidance
				To obtain full marks candidates must consider their own specification.
	(d)	<p>Evaluation contains vague statements that could relate to any item. (0 marks)</p> <p>Limited evaluation of how their design meets their specification at a superficial level. (1 Mark)</p> <p>Reasonable evaluation considering how their design meets the specification. Most specification points addressed. (2-3 Marks)</p> <p>Detailed evaluation of how their design meets their specification. Fully addresses all specification points. (4 Marks)</p>	4	Accept justified points related to the candidates' own specification , even if not rewarded in 5(a).
		TOTAL	20	

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