

Markscheme

November 2023

Design technology

Higher level

Paper 3

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General Marking Instructions

Subject Details: Design Technology HL Paper 3 Markscheme

Mark Allocation

Candidates are required to answer **ALL** questions in Section A (total **[20 marks]**) ONE question in Section B **[20 marks]**. Maximum total = **[40 marks]**.

Markscheme format example:

Question			Answers	Notes	Total
4.	b	ii	the displacement and acceleration; are in opposite directions;	Accept <i>force</i> for <i>acceleration</i> .	2

- Each row in the “Question” column relates to the smallest subpart of the question.
- The maximum mark for each question subpart is indicated in the “Total” column.
- Each marking point in the “Answers” column is shown by means of a semi colon at the end of the marking point.
- A question subpart may have more marking points than the total allows. This will be indicated by “**max**” written after the mark in the “Total” column. The related rubric, if necessary, will be outlined in the “Notes” column.
- An alternative wording is indicated in the “Answers” column by a slash (/). Either wording can be accepted.
- An alternative answer is indicated in the “Answers” column by “**OR**” on the line between the alternatives. Either answer can be accepted.
- Words in angled brackets < > in the “Answers” column are not necessary to gain the mark.
- Words that are underlined are essential for the mark.
- The order of marking points does not have to be as in the “Answers” column, unless stated otherwise in the “Notes” column.
- If the candidate’s answer has the same “meaning” or can be clearly interpreted as being of equivalent significance, detail and validity as that in the “Answers” column then award the mark. Where this point is considered to be particularly relevant in a question it is emphasized by **OWTTE** (or words to that effect).
- Remember that many candidates are writing in a second language. Effective communication is more important than grammatical accuracy.
- Occasionally, a part of a question may require an answer that is required for subsequent marking points. If an error is made in the first marking point then it should be penalized. However, if the incorrect answer is used correctly in subsequent marking points then **follow through** marks should be awarded. When marking, indicate this by adding **ECF** (error carried forward) on the script. “ECF acceptable” will be displayed in the “Notes” column.
- Do **not** penalize candidates for errors in units or significant figures, **unless** it is specifically referred to in the “Notes” column.

Section A

Question			Answers	Notes	Total
1.	a		(electrical/electronic/mechanical) engineers; manufacturers; ergonomists; electrical appliance retailers; (product/interior/UI/UX/user centered) designers/artists; (end) users; psychologists; anthropologists; ethnographers;	<i>Award [1] for listing each member of a multi-disciplinary user-centered design team that would be involved in the development of the Ripple washing machine up to [2 max].</i>	2
1.	b		Ripple has a distinctive/unique/minimalist form (aesthetics) / is water efficient/environmentally friendly / has a low memory burden / is easy to use (usable); appealing to users' tastes/values/aspirations;	<i>Award [1] for identifying how the Ripple washing machine produces ideopleasure for its users and [1] for a brief explanation up to [2 max].</i>	2
1.	c		A persona (is a fictional character) representing the primary target audience of the Ripple washing machine; aids designers to empathize / understand users / tasks / needs / limitations / environments / build (a range of possible) real life scenarios;	<i>Award [1] for identifying each advantage of creating personae in the design and development of the Ripple washing machine and [1] for a brief explanation up to [2 max].</i>	2
1.	d		The user interface is well-organized / simple / labelled; operating the machine is intuitive / does not require users to memorize complicated instructions (steps); all the variables (water temperature, washing mode, speed and time) can be set from the same dial / the selected variable turns red / the selected option is displayed under each variable; making the washing machine more user friendly / learnable / easy to use (usable) / reducing errors (effective);	<i>Award [1] for identifying how the Ripple user interface reduces memory burden and [1] for each subsequent explanation up to [4 max].</i>	4

Question			Answers	Notes	Total
2.	a		Provide positive publicity / negative publicity/protesting (against existing tents); use social media / (other) media to attract support; exert influence on governments/ refugee relief agencies; raise (public and government) awareness / educate; support the development of sustainable tents;	<i>Award [1] for listing each way pressure groups can help in promoting the adoption of these tents for refugees up to [2 max].</i>	2
2.	b		The tent satisfies refugee shelter/water/energy needs from renewable (sustainable) resources / uses natural materials (biodegradable); lowering environmental impact on the planet / allowing future generations to meet their own needs;	<i>Award [1] for identifying a reason why the tent in Figure 4 is an example of sustainable development and [1] for a brief explanation up to [2 max].</i>	2
2.	c		Solar; generates electricity from a renewable source; Social; supports/provides refugees with basic human rights (shelter/water/energy); Safe; Provides a well-ventilated environment within the tent / is woven from natural materials; Cyclic; the tent is made from natural materials / is naturally biodegradable;	<i>Award [1] for identifying one of Datschefski's five principles of sustainable design that apply to the tent in Figure 4 and [1] for a brief explanation up to [2 max].</i>	2
2.	d		Sustainable innovation facilitates the diffusion of sustainable products into the marketplace; governments intervention includes subsidies/regulation (legislation) /education/tax; to encourage multiple stakeholders to cooperate / make it economically viable; and promote individual/collective/business actions towards sustainability / a multi-agency approach;	<i>Award [1] for an explanation of how government intervention can enable sustainable products, such as the tent in Figure 4 to become sustainable innovations up to [4 max].</i>	4

Question			Answers	Notes	Total
3.	a		Cost-plus; psychological; product line; demand; competitor-based; price-minus;	<i>Award [1] for listing each possible price setting strategy that could have been used by Caliso up to [2 max].</i>	2
3.	b		Highly trained multi-skilled workforce / creating a culture of continuous improvement (Kaizen) / rewarding workers (such as having a gym on site); reduces defects / reduces inappropriate processing / enhances loyalty / motivates workers / provides greater pride in what they produce;	<i>Award [1] for identifying how empowering workers would help Caliso enhance its quality control and [1] for a brief explanation up to [2 max].</i>	2
3.	c		The package includes their logo / slogan (made for good) / expresses the Caliso brand; differentiating them from their competitors; The package protects the mattress /ensures mattress is delivered intact; impacting consumers perception of the Caliso brand; The package is striped to match the design of the mattresses; reinforcing the brand identity/image; The package is compact (for a mattress); showing the brand's commitment to reducing their environmental impact (less space needed for delivery/storage /lower energy during distribution);	<i>Award [1] for identifying how the Bed-in-a-Box packaging contributes to Caliso brand identity and [1] for a brief explanation up to [2 max].</i>	2
3.	d		CIM uses computers to integrate the entire process (design, planning, purchasing, cost accounting, inventory control, distribution); creating more efficient/automated production lines; allowing Caliso products to be made-to-order; with no large storage spaces/inventory; reducing lead time / errors / the size of the workforce / delay from third party suppliers;	<i>Award [1] for each distinct point of an explanation of the advantages of using computer integrated manufacturing (CIM) in implementing a just in time (JIT) approach for Caliso up to [5 max].</i>	5

Question			Answers	Notes	Total
3.	e		<p>Market Penetration: By using strategies such as free deliveries and returning within 100 days; Caliso aims to increase the sales of an existing product in an existing (saturated) market / or finding new customers for an existing product; is the most cost effective/straightforward strategy to implement / reduces risk;</p> <p>Product family: The Caliso mattresses share common parts/materials/assemblies; satisfying customers' different needs / different segments / incomes; while reducing cost / using the same equipment / similar processes / gaining economies of scale;</p> <p>CSR: Caliso developed social and environmental goals/programs; donating mattresses for children in need / providing their team with an on-site gym / running their headquarters on renewable energy / using recycled and natural materials; thus, creating a stronger brand identity / gaining a competitive advantage in the market / boosting employee morale (loyalty/productivity) / attracting eco-fans;</p>	<p><i>Award [1] for an explanation why Caliso has utilized market penetration to achieve its market growth up to [3 max].</i></p> <p><i>Award [1] for an explanation why Caliso has utilized a product family to achieve its market growth up to [3 max].</i></p> <p><i>Award [1] for an explanation why Caliso has utilized Corporate Social Responsibility (CSR) to achieve its market growth up to [3 max].</i></p> <p><i>Mark as [3] + [3] + [3].</i></p>	9