

Markscheme

May 2016

Design technology

Higher level

Paper 3

11 pages

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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 acceleration .	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 tick (✓) 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	products are made to order ✓ minimise costs ✓ minimise storage costs ✓ minimise transport costs ✓ minimise use of raw materials ✓ reduce inventory ✓ avoid overproduction ✓ reduce waste ✓ no storage needed ✓	<i>Award [1] for each point listed about how the Just in Time nature of the Fabsie system contributes to the cost-effectiveness of production.</i>	2 max
	b	the manufacture uses modern processes ✓ the working conditions are safe/ do not remove human dignity ✓ enables consumer to customise ✓ customer more likely to look after and repair product ✓ supports cultural diversity ✓ enables customers to modify/customise the design to meet their requirements ✓ creates local jobs ✓ more sustainable communities ✓	<i>Award [1] for correctly identifying how the Fabsie self-assembly stool meets Datschefski's social principle and [1] for a brief explanation.</i>	2 max
	c	an overarching/global/organisational/strategic overview/production system was needed ✓ to establish/enable production across a network of manufacturers ✓ the system required a significant amount of investment/funding ✓ which would have to be authorised by a senior manager ✓	<i>Award [1] for identifying why the initial impetus for the Fabsie product system is a result of a top down strategy and [1] for a brief explanation.</i>	2 max

<p>d</p>	<p>Fabsie system reduces material/energy consumption ✓ JIT avoids overproduction ✓ use of JIT/CAD CNC reduces waste/inventory/storage from manufacture ✓ provides support for local business/enterprise/employment ✓ production local to consumer ✓ reduces product miles/transport costs ✓ encourages involvement of individual consumers in the design process ✓ appeals to consumers concerned about impact of consumerism on the environment ✓ promotes a rethink of consumers attitudes to the purchase of common consumer goods/designed in part by user so increased sentimental value likely to lead to longer product life/not consuming less but consuming differently ✓ reduces the impact on the environment of large scale manufacturing of furniture while still offering consumers economies of scale ✓ ease of assembly/disassembly promotes recycling/reuse ✓</p>	<p><i>Marking note:</i> <i>Examiners must reward the depth of the response rather than the breadth. To achieve [4 marks] the explanation must be coherent.</i></p> <p><i>Award [1] for identifying how the Fabsie system concept satisfies the principles of sustainable consumption and up to [3 marks] for each additional points of explanation.</i></p>	<p>4 max</p>
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Question		Answers	Notes	Total
2	a	<p>having the small round table in the middle encourages people to lean forward ✓ and communicate with each other at close range ✓</p> <p>the wheel creates an enclosed/designated space within a larger open one ✓ creating a sense of being in a private space ✓</p> <p>meetings may be more focused and productive/motivational ✓ with less distraction ✓</p> <p>meetings are likely to be more informal ✓ less regimented than in a boardroom ✓</p> <p>enhanced creativity ✓ due to novel environment of thought wheel ✓</p>	<p><i>Award [1] for identifying how the design of the thought wheel impacts on the nature of meetings between colleagues and [1] for a brief explanation.</i></p>	2 max
	b	<p><u>psycho-pleasure</u> ✓ the design focuses on users' emotional reaction to the product ✓</p> <p><u>physio-pleasure</u> ✓ there is a sensual feeling from the intimate surroundings/different coloured thought wheels/softness of seats/comfort ✓</p> <p><u>socio-pleasure</u> ✓ enhances interaction between meeting participants ✓</p>	<p><i>Marking note: The candidate must specify an aspect of the four pleasure framework to be awarded a mark.</i></p> <p><i>Award [1] for identifying which aspect of the 4-pleasure framework the thought wheel satisfies and [1] for a brief explanation.</i></p>	2 max
	c	<p>it is difficult/unlikely for one designer to have all the necessary skills/knowledge ✓</p> <p>because an efficient UCD team needs to have a deep understanding of the user, task and the environment ✓</p>	<p><i>Award [1] for identifying why UCD design teams are usually multi-disciplinary and [1] for a brief explanation.</i></p>	2 max

d		<p>focus groups provide a representative sample of the user population ✓ are assembled to promote discussion of the advantages and disadvantages of the design ✓ provide richer data than individual interviews/stimulate discussion in wider contexts ✓ provide multiple viewpoints from different members of the group/experience ✓ can be cost effective as they can speed up the development process/allows for rapid/agile development of the product using an iterative process ✓ contributes to design improvement ✓</p>	<p><i>Marking note:</i> <i>Focus groups could be used at any stage of the design process.</i></p> <p><i>Examiners must reward the depth of the response rather than the breadth. To achieve [4 marks] the explanation must be coherent.</i></p> <p><i>Award [1] for identifying the benefits of using focus groups to assist the designer team of the thought wheel and up to [3 marks] for each additional points of explanation.</i></p>	4 max
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Section B

Question		Answers	Notes	Total
3	a	the tyre/map/travel guides market is highly competitive ✓ so R&D is required to innovate/compete effectively ✓	<i>Award [1] for a reason why research and development is so important to the Michelin tyre company in today's market and [1] for a brief explanation.</i>	2
	b	brand loyalty ✓ crossover to other Michelin products ✓ the Michelin * system is based on an evaluation for quality and each star is difficult to obtain ✓ the system promotes the Michelin brand name as one of excellence so consumers may assume that their tyres are high quality ✓	<i>Award [1] for identifying how the Michelin * system for restaurants impacts on the company's brand for tyres and [1] for a brief explanation.</i>	2 max
	c	the original target market was cyclists ✓ nowadays the sector is the global marketplace for people ✓ the market for tyres has shifted ✓ from a specialized one (bicycle and car races) to a new one that includes average families with different needs ✓ the market for tyres has grown massively ✓ from (French) cyclists in the 19th century to a global market ✓	<i>Award [1] for each of two distinct points in a description of how the Michelin tyre company's target market sector has changed over the past 150 years.</i>	2 max

<p>d</p>	<p>it is a unique trademark ✓ it has been used on labelling & advertising for over 100 years creating brand longevity/reinforces the longevity of the brand ✓ creates brand loyalty ✓ promotes brand identity ✓ different generations will have grown up recognizing the trademark ✓ it has global appeal/is not culture specific ✓ overcomes language barriers in the international marketplace ✓ it is simple/fun/humorous/amiable ✓ easy to remember ✓ indicates main product area ✓ unifies the different sectors of the company ✓</p>	<p><i>Marking note:</i> <i>Examiners must reward the depth of the response rather than the breadth. To achieve [5 marks] the explanation must be coherent.</i></p> <p><i>Award [1] for identifying how the Michelin Man trademark has helped the Michelin Tyre Company maintain brand identity and up to [4 marks] for each additional points of explanation.</i></p>	<p>5 max</p>
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continued

<p>e</p>	<p>Market penetration Michelin used/uses advertising/promotion and branding to promote its existing products in their existing/current markets and increasing their market share ✓ easiest [growth] strategy to implement as Michelin has an understanding of the market ✓ requires less R&D than for the other growth strategies so is a cheaper/easier to implement option ✓ could be used as this market is not saturated meaning Michelin can easily increase its sales ✓ Michelin may already have competitive advantage in this market and can use pricing techniques such as penetration pricing to expand in this market at the expense of their competitors ✓ however, may only have limited growth opportunities as the market for the product may be close to saturation ✓ overall for Michelin the rewards may be relatively small and the relative ease of implementation / relatively risk free nature of this strategy may make it an appropriate growth strategy ✓ (evaluation)</p> <p>Product development Michelin did this by introducing new products such as the pneumatic cycle/car tyre or modifying existing products in existing markets ✓ Michelin realised that the market for bicycle tyres may be saturated and sees the opportunity for growth in the car tyre market (as it may be in its fledgling state) ✓ however, with this strategy the R&D costs may not be covered if the new product is not successful ✓</p>	<p><i>Marking note</i> Candidates have taken two approaches in responding to this question:</p> <ul style="list-style-type: none"> • Diversification to car tyres (so this is a new product in a market) • Diversification to travel guides... <p><i>Either approach is acceptable providing the approach remains consistent in the three clusters.</i></p> <p><i>Award [1] per distinct point in a discussion of how the Michelin Company used different strategies to develop its market over the past 125 years.</i></p> <p><i>Mark as [3] + [3] + [3].</i></p> <p><i>To achieve 9 marks there must be at least one evaluative statement. Discuss is an AO3 term.</i></p> <p><i>Candidates should refer to Michelin or Michelin's products in the response. If generic answers are produced [4 max].</i></p>	<p>9 max</p>
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		<p>allows Michelin to use incremental design rather than radical design that may be required for diversification so may be more achievable than diversification ✓ <i>(evaluation)</i></p> <p>overall, while the rewards may be greater than for market penetration but the risks may also be greater ✓ <i>(evaluation)</i></p> <p>this is relatively low risk growth strategy compared to diversification ✓ <i>(evaluation)</i></p> <p>Diversification Michelin did this by developing new products such as travel/restaurant guides in new markets ✓</p> <p>the Michelin brothers diversified into travel guides/restaurants/maps as travel by cars had increased and a new market(s) was created for Michelin to exploit (linked to their core business) ✓</p> <p>the brand image of Michelin was respected, this made diversification more straight forward as potential customers were aware of the quality of the brand ✓</p> <p>may require significant investment in R&D and need considerable financial reserves to be able to absorb possible losses until the new products become financially viable ✓</p> <p>there may be no organisational knowledge of the development of these new products ✓</p> <p>may bring the greatest rewards but is a relatively high risk strategy ✓ <i>(evaluation)</i></p>		
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