



2015 Product Design

Intermediate 2

Finalised Marking Instructions

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Part One: General Marking Principles for: Product Design Intermediate 2

This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the specific Marking Instructions for each question.

- (a)** Marks for each candidate response must always be assigned in line with these general marking principles and the specific Marking Instructions for the relevant question. If a specific candidate response does not seem to be covered by either the principles or detailed Marking Instructions, and you are uncertain how to assess it, you must seek guidance from your Team Leader/Principal Assessor.
- (b)** Marking should always be positive ie, marks should be awarded for what is correct and not deducted for errors or omissions.

GENERAL MARKING ADVICE: Product Design Intermediate 2

The marking schemes are written to assist in determining the “minimal acceptable answer” rather than listing every possible correct and incorrect answer. The following notes are offered to support Markers in making judgements on candidates’ evidence, and apply to marking both end of unit assessments and course assessments.

Part Two: Marking Instructions for each Question

Within each question, marks are not awarded for repetition. This excludes question 1, where repetition is not allowed with parts (a), (b) and (c)

SECTION A

Q1		Marks
a	<p>i Suitable process and reason (Outer casing):</p> <p>Process</p> <ul style="list-style-type: none">• Injection moulding/Injecting• Any other suitable response <p>Reason</p> <ul style="list-style-type: none">• Quick• Cheap• Mass component• Intricate detail• Any other suitable response <p>Only first response should be marked for each part of the question.</p> <p>1 mark for correct process and 1 mark for correct reason up to total of 2 marks.</p>	<p>2</p>

Q1			Marks
a	ii	<p>Suitable material reasons (HIPS)</p> <p>HIPS</p> <p>Reasons given could be derived from any of the usual design issues.</p> <ul style="list-style-type: none"> • Functional reasons • Ergonomic reasons • Environmental reasons • Durability reasons • Safety reasons • Cost reasons • Aesthetics reasons • Material reasons • Manufacturing reasons <p>Other possible routes of reasoning within this answer including consumer and manufacturer suitability.</p> <ul style="list-style-type: none"> • Does not rot/rust • Light in weight • Strong/hardwearing/robust/tough/sturdy • Easily moulded (for manufacturer) • Inexpensive/cheap • Easy to clean • Inbuilt colour/range of colours • Waterproof • Readily available • Any other suitable response <p>Only first 2 responses are marked.</p> <p>However, where the candidate has given two contradicting reasons, these cancel each other out and the remainder of the candidate's response should be marked up to a total of three responses. (maximum 1 mark)</p> <p>1 mark per correct response up top total of 2 marks.</p>	2

Q1			Marks
a	iii	<p>Suitable process (Tubular metal):</p> <p>Process</p> <ul style="list-style-type: none"> • Cold-rolling • Seam welded • Extrusion • Bending • Swaging • Forging • Drilling <p>Reason</p> <ul style="list-style-type: none"> • Cheap • Quick to produce • Strong • Mass produced component • Uniform cross-section • Any other suitable response <p>Only first response should be marked for each part of the question.</p> <p>1 mark for correct process and 1 mark for correct reason up to total of 2 marks.</p>	2
a	iv	<p>Two suitable finishes (tubular metal handle)</p> <ul style="list-style-type: none"> • Plastic dip coating • Powder coating • Galvanising • Electro-plating • Anodising • Oil/bluing • Paint/spray paint • Any other suitable response <p>Only first 2 responses are marked.</p> <p>However, where the candidate has given two contradicting reasons, these cancel each other out and the remainder of the candidate's response should be marked up to a total of three responses. (maximum 1 mark)</p> <p>1 mark per correct response up to total of 2 marks.</p>	2

Q1			Marks
b	i	<p>“Anthropometrics”</p> <p>Response should show link between lawnmower part and human dimension.</p> <ul style="list-style-type: none"> • Handle – grip diameter • Height of handle –elbow height <p>Any suitable response relating human dimensions and relevant aspect of the lawnmower should attract 1 mark.</p> <p>1 mark per correct response (including both elements of information) up to total of 2 marks</p> <p>Vague answers which display an appropriate level of knowledge attract one mark.</p> <p>Where candidates have given an extended response, which links one part of the lawnmower to three or more bits of anthropometric data, this will attract two marks.</p> <p>The diameter of the lawnmower handle has been designed to fit the 5th percentile adult grip diameter so that almost all potential users can fit their hand onto it. (Percentile/user/body dimension/lawnmower part).</p>	2

Q1			Marks
b	ii	<p>“Physiology”</p> <p>Response should link between lawnmower part and human capabilities.</p> <ul style="list-style-type: none"> • Grass collection box – easy to empty • On/off trigger – easy to pull or squeeze <p>Any suitable response relating to human limitations, linking to a part of the lawnmower. The use of physical action verbs linking to the use of the lawnmower are to be looked for here.</p> <p>1 mark per correct response (including both elements of information) up to total of 2 marks.</p> <p>Vague answer will display an appropriate level of knowledge attract one mark.</p> <p>Where candidates have given an extended response, which links one part of the lawnmower to three or more physiological considerations, this will attract two marks.</p> <ul style="list-style-type: none"> • The lawnmower has wheels which makes it easily manoeuvred around the garden and when being used it requires a small amount of effort and physical strength. 	2

Q1			Marks
b	iii	<p>“Psychology”</p> <p>Response should show link between lawnmower part and human thoughts, feelings or emotions.</p> <ul style="list-style-type: none"> • Big wheels – <i>looks</i> easy to manoeuvre • Plastic handle – <i>looks</i> comfortable to hold • Red adjusting levers – <i>looks</i> easy to adjust angle of handles <p>Any suitable response relating to human thoughts, feelings or emotions, linking to part or bit of the lawnmower.</p> <p>1 mark per correct response (including both elements of information) up to total of 2 marks</p> <p>Vague answers which display an appropriate level of knowledge attract one mark.</p> <p>Where candidates have given an extended response, which links one part of the lawnmower to three or more psychological considerations, this will attract two marks.</p> <ul style="list-style-type: none"> • The rounded grip on the handle looks like it will feel comfortable to hold, be safe for the user when they hold it and will not catch on their clothing. 	2

Q1			Marks
c	i	<p>“safety”</p> <p>Any suitable response relating to safety, linking to part of the lawnmower.</p> <ul style="list-style-type: none"> • Legal ramifications of dangerous equipment • Dangerous tools could give the company a bad reputation • Feet are protected from blade by outer casing • Trigger release button prevents accidental starting of machine • Electrical cable securely attached to tubular metal handle to prevent snagging • Any other suitable response <p>Vague answers which display an appropriate level of knowledge attract 1 mark.</p> <p>Where candidates have given an extended response, which links one part of the lawnmower to three or more safety considerations, this will attract two marks.</p> <p>1 mark per correct response (including both elements of information) up to total of 2 marks.</p>	2

Q1			Marks
c	ii	<p>“aesthetics”</p> <p>Any suitable response relating to the aesthetics terms listed below, linking to part of the lawnmower.</p> <ul style="list-style-type: none"> • Shape • Style • Line • Form • Colour • Contrast • Proportion • Symmetry • Texture • Balance • Finish <ul style="list-style-type: none"> • The curved shape of the outer casing looks modern <p>Vague responses which display an appropriate level of knowledge attract 1 mark.</p> <p>Where candidates have given an extended response, which links one part of the lawnmower to three or more aesthetic considerations, this will attract two marks.</p> <ul style="list-style-type: none"> • The curved shape of the outer casing looks sleek, contemporary and aerodynamic. <p>1 mark per correct response (including both elements of information) up to total of 2 marks.</p>	2

Q1			Marks
c	iii	<p>“the environment”</p> <p>Any suitable response relating to the environment, linking to part of the lawnmower.</p> <ul style="list-style-type: none"> • The plastic outer casing is designed to be recyclable. <p>Vague responses which display an appropriate level of knowledge attract 1 mark.</p> <p>Marks should be awarded where a candidate’s response refers to the immediate environment of the lawnmower (the lawn/the shed/the garden path/the proximity of the power point, etc).</p> <p>Where candidates have given an extended response, which links one part of the lawnmower to three or more environmental considerations, this will attract two marks.</p> <ul style="list-style-type: none"> • The plastic outer casing is designed to be recyclable, uses only a small amount of raw material and has been mass produced in an energy efficient manner. <p>1 mark per correct response (including both elements of information) up to total of 2 marks.</p> <p>Note: The marking scheme for question 1 (b) and (c) is as follows One part + one justification = one mark One part + two justifications = one mark One part + three justifications = two marks Two separate parts + two separate justifications = two marks Vague, incomplete/extended responses may attract one mark</p>	2
			20

Section B

Q2		Marks
a	<p>Tin opener</p> <p>A description of each evaluative technique will attract marks when appropriately linked to an aspect</p> <p><i>Generic description of evaluation techniques may attract 2 marks.</i></p> <p>Candidates are asked to describe an evaluation technique.</p> <p>i Primary function of the tin opener</p> <p>Description of evaluation activity marked on a 2-1-0 scale</p>	2
a	<p>ii Aesthetics of the tin opener</p> <p>Description of evaluation activity marked on a 2-1-0 scale</p>	2
b	<p>Symbol</p> <p>Name</p> <ul style="list-style-type: none"> • British Standards Institution, kite mark/BSI kite mark/kite mark/British standards mark/safety mark <p>Purpose</p> <ul style="list-style-type: none"> • Shows it is safe to use • Shows it has been tested for safety • It is safe • Any other suitable response <p>1 mark for name, one mark for purpose up to total 2 marks.</p>	2
		6

Q3		Marks
a	<p>Two reasons for producing models</p> <p>Candidates' responses may be based upon different aspects of design.</p> <p>Visual/Aesthetic</p> <ul style="list-style-type: none"> • Checking sizes and proportions in 3D • Any other suitable response <p>Ergonomic</p> <ul style="list-style-type: none"> • Checking fit of fingers on handle • Any other suitable response <p>Presentation</p> <ul style="list-style-type: none"> • To show to the client/other designers/etc. • Any other suitable response <p>Candidates may state two reasons from each aspect. 1 mark per correct response up to total of two marks.</p>	2
b	<p>Two materials for modelling</p> <ul style="list-style-type: none"> • Sheet material • Card/cardboard/paper/paper mache • Modelling compound (brand name: Plasticine) • Clay • Styrofoam/expanded polystyrene/modelling foam • Air drying clay (brand names: Fimo/Nuclay) • Balsa/MDF/lollypop sticks/plywood • Wire • Acrylic • Foam rubber • Foamboard (brand names: Kappa board/Kapa board) • Thin wall plastic sheet (brand name: Corriflute) • Any other suitable response • Wood/plastic/metal/computer modelling all score zero (0) <p>1 mark per correct material up to a total of two marks.</p>	2

Q3		Marks
c	<p>Two reasons for prototyping</p> <ul style="list-style-type: none"> • To test aesthetics/visuals/ergonomics • To assist manufacturing • To see if it works • To check if everything fits together • To check dimension tolerances • To test endurance/destruction testing • Any other suitable response <p>1 mark per correct response up to a total of two marks.</p>	2
		6

Q4		Marks
a	<p>Trailer</p> <p>Galvanised sheet steel</p> <ul style="list-style-type: none"> • To stop it rusting • To make it light weight • To make it strong • Any other suitable response <p>1 mark per correct response up to a total of two marks.</p>	2
b	<p>Non-ferrous metal</p> <ul style="list-style-type: none"> • Aluminium/lead/copper/brass/duralumin • Any other suitable response • Alloy, tin, zinc, gold, silver all score zero (0) <p>1 mark per correct response up to a total of one mark.</p>	1
c	<p>Methods that could be used to join the parts of the frame together</p> <ul style="list-style-type: none"> • MIG/TIG/arc welding/spot welding/welding • Brazing/hard soldering • Nuts and bolts/bolting/machine screws • Riveting • Any other suitable response • Glues, epoxy resins, soldering all score zero (0) <p>1 mark per correct response up to a total of two marks.</p>	2
d	<p>Functional appeal of the trailer to the consumer</p> <ul style="list-style-type: none"> • Able to carry big heavy loads • Has a tipping function • Front and rear hinge downwards • Can be attached to a standard towball • Any other suitable response <p>1 mark per correct response up to a total of two marks.</p>	2
		7

Q5		Marks
a	<p>Hot plate grill (design issues)</p> <p>Ease of maintenance</p> <ul style="list-style-type: none"> • Easy to dismantle • To make sure it can be easily cleaned/keep it hygienic • To make sure it can last a long time • Any other suitable response <p>1 mark per correct response up to a total of two marks.</p>	2
b	<p>Standard Components</p> <ul style="list-style-type: none"> • Cheaper • Bought in bulk • More cost effective • JIT production • Used over a number of products • No need to manufacture or design them • Ease of replacement/repair • Any other suitable response <p>1 mark per correct response up to a total of two marks.</p>	2
c	<p>Contrast</p> <ul style="list-style-type: none"> • Hot/cold contrast • To make it appealing to purchasers • To make it match other products of the same brand • Aesthetics • House style • Any other suitable response <p>1 mark per correct response up to a total of two marks</p>	2
		6

Q6		Marks
a	<p>Spokeless Bicycle</p> <p>Intellectual properly</p> <ul style="list-style-type: none"> • An idea or concept that a designer or company has produced which belongs to them. • Any other suitable response <p>1 mark per correct response up to total of 1 mark.</p>	1
b	<p>Protect their intellectual property</p> <ul style="list-style-type: none"> • Trademark • Copyright • Registering a '<i>design right</i>' • Patenting • Post idea to lawyer or self to remain sealed until challenged • Any other suitable response • Logo scores zero (0) <p>1 mark per correct response up to total 2 marks.</p>	2
c	<p>Product Popularity</p> <ul style="list-style-type: none"> • Internet research/blog • Questionnaire/survey • Marketing in the street • User trial with specialist market niche group • Any other suitable response <p>1 mark per correct response up to total 2 marks.</p>	2
		5
		30

[END OF MARKING INSTRUCTIONS]