



Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

DESIGN AND TECHNOLOGY

0445/12

Paper 1 Product Design

October/November 2017

MARK SCHEME

Maximum Mark: 50

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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This document consists of **3** printed pages.



Question	Answer	Marks
1(a)	Accept any four additional suitable points – contains loose compost on surface, space for compost and pots, hopper for compost, water resistant, tool rack, easy to keep clean, lightweight for moving/storage. AOCR 1 × 4	4
1(b)	Accept drawings of any two folding features – hinged frames, sliding tubes, tubes located in fittings, support struts, detachable legs/top, nuts/bolts, different types of hinge. AOCR 2 × 2	4

Question	Answer	Marks
2(a)	Accept any four additional suitable points – methods of construction, suggested sizes, suitable colour, visual impact, advertising aspects, use of net, printing methods, folding issues. AOCR 1 × 4	4
2(b)	Accept drawings of any two pop up methods – elastic bands, lever systems, balloon, pinned articulation, springs. AOCR 2 × 2	4

Question	Answer	Marks
3(a)	Accept any four additional suitable points – light/dark sensing methods, safety issues, different working environments, different power sources, reliability when unattended. AOCR 1 × 4	4
3(b)	Accept drawings of any two rotary to linear mechanisms – cam and follower, rack and pinion, crank and slider, screw thread and follower, pulley/cord and falling weight. AOCR 2 × 2	4

Question	Answer	Marks
1, 2 and 3 (c)	Any suitable ideas. At least three different ideas for maximum marks. Pro rata if fewer.	12
	<p>Communication</p> <p>Simple drawings displaying a low standard or limited range of techniques. 0–2</p> <p>Clear drawings displaying a good standard and a range of techniques – shading, colour, annotation. 3–4</p> <p>High quality drawings using a wide range of techniques with clear annotation and detail. 5–6</p> <p>[max 6 marks]</p>	
	<p>Suitability</p> <p>Simplistic designs showing outlines only. 0–2</p> <p>Rather more detail, sensible solutions that could work. 3–4</p> <p>Accurate solutions, good fitness for purpose, construction detail. 5–6</p> <p>[max 6 marks]</p>	

Question	Answer	Marks
1, 2 and 3 (d)	Evaluation of each of the ideas. At least 3 evaluations up to 2 marks each. [max 6 marks]	8
	Selection and justification. 1+1 [max 2 marks]	
1, 2 and 3 (e)	Quality of drawing Poor line quality, proportions, little detail Good line work, use of colour, proportions, some detail. High standard throughout with a range of techniques that show clearly all detail. 1 2–3 4 [max 4 marks]	12
	Dimensions 2 or 3 overall dimensions only Additional detail dimensions 1 1 [max 2 marks]	
	Construction detail A simplistic approach showing little or no detail of construction to be used. Most construction detail may be obvious from overall views or from some annotation. All construction detail will be clear with good annotation and additional detail drawings as necessary. 0–2 3–4 5–6 [max 6 marks]	
1, 2 and 3 (f)	Suitable specific materials stated. 1+1	4
	Appropriate reasons for choice. 1+1	
1, 2 and 3 (g)	Suitable method described. 1	6
	Good detailed description of: processes tools 0–3 0–2	