Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

DESIGN AND TECHNOLOGY **0445/12**

Paper 1 Product Design **May/June 2018**

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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the May/June 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer	Marks
1(a)	Accept any **four** additional suitable points – keep repair item types separate, easy access to small items, tough materials, robust construction, waterproof, stable anti tip-over features, ease of carrying, covered top. AOVR 1×4	**4**
1(b)	Accept drawings and notes of any **two** methods of transporting, including – bar handle, shoulder strap, twin handle system, use of wheels, single handle with gripping area. AOVR 2×2	**4**

Question	Answer	Marks
2(a)	Accept any **four** additional suitable points – number of boxes to be displayed, method of attraction, method of displaying boxes, weight factors, ease of access to boxes, safe, size of display stand, free standing arrangements. AOVR 1×4	**4**
2(b)	Accept drawings of any **two** methods of strengthening cardboard – double thickness, another material in sheet or rib form, addition of glued flaps, box construction, corrugated cardboard construction, use of plastic or cloth sheet. AOVR 2×2	**4**

Question	Answer	Marks
3(a)	Accept any **four** additional suitable points – mechanical principles involved, power source, safety points, weight issues, stability, approach to form of puppet, points about the movement in relation to the arms and legs. AOVR 1×4	**4**
3(b)	Accept drawings of any **two** methods of providing reciprocating movement – crank/slider, gears, pulley, relays, electro magnets, rack and pinion, pneumatics, cams. 2×2	**4**

Question	Answer	Marks
1, 2, 3 (c)	Any suitable ideas. At least **three different** ideas for maximum marks. Pro rata if fewer.	
	Communication Simple drawings displaying a low standard or limited range of techniques. 0–2 Clear drawings displaying a good standard and a range of techniques – shading, colour, annotation. 3–4 High quality drawings using a wide range of techniques with clear annotation and detail. 5–6	**6**
	Suitability Simplistic designs showing outlines only. 0–2 Rather more detail, sensible solutions that could work. 3–4 Accurate solutions, good fitness for purpose, construction detail. 5–6	**6**
1, 2, 3(d)	Evaluation of each of the ideas. At least 3 evaluations up to 2 marks each.	**6**
	Selection and justification. 1+1	**2**

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