Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

DESIGN AND TECHNOLOGY **0445/12**

Paper 1 Product Design **May/June 2016**

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 will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2016 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

1 **(a)** Accept any **four** additional suitable points – safe to use, stable, won't topple, adjustable, colourful, attractive, mobile, collapsible for storage.
Accept other valid responses.

(1 × 4) **[4]**

(b) Accept drawings of any **two** methods – screw/nut and washer, split pin, axle with threaded end, welded stub axle type;
Plastic formed bracket and captured wheel. Sub axle assembly with attachment to frame, star washer.
Accept other valid responses.

(2 × 2) **[4]**

2 **(a)** Accept any **four** additional suitable points – stack for display, promotes the details of the dolls, robust for storage, method of carrying, colours, attractive logo, recycle potential, easily opened.
Accept other valid responses.

(1 × 4) **[4]**

(b) Accept drawings of any **two** features – integrated handle, handle attached to package, cord/string, additional carrying frame, single or double sided handle.
Accept other valid responses.

(2 × 2) **[4]**

3 **(a)** Accept any **four** additional suitable points – safe to use, shape/theme, stable, robust, method of steering, method of propulsion, materials, method of movement.
Accept other valid responses.

(1 × 4) **[4]**

(b) Accept drawings of any **two** mechanisms of propulsion – pedal, linkages, chain, foot powered, treadle, electric motor, hand levers, gearing.
Accept other valid responses.

(2 × 2) **[4]**

(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 etc. (3–4)
High quality drawings using a wide range of techniques with clear annotation and detail. (5–6)

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) **[12]**

(d) Evaluation of each of the ideas. At least 3 evaluations up to 2 marks each (0–6)
Selection and justification. (1 + 1) (2) **[8]**

(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)

Dimensions

2 or 3 overall dimensions only (1)
Additional detail dimensions (1) (2)

Construction details

A simplistic approach showing little or no detail of construction to be used. (0–2)
Most constructional detail may be obvious from overall views or with some annotation. (3–4)
All constructional detail will be clear with good annotation and additional detail drawings as necessary. (5–6) **[12]**

(f) Suitable **specific** materials stated. (1 + 1) (2)
Appropriate reasons for choice. (1 + 1) (2) **[4]**

(g) Suitable method described. (1)
Good detailed description of; processes, (0–3)
tools (0–2) **[6]**

[Total: 50]