

## MARK SCHEME for the October/November 2013 series

### **7048 CDT: DESIGN AND COMMUNICATION**

**7048/01**

Paper 1, maximum raw mark 80

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.

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- 1 (a) (i) **FE** Shelf extend [1] to correct length [1]  
End added of correct width [1] and height [1] – ignore position
- (ii) **EE** End width(80) and height (100) [1]  
End in projection from F.E. [1] [2]
- (iii) Any circle added to the right [1]  
Circle of 25mm or 12.5 diameter added on centre line [1]  
Any triangle added to the left [1]  
Triangle of 25mm or 12.5 in height added on centre line [1] correct orientation [1] [5]
- (b) Any three dimensions of the correct size or scale size [1]  
One dimension completed to British Standards [1] [2]
- (c) Projection symbol attempted (circles and truncated cone) [1]  
Third angle projection symbol added correctly [1] [2]
- (d) Isometric head of any size drawn on **A** [1]  
Head 60 × 30 × 30 [1]  
Shaft of the correct length [1]  
Shaft shown in isometric projection [1]  
Large end of shaft 25 round or square [1]  
Small end of shaft 15 round or square [1]  
Ellipse drawn from Ø25 [1]  
Ellipse drawn from Ø15 [1] [8]
- (e) (i) Some grain added [1]  
End grain evident [1] and face grain match [1] [3]
- (ii) Some attempt to add tone to top [1]  
Graded tone to side [1] [2]
- (f) 'HARRY' added in upper case [1]  
'HARRY' added in isometric [1] [2]
- [30]

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- 2 (a) (i) Oblique (cavalier or cabinet not necessary for the mark)
- (ii) Two tones shown [1]  
 three tones shown [1]  
 Some thicker lines shown [1]  
 Thick lines used correctly [1]  
 Shadow added outside the building block [1]  
 from the given light source with an edge [1] [6]
- (b) Front top corner to VP1 [1]  
 RH vertical to look square [1]  
 LH vertical to look square [1]  
 Two back 'top' lines to VP1 and VP2 [1]  
 'L' added to one surface [1] or  
 'L' added as in the question [1]  
 And in perspective [1] [6]
- (c) (i) Three dimensional sketch for idea 2 and 3 [1]  
**Idea 2**  
 Stack adds up to 24 building blocks (new arrangement) [1]  
 Lines that define the blocks are parallel to the outer edges [1]
- Idea 3**  
 Stack adds up to 24 building blocks (new arrangement) [1]  
 Lines that define the blocks are parallel to the outer edges [1] [5]
- (ii) Length 300mm [1]  
 Width 225mm [1]  
 Height 150mm [1]  
 Accept sizes in any order [3]
- (iii) One piece development consisting of 9/10 surfaces that will make a box [1]  
 Two ends  $45 \times 30$  [1]  
 Two sides  $60 \times 30$  (or to candidate solution) [1]  
 One glue tab shown to join sides & hold the box together [1]  
 3 glue tabs to hold the base to the sides [1]  
 Fold shown top flaps to sides [1]  
 Fold shown base and side to sides [1]  
 One base  $60 \times 40$  or two bases  $60 \times 22.5$  (or to cand soln) [1]  
 Fold lines shown correct convention [1] [9]
- [30]

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- 3 (a)** 40mm diameter circle drawn [1]  
On the given centre line [1]  
10mm radius circle drawn (in any position) [1]  
Top point 40mm from the given centre line [1]
- Each side added correctly regardless of size of circles drawn  
L/H side [1] [6]  
R/H side [1]
- (b) (i)** Hexagonal cam (award mark for hexagon) [1]  
Snail cam (award mark for snail, shell or drop) [1] [2]
- (ii)** Circle [1]  
Circle with centre off centre [1]  
Major axis and minor axis of the correct size [1]  
Evidence of construction [1]  
Ellipse profile [1] [5]
- (c) (i)** Isometric drawing [1]  
Length (80) [1], width (40) [1] and depth (20) [1]  
Each angled end (30 × 15) [2 × 1]  
6mm diameter hole [1] [7]
- (ii)** Any exploded view [1]  
Sketch of body of the toy [1]  
Hole shown in body [1]  
Axle evident [1]  
Two egg shaped cams [1] [5]
- [25]

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- 4 (a) Centre of clock used to draw a circle (any size) [1]  
Circle drawn correct PCD [1]  
Face divided into 12 parts [1]  
Face divide into 12 equally spaced parts [1]  
Evidence of centre lines drawn correctly [1]  
All remaining centres drawn to convention [1] [6]
- (b) Some pencil shading (blue or grey) added to edges [1]  
Reflective effect evident on one face [1]  
Reflective effect evident on second face [1] [3]
- (c) (i) Colour scheme includes at least two colours [1]  
At least two key parts identified (numbers and face) [1] [2]
- (ii) Vague reasons given (looks nice) [1]  
Precise reason related to colour theory (such as contrasting colours) [1] [2]
- (d) A sectional view shown [1]  
sectional view includes the face and two hands [1]  
Bolt added with plain shaft to hands [1]  
Hatching shown alternate to parts (bolt not hatched) [1] [4]
- (e) Four more boxes added [1]  
Finish box added [1]  
All boxes of a consistent width with 'start' box [1]  
Text added to boxes [1]  
Correct text to all boxes [1]  
Feedback box of correct shape added in correct place [1]  
'yes' and 'no' lines and arrows [1]  
Appropriate text [1] [8]
- [25]

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- 5 (a)** Concept of stencil [1]  
Stencil shown in use [1]  
Description of how to use it [1]
- Triangular pyramid (or tetrahedron) [1]  
4 surfaces [1]
- Octagonal [1]  
Benefit such as, lasts longer, available in different colours, numbers can be moulded... [1] [7]
- (b)** Circle drawn [1]  
Circle divided into six parts [1]  
Three parts correct [1]  
Six parts correct [1]  
Colour added to enhance the pie chart [1]  
Labels added to the pie chart (numbers 1–6) [1] [6]
- (c)** Bottom circle drawn [1]  
Correct size [1]  
Correct height used [1]  
Top circle drawn [1]  
Correct size [1]  
L/H side [1]  
R/H side [1] [7]
- (d)** Bottom circle [1]  
Glue tabs [1]  
Truncated cone [1]  
Glue tabs [1]  
Labels and notes [1] [5]
- [25]

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- 6 (a)** Arc used to show the arm swinging [1]  
 Three positions for the arm drawn [1]  
 More than three [1]  
 Three or more positions plotted for L [1]  
 MP to L must be consistent [1]  
 Load is finally positioned on the ground [1]  
 Points joined together to form a smooth curve for L [1] [7]
- (b)** Vertical 30 to the right of A [1]  
 Horizontal 80 up from A [1]  
 Corner 80 to the left of A [1]  
 Radius 80 circle to top and corner 80 to left of A [1]  
 Horizontal 30 long to bottom left [1]  
 R10 arc [1]  
 R50 arc [1] (centre parallel and arc)  
 Shape correctly lined in [1] [8]
- (c)** Any two from internet, books or use a questionnaire (2 × 1)  
 (accept reasonable variations on these answers) [2]
- (d)** One mark for each specification point (3 × 1). For example:  
 Must have no sharp edges  
 Must be colourful/non-toxic finish  
 The crane must move smoothly [3]
- (e)** Horizontal and vertical axis [1]  
 Suitable vertical scale evident [1]  
 Five equal width bars [1]  
 Years plotted [1]  
 Sales plotted correctly to candidate scale [1] [5]
- [25]