Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CDT: DESIGN AND COMMUNICATION **7048/01**

Paper 1 **October/November 2016**

MARK SCHEME

Maximum Mark: 80

Published

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1 (a) Top square
Top square drawn in isometric [1]
Top square correct to overlay (80mm) [1]
Corners rounded [1]
Top circle
Ellipse of any size drawn (any method) [1]
Ellipse correct to overlay [1]
Bottom circle
Ellipse of any size drawn [1]
Ellipse correct to overlay (ignore hidden edge) [1]
Height
Height of 90mm (regardless of size of top and bottom) [1]
Sloping sides
Two sloping sides drawn to Candidate solution [1]
Drawing correctly lined in [1] [10]

(b) (i) Vacuum forming / blow moulding [1]

(ii) Any **two** from:
Large quantity of identical pots can be produced from a single former [1]
suitable for mass production [1]
material can be recycled [1] [2]

(c) Identifies the type of plastic (polypropylene) [1]
which then allows it to be sorted for recycling [1] [2]

(d) Right half of bananas added [1]
Right half of bananas added in a similar style outline & detail to that given [1] [2]

Symbol clearly identifiable as strawberry [1]
Symbol in a similar style to the cherry (stalk) [1]
High quality symbol – shading / highlighting [1] [3]

(e) Any three surfaces added [1]
Two trapezoids and a rectangle added of any size added [1]
Each surface correct to overlay L to R Surface 1 [1]
Surface 2 [1]
Surface 3 [1]
Fold lines correctly identified -- - - -- - - -- [1]
Glue tab added left or right [1]
Glue tab added in correct position (left side) [1] [8]
Or on RHS with left line bold

(f) Any **two** from:
Histograms [1]
Pie chart/diagrams [1]
Bar charts and graphs [1] [2]

[Total: 30]

2 (a) Plan

Second wing added [1]
Wing correct to overlay [1]
Two lines added to show corners of hexagon shaped head [1] [3]

Front view

Beak completed to overlay [1]
Top right side 30 degree line of hexagon to overlay [1]
Right side upright of hexagon to overlay [1] [3]

End view

Two wings added of any size [1]
Left and right wing correct to overlay [1]
Any Tail added [1]
Tail added thickness added (rectangle) [1]
Tail correct to O/L [1]
Body, including head, correctly completed [1] [6]

(b) Truncated cone added [1]
Concentric circles added [1]
Orientation correct for third angle projection (circle on left) [1] [3]
Truncated cone – small Ø on left

(c) 180 mm major axis [1]
80 mm minor axis [1]
Some construction evident [1]
Clear construction evident [1]
At least six points plotted [1]
Ellipse profile to overlay [1]
Hexagon extended top right to meet ellipse profile [1]
Top left of ellipse stops at head vertical [1]
Lower left end of ellipse lines up with bottom of hexagon [1] [9]

(d) Trapezium (accept trapezoid) [1]
Isosceles [1]
Triangle [1] [3]

(e) (i) PVA, Pritt stick, latex glue, double sided tape… [1]
Not *a solvent based glue as it dissolves the foam*

(ii) Sketch shows a slot in at least one piece of foam board [1]
Slot in both pieces of foam board of an appropriate size [1] [2]

[Total: 30]

3 (a) (i) Some shading added to the drawing of part A [1]
Shading shows a good understanding of graduation to show a curved surface [1]
Shading to pin matches the light source used for the circular body of A [1] [3]

(ii) Thick lines added to the base [1]
Thick lines added to all outer edges only of base [1]
Thick lines added to both verticals and back curve of pin [1]
Thin lines left to lower curves (x2) of pin [1] [4]

(iii) Any **two** from:
Can be moulded to a range of shapes [1]
Hygienic / non toxic [1]
Washable [1]
Colourful [1]
Quantity production [1] [2]

(b) Right hand half of B added [1]
Right hand half mirror of given to O/L [1]
Body of A drawn on centre line [1]
Pin of A drawn on centre line [1]
Right hand half of B hatched correctly [1]
Hatching drawn on part A [1]
Hatching in opposite direction on part A to part B and complete [1] [7]

(c) Understanding that:
The parts must push together easily [1]
The parts must not fall apart [1]
The parts can be separated with a little effort [1] [2]
*Any **two** responses*

(d) Semi-circle drawn on Ø40 on plan and divided into 6 [1]
Semi-circle drawn on Ø40 on side view and divided into 6 [1]
Lines projected along Ø40 to touch Ø50 on plan [1]
Lines projected along Ø40 on side view [1]
Lines projected down from intersection [1]
To give points plotted on plan [1]
Points joined with a smooth curve [1] [7]

[Total: 25]

4 (a) (i) Missing vertical and horizontal line of square added [1]
Square bisected horizontally and vertically [1]
(measured or constructed)
Four portions correct to overlay [1]
(even if construction not visible) [3]

(ii) Circle drawn [1]
Ø40 circle drawn [1]
Four sectors drawn [1]
Sectors correct to overlay (rotate overlay) [1] [4]

(iii) Octagon drawn [1]
Regular Octagon drawn 20 side [1]
Lines drawn to divide the octagon [1]
8 equal portions correct to O/L or candidate solution [1] [4]

(iv) One angle or side bisected (or 30°set square) [1]
Second angle bisected (or 30°set square) [1]
Centre used to draw out to corners of triangle [1]
Three triangles correct to overlay [1] [4]

(b) Circle drawn in Planometric [1]
Circle drawn correct size [1]
Second circle [1]
Height to second circle 20 mm [1]
Sector removed [1]
Face / faces visible [1]
90° sector [1] [7]

(c) Cheese shape used as a basis for a character [1]
Character clearly identifiable as… [1]
Quality cartoon character [1] [3]

[Total: 25]

5 **(a)** Right hand side in perspective to VP2 [1]
Right hand side in proportion [1]
Left hand side in perspective to VP1 [1]
Left hand side in Proportion [1]
4 steps drawn to front [1]
4 steps drawn to rear [1]
4 steps reducing in height [1]
4 steps reducing in width [1]
Top of first step visible [1]
Drawing correctly lined in [1] [10]

(b) Solution shows a rise of five steps [1]
Solution uses 15 blocks [1] [2]

(c) At least one block added anywhere with the correct:
height [1]
length [1]
depth [1]
Front second layer correct [1]
Front third layer correct [1]
Back R/H block level 3, level with top of front level three [1]
Level four correct [1]
All blocks lined in **and** arrows added [1] [8]

(d) Lines projected at 90° from the sloping surface of side view [1]
Rectangle drawn [1]
Rectangle correct to size 20 × 105 [1]
Arrow drawn [1]
Arrow correct to length (59–60 mm) [1] [5]

[Total: 25]

6 (a) Square drawn in [1]
Square drawn in the circle correct to overlay [1]
Ø30 circle added and in correct position [1]
R25 arc from given circle and centre line to plot centre [1]
R25 arc from Ø30 circle and centre line to plot centre [1]
R25 drawn [1]
Arc drawn touching both circles [1]
Line from square extended 35 at 45° [1]
Box drawn in proportion on extended line [1]
WEB and WIDE added in Upper Case [1] [10]

(i) Four more process boxes added [1]
Process boxes all of the correct shape and consistent width [1]
Correct text added to each box Box 1[1]
Box 2 [1]
Box 3 [1]
Box 4 [1]
End box added consistent with start box [1] [7]

(ii) For example:
Where ?
A decision box would be added between stage 2 and 3 or 4 and 5 [1]
Why ?
to show alternative routes from process / flow of chart [1] [2]
*decision box evident in flow chart **

(c) Sketches and/or notes show:
Axle [1]
Handle to provide rotary motion [1]
Any cam producing an up and down motion on person [1]
A suitably shaped cam (not crank) [1]
Cam follower on middle person (shaft) [1]
Design proposal will move the middle person up and down when handle is turned [1] [6]

[Total: 25]