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**CDT: DESIGN AND COMMUNICATION**

**7048/01**

Paper 1

**October/November 2016**

MARK SCHEME

Maximum Mark: 80

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**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.

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Page 2	Mark Scheme	Syllabus	Paper
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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]

Page 3	Mark Scheme	Syllabus	Paper
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- 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  $\varnothing$  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]

Page 4	Mark Scheme	Syllabus	Paper
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- 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  $\varnothing 40$  on plan and divided into 6 [1]  
 Semi-circle drawn on  $\varnothing 40$  on side view and divided into 6 [1]  
 Lines projected along  $\varnothing 40$  to touch  $\varnothing 50$  on plan [1]  
 Lines projected along  $\varnothing 40$  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]

Page 5	Mark Scheme	Syllabus	Paper
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- 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] [3]  
(even if construction not visible)
- (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]**

Page 6	Mark Scheme	Syllabus	Paper
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- 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]

Page 7	Mark Scheme	Syllabus	Paper
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- 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]