

Mark Scheme (Results)

Summer 2013

GCSE Design & Technology Graphic
Products (5GR02/01)

Knowledge & Understanding of
Graphic Products

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Summer 2013

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| Question Number | Answer | Mark |
|-----------------|--------|------------|
| 1 | D | (1) |
| Question Number | Answer | Mark |
| 2 | C | (1) |
| Question Number | Answer | Mark |
| 3 | D | (1) |
| Question Number | Answer | Mark |
| 4 | A | (1) |
| Question Number | Answer | Mark |
| 5 | C | (1) |
| Question Number | Answer | Mark |
| 6 | D | (1) |
| Question Number | Answer | Mark |
| 7 | C | (1) |
| Question Number | Answer | Mark |
| 8 | B | (1) |
| Question Number | Answer | Mark |
| 9 | A | (1) |
| Question Number | Answer | Mark |
| 10 | B | (1) |

| Question Number | Answer | | Mark |
|-----------------|--------|---|------------|
| 11. (a) | Use | Cutting curves / shapes / complex shapes / angles (1) | |
| | Name | File Accept any named file (Do not accept 3 square, half round, round, rasp or Square file) (1) | |
| | Name | Mouse (only answer) (1) | |
| | Name | <ul style="list-style-type: none"> • RFID • Radio frequency Identification tag Only answers Do not accept 'Identification tag' on its own. (1) | |
| | | | (4) |

| Question Number | Answer | Mark |
|--------------------|---|------------|
| 11. (b) (i) | <p>Three properties given from:</p> <ul style="list-style-type: none"> • Lightweight (1) • Ductile (1) • Malleable / easily pressed into shape (1) • Good resistance to corrosion / will not rust (1) • Good strength to weight ratio (1) • Inert / will not react with the food contents (1) • Good conductor of heat / can be used to cook the fish in (1) • Can be printed on (1) • Durable (1) • Tough (1) • Impervious to liquid (1) <p>Do not accept 'strong/cheap/recyclable/keeps food fresh'</p> <p style="text-align: right;">1 x 1 1 x 1 1 x 1</p> | (3) |

| Question Number | Answer | Mark |
|--------------------|---|------------|
| 11.(b) (ii) | <p>One disadvantage explained from:</p> <ul style="list-style-type: none"> • It will rust (1) which will contaminate food (1) • Steel is a ferrous metal (1) and will therefore rust (1) • Relatively heavy (1) costing more to transport (1) • Tougher (1) therefore it takes more energy / force to deform when shaping container (1) • Needs to be plated with tin (1) to stop food coming into contact with steel/adds an extra process (1) • Extra material required (1) increasing productions costs (1) <p style="text-align: right;">2 x 1</p> | (2) |

| Question Number | Answer | Mark |
|----------------------|--|------------|
| 11. (b) (iii) | <p>Two forms given from:</p> <ul style="list-style-type: none"> • Stereolithography (1) • 3D printing (1) • Laser sintered powder printing (1) • Layered / laminated object modelling (1) <p style="text-align: right;">2 x 1</p> | (2) |

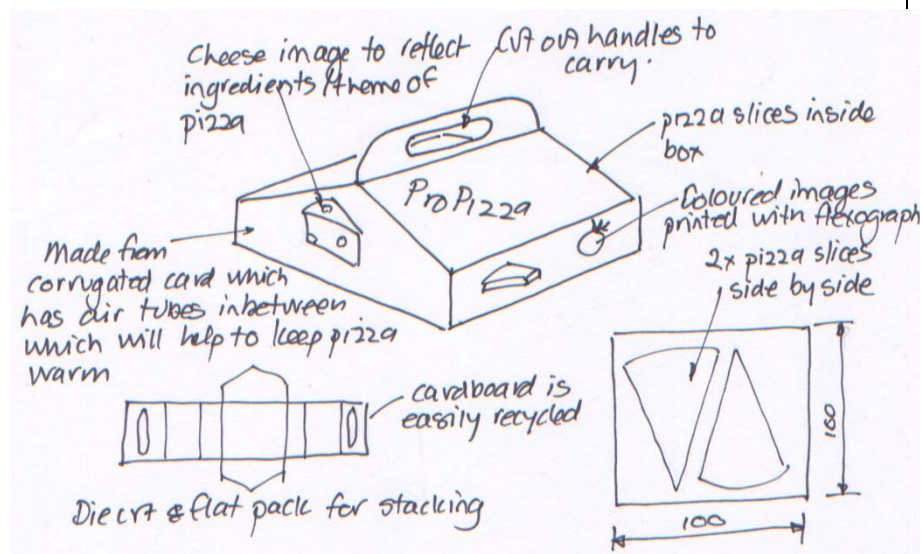
| Question Number | Answer | Mark |
|---------------------|---|------------|
| 11. (b) (iv) | <p>One advantage from:</p> <ul style="list-style-type: none"> • Able to see what it looks like before making it (1) so that changes / errors can be corrected (1) • Can get consumer feedback (1) so that any changes can be made before making (1) • Accurate testing of product (1) to see if it works / is the correct size (1) • Reduced development time (1) which saves money / gets product out to market faster (1) • Make many/multiple models (1) for testing (1) <p style="text-align: right;">2 x 1</p> | (2) |

| Question Number | Answer | Mark |
|-----------------|--|------------|
| 11. (c) | <p>Two pieces of information given from:</p> <ul style="list-style-type: none"> • Brand/owners number (1) • Country of origin/where the product was made/origin of product (1) • Manufacturer (1) • Item number/product type (1) • Check digit (1) <p>(only answers)</p> <p>Do not accept 'price'.</p> <p style="text-align: right;">2 x 1</p> | (2) |

| Question Number | Answer | Mark |
|-----------------|--|------------|
| 11. (d) | <p>Two advantages given from:</p> <ul style="list-style-type: none"> • Documents can be saved electronically (1) and sent to clients / printers (1) • Changes can be made easily / edited (1) following feedback (1) • Zoom / edit features / tools (1) are easily used for attention to detail / proofing / preview (1) • Font / typefaces (1) can be tested out to suit the style of product / package (1) • Colour separations / 'bleed' areas (1) can be generated to aid printing process (1) • Page layout grids / guides (1) can be used to help position text / graphics / images (1) • Templates / image libraries can be used (1) saving time / not having to draw from scratch (1) • Lay planning (1) can be used to help reduce waste (1) <p>Do not accept 'fast/cheap' unless qualified.</p> <p style="text-align: right;">2 x 1 2 x 1</p> | (4) |

| Question Number | Answer | Mark |
|-----------------|--|------|
| 12. | <p>Design idea 1</p> <p>Candidates may answer any specification point in either graphical form or by annotation.</p> <p>No marks are awarded for the quality of graphical communication.</p> <ul style="list-style-type: none"> • be capable of holding two pizza slices (1) e.g. side by side, rotated to tessellate, use of dimensions • enclose the pizza slices (1) e.g. lid , box, tray • keep the pizza slices warm (1) lid over box and insulation material e.g. polystyrene, corrugated card, foil backed • be easy to carry (1) method specified e.g. handles, insulated bottom, case • include a graphical image to reflect the theme of pizza (1) e.g. pizza shape image, wedges, toppings, vegetables, takeaway, Italian theme • allow the packages to be stacked before they are used (1) e.g. flat surface, tapered sides • be printed using commercial printing methods (1) e.g. specific named process such as digital, offset lithography, flexography, gravure, screen printing • be made from a material that can be recycled (1) e.g. cardboard, polystyrene, aluminium foil | |

Example of candidate response:



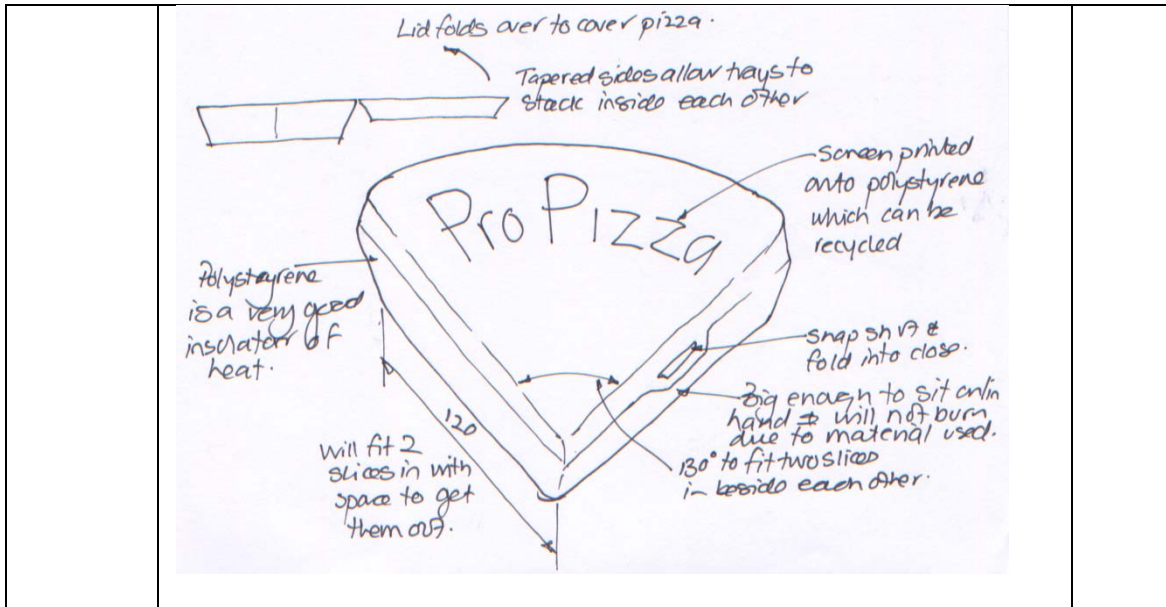
(8)

Box dimensions should be
120mm square not 100mm

Design idea 2

Marks for design idea 2 can only be awarded where specification points are resolved differently than in design idea 1.

(8)



| Question Number | Answer | Mark |
|-----------------|---|------------|
| 13. (a) | <p>One property and linked justification from:</p> <ul style="list-style-type: none"> • Property: excellent impact resistance (1) • Justification: which means it will absorb knocks / bumps / shock / being dropped / protect product (1) • Property: lightweight (1) • Justification which means it will not cost too much to ship/post/transport / makes it easier to carry (1) • Property: low water absorption (1) • Justification which means if it gets wet it will not soak up water and damage product (1) • Property: easy to mould (1) • Justification: which allows for complex shapes to be protected (1) <p style="text-align: right;">2 x 1 2 x 1</p> | (4) |

| Question Number | Answer | Mark |
|-----------------|---|------------|
| 13. (b) | <p>One reason explained from:</p> <ul style="list-style-type: none"> • It will keep the two halves together (1) and stop the mug from falling out / breaking (1) • It will allow it to be wrapped up (1) so that an address label / stamp can be attached (1) • It can be printed on (1) so adding promotional details/offers (1) • Protects polystyrene from crumbling/abrasion (1) so as to maintain shape (1) <p style="text-align: right;">2 x 1</p> | (2) |

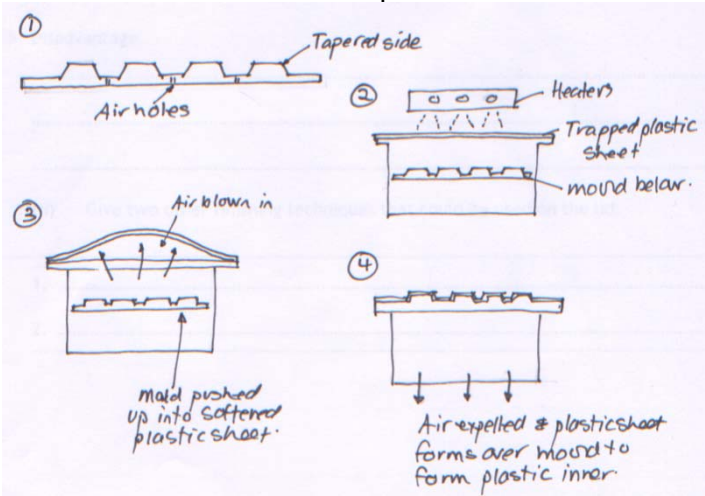
| Question Number | Answer | Mark |
|--------------------|---|------------|
| 13. (c) (i) | <p>One reason explained from:</p> <ul style="list-style-type: none"> • It is lightweight (1) so it will keep costs to a minimum (1) • It is small and compact (1) so will reduce costs / can be sent as a small parcel (1) <p>[do not accept any repeat of the stem]</p> <p style="text-align: right;">2 x 1</p> | (2) |

| Question Number | Answer | Mark |
|---------------------|---|------------|
| 13. (c) (ii) | <p>One reason explained from:</p> <ul style="list-style-type: none"> • It is very resistant to impact (1) so it will withstand any knocks and bumps / protect the mug (1) • The polystyrene will absorb all the impact (1) rather than the mug which is brittle and would break (1) • Holds item in place (1) to give protection to the mug (1) <p>[do not accept any repeat of the stem]</p> <p style="text-align: right;">2 x 1</p> | (2) |

| Question Number | Answer | Mark | | | | | | | | |
|---|--|------------|------------|--|---|------------|------------|---|--|-------------------|
| <p>13. (d) QWC</p> | <p>Evaluation to address the following issues:</p> <p>User requirements</p> <table border="1"> <thead> <tr> <th>Material A</th> <th>Material B</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • Snug fit / moulded to product / gives excellent protection • Can only be used for this shape / sized mug / product • Requires high volume to keep the price down </td> <td> <ul style="list-style-type: none"> • Loose fill allows product to move and mug can break • Can make at home yourself if you send / sell parcels / ebay • Can fit around any product • Less professional/effective </td> </tr> </tbody> </table> <p>Sustainability</p> <table border="1"> <thead> <tr> <th>Material A</th> <th>Material B</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • Made from oil which is a finite resource • Requires lots of energy to make • Difficult to dispose of • Degrades slowly and fills landfill sites • Gives off harmful fumes if burnt • </td> <td> <ul style="list-style-type: none"> • Makes good use of old paper / cardboard • Can be reused to package any shape • Can be re-used for animal bedding • Can be put onto compost heap • Made from a sustainable source </td> </tr> </tbody> </table> | Material A | Material B | <ul style="list-style-type: none"> • Snug fit / moulded to product / gives excellent protection • Can only be used for this shape / sized mug / product • Requires high volume to keep the price down | <ul style="list-style-type: none"> • Loose fill allows product to move and mug can break • Can make at home yourself if you send / sell parcels / ebay • Can fit around any product • Less professional/effective | Material A | Material B | <ul style="list-style-type: none"> • Made from oil which is a finite resource • Requires lots of energy to make • Difficult to dispose of • Degrades slowly and fills landfill sites • Gives off harmful fumes if burnt • | <ul style="list-style-type: none"> • Makes good use of old paper / cardboard • Can be reused to package any shape • Can be re-used for animal bedding • Can be put onto compost heap • Made from a sustainable source | <p>(6)</p> |
| Material A | Material B | | | | | | | | | |
| <ul style="list-style-type: none"> • Snug fit / moulded to product / gives excellent protection • Can only be used for this shape / sized mug / product • Requires high volume to keep the price down | <ul style="list-style-type: none"> • Loose fill allows product to move and mug can break • Can make at home yourself if you send / sell parcels / ebay • Can fit around any product • Less professional/effective | | | | | | | | | |
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| Level | Mark | Descriptor |
|--|------|--|
| | 0 | No rewardable material |
| Level 1 Shows limited understanding | 1-2 | Candidate identifies the area(s) of comparison with no development OR identifies and develops one area. Shows limited understanding of the comparison. Writing communicates ideas using everyday language but the response lacks clarity and organisation. The candidate spells, punctuates and uses the rules of grammar with limited accuracy. |
| Level 2 Identifies issues and developed with some understanding | 3-4 | Candidate identifies some areas of comparison with associated developments showing some understanding of the comparison. Writing communicates ideas using D&T terms accurately and showing some direction and control in the organising of material. The candidate uses some of the rules of grammar appropriately and spells and punctuates with some accuracy, although some spelling errors may still be found. |
| *Level 3 Identifies issues that a developed with detailed understanding | 5-6 | Candidate identifies a range of areas of comparison with associated developments showing a detailed understanding of the comparison. Writing communicates ideas effectively, using a range of appropriately selected D&T terms and organising information clearly and coherently. The candidate spells, punctuates and uses the rules of grammar with considerable accuracy. |

*Level 3 answers must refer to both 'user requirements' **and** 'sustainability'.

| Question Number | Answer | Mark |
|------------------------------|---|------------|
| 14. (a) (i) | <p>Notes and sketches used to describe process to include:</p> <ul style="list-style-type: none"> • Details about the mould/former • Heating plastic sheet • Blowing air up • Vacuum pump to expel air • Plastic formed over mould • Blow air to release plastic shell  <p>[Notes only up to 3 marks, sketches only up to 3 marks]</p> <p style="text-align: right;">4 x 1</p> | (4) |

| Question Number | Answer | Mark |
|---------------------|---|------------|
| 14. (a) (ii) | <p>Three advantages given from:</p> <ul style="list-style-type: none"> • Lightweight shell formed (1) • Hollow centres / cavities formed for chocolates (1) • Relatively cheap mould (1) • Surface textures can be added (1) • Each product formed will be identical (1) • Moulds can be reused (1) • Suitable for batch production (1) • Cost effective (1) <p>Do not accept 'fast/quick' unless qualified.</p> <p style="text-align: right;">1 x 1 1 x 1 1 x 1</p> | (3) |

| Question Number | Answer | Mark |
|--------------------|---|------------|
| 14. (b) (i) | <p>One advantage described from:</p> <ul style="list-style-type: none"> • High quality / visual appearance /shiny (1) gives it an increased value (1) • True reflective printing (1) that cannot be achieved with thermal inks (1) <p style="text-align: right;">2 x 1</p> <p>One disadvantage described from:</p> <ul style="list-style-type: none"> • Wasteful process / not environmentally friendly (1) because only a little bit is used /printed out (1) • Expensive process (1) which adds to overall cost (1) • Heat involved (1) which makes it a more expensive / time consuming process (1) <p style="text-align: right;">2 x 1</p> | (4) |

| Question Number | Answer | Mark |
|---------------------|--|------------|
| 14. (b) (ii) | <p>Two finishes given from:</p> <ul style="list-style-type: none"> • Laminating (1) • Varnishing/spot varnishing (1) • Embossing (1) <p style="text-align: right;">1 x 1 1 x 1</p> | (2) |

| Question Number | Answer | Mark |
|--------------------|--|------------|
| 14. (c) QWC | <p>Indicative content</p> <p>Discussion to address the following issues:</p> <ul style="list-style-type: none"> • Save natural resources such as trees • Reduce demand on finite resources such as oil • Less pollution due to incineration • Less waste going to landfill sites • Less waste being dumped / fly tipping / thrown into rivers • Reduce impact on the environment / landscape by not having to mine • Less damage caused to wildlife /protection of sites / species • Health risk/toxic material | (6) |

| Level | Mark | Descriptor |
|---|------|---|
| | 0 | No rewardable material |
| Level 1 Shows limited understanding | 1-2 | Candidate identifies the issues with no development OR identifies and develops one area. Shows limited understanding of the issues. Writing communicates ideas using everyday language but the response lacks clarity and organisation. The candidate spells, punctuates and uses the rules of grammar with limited accuracy. |
| Level 2 Identifies issues and developed with some understanding | 3-4 | Candidate identifies some issues with associated developments showing some understanding of the issues. Writing communicates ideas using D&T terms accurately and showing some direction and control in the organising of material. The candidate uses some of the rules of grammar appropriately and spells and punctuates with some accuracy, although some spelling errors may still be found. |
| Level 3 Identifies issues that a developed with detailed understanding | 5-6 | Candidate identifies a range of issues with associated developments showing a detailed understanding of the issues. Writing communicates ideas effectively, using a range of appropriately selected D&T terms and organising information clearly and coherently. The candidate spells, punctuates and uses the rules of grammar with considerable accuracy. |

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Welsh Assembly Government

