

Mark Scheme (Results)

Summer 2014

Pearson Edexcel
GCE in Design & Technology
6GR02 01
(Paper 01: D&T in Practice)

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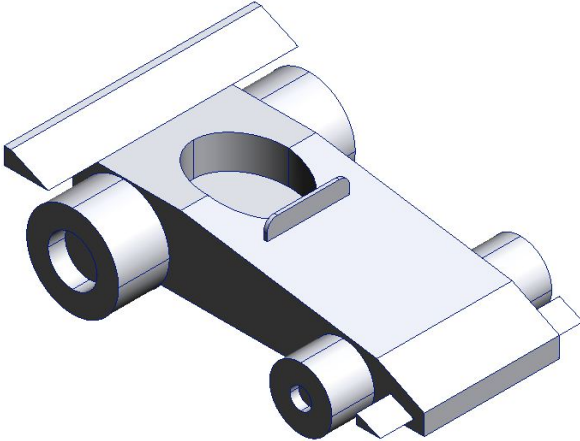
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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Mark
1(a)	<p>Any two of the following:</p> <p>Aesthetic:</p> <ul style="list-style-type: none"> • Available in variety of colours (1) • shiny finish (1) • available as translucent, opaque and transparent (1) <p>Functional:</p> <ul style="list-style-type: none"> • Impermeable to liquids/chemicals (1) • Wipe clean (1) • hygienic (1) <p><i>The responses must be written under the appropriate heading, i.e. aesthetic or functional.</i> <i>Must have one from aesthetic and one from functional for max marks.</i></p> <p style="text-align: right;">(1+1)</p>	(2)
1(b)	<p>Any two of the following:</p> <ul style="list-style-type: none"> • lack of physical contact produces a clean edge/edge (1) • acrylic self finishes (1) • precision due to computer controlled (1) • easy to setup (1) • can be repeated easily for multiple copies (1) • no work holding issues (1) • material does not warp during cutting (1) • no wear and tear on tools (1) • could incorporate engraving within the same operation (1) <p><i>[Do not except fast/quick or reference to cost]</i></p> <p style="text-align: right;">(2x1)</p>	(2)
1(c)	<p>Justified responses only:</p> <ul style="list-style-type: none"> • Need specialist machine (1) so cannot be done anywhere (1) • If used incorrectly can crease/wrinkle (1) and therefore waste menu (1) • Cannot change menu (1) as encapsulation heat seals menu in (1) • Need to be trained in how to operate the machine (1) and so not everyone can use (1) • Specialist machine expensive (1) so is another cost to business (1) <p style="text-align: right;">(2x1)</p>	(2)

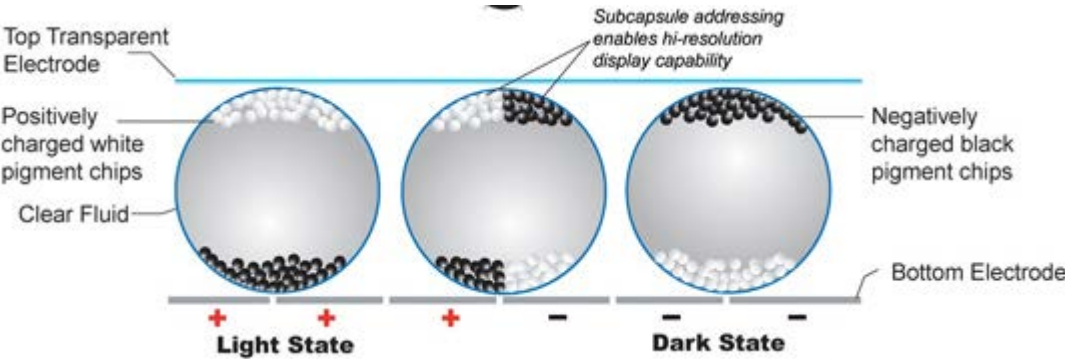
<p>1(d)</p>	<p>Any four of the following:</p> <p>Inhalation of vapours</p> <ul style="list-style-type: none"> • Use in well ventilated area/extraction system (1) • Replace lid after use (1) • Use with appropriate supervisor (1) • Wear face mask/respirator (1) • If dizziness/nausea vacate area (1) <p>storage</p> <ul style="list-style-type: none"> • Storage in locked metal cupboard (1) • Cupboard easily identifiable/yellow (1) • Cupboard must have signs/warning signs (1) • Regular checks by technician (1) • Staff training (1) <p style="text-align: right;">(1+1) + (1+1)</p>	<p style="text-align: right;">(4)</p>
<p>1(e)</p>	<p>Any two from the following:</p> <ul style="list-style-type: none"> • measuring using probe (1) • determines if coordinates of specific points are within tolerance (1) • Data linked to computer for accurate measurement and comparison (1) • Data can be used to create 3D model from coordinates (1) • Probe controlled in three axis (X-Y-Z) (1) • Provides immediate feedback (1) <p style="text-align: right;">(2x1)</p>	<p style="text-align: right;">(2)</p>
<p>Total for question</p>		<p>12</p>

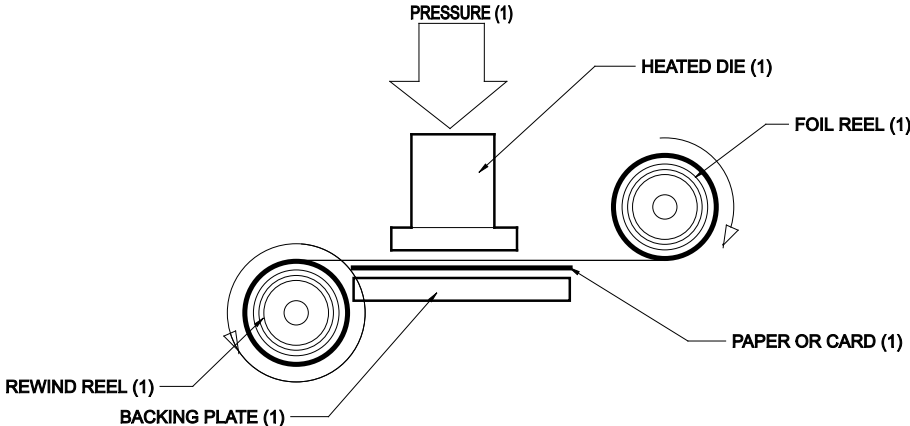
Question Number	Answer	Mark
2(a)	<ul style="list-style-type: none"> • Isometric view (1) • Proportion (1) • Car body sloping (1) • Four wheels are ellipses (1) • Correct fins front/back (1) • Correct windscreen (1)  <p>[new image needed from simon.] If incorrect projection used max three marks. The drawing needs to be 75% complete.</p> <p style="text-align: right;">(5x1)</p>	(5)
2(b)	<p>Justified responses:</p> <ul style="list-style-type: none"> • Soft/easy to cut (1) due to low density (1) • Relatively strong (1) allowing thin/ fine detail modelling (1) • Able to be painted/varnished (1) so ensuring good finish (1) • Readily glued (1) allowing ease of joining without specialist adhesive (1) • Lightweight (1) allowing ease of transport/production (1) • Easy to machine (1) using a CNC router (1) <p style="text-align: right;">(2x1)</p>	(2)
Total for question 2		7

Question Number	Answer	Mark
3a	<p>Any two from the following:</p> <ul style="list-style-type: none"> • Strong/rigid (1) • High quality printing surface (1) • Readily creased and formed into shape (1) • Holds its shape/does not deform easily (1) • Easy to cut/die cut (1) <p style="text-align: right;">(1+1)</p>	(2)
3b	<p>One explanation from:</p> <ul style="list-style-type: none"> • Manufacture of identical products in specific quantities (1) related to market demand (1) • Flexibility of manufacture techniques (1) allows the same production line to be used for a number of titles (1) • Can involve methods of flexible manufacture/CIM (1) allows reprints at a later date according to demand/reduce the need to carry large stocks (1) • Good economies of scale (1) materials can be shared between a number of titles (1) <p><i>[Do not expect fast/quick or reference to cost/cheap]</i></p> <p style="text-align: right;">(2x1)</p>	(2)
3c	<p>Justified responses:</p> <ul style="list-style-type: none"> • glue may come unstuck (1) allowing pages to fall out (1) • thick glue layer on spine (1) prevents book from opening flat (1) • glued spine may crease/break (1) leaving the book looking tatty (1) • cannot withstand constant handling (1) due to poor glue penetration (1) • expensive binding process (1) that adds to the cost of the book (1) <p style="text-align: right;">(2x1) + (2x1)</p>	(4)
3d	<p>Any three from the following:</p> <ul style="list-style-type: none"> • replaces need for regular stock management/inventory control (1) • reduces labour costs due to ability of self-scanning (1) • can improve stock forecasting (1) • reduces theft/allows link to store security (1) • reduces re-stocking/JIT stocking of products (1) • allows product tracking and sales analysis (1) <p style="text-align: right;">(1+1+1)</p>	(3)

3e	<p>Preparation:</p> <ul style="list-style-type: none"> • Check lithographic plates (1) • Check inks (1) • Check card quality (1) • Check guillotine/die cutter (1) <p>Printing/Production:</p> <ul style="list-style-type: none"> • Check colour density during print run (1) • Check registration during print run (1) • Check for unwanted dust/hickies (1) • Check set-off during printing/unwanted ink transfer (1) • Check guillotine/die cut during process-ensure registration (1) <p>Folding/assembly:</p> <ul style="list-style-type: none"> • Check accuracy/alignment of folds (1) • Samples are checked for alignment and print quality (1) • Check books fit (1) • Check thickness quality of glue (1) • Check that glue nozzles are clean and clear (1) <p style="text-align: right;">(1+1+1)</p>	(3)
Total for question 3		14

Question Number	Answer	Mark
4(a)	<p>Justified responses:</p> <ul style="list-style-type: none"> • Ability to combine files (1) meaning great control over document (1) • Changes/editing (1) made using various tools (1) • Files can be exported/emailed (1) meaning offsite printing/design (1) • Grids/rulers/fonts (1) allow short design time (1) • templates (1) allow ready made layouts/remove design aspects (1) • pictures and files can be imported (1) allowing personalised design (1) • cost effective software (1) that doesn't need specialised computer (1) <p style="text-align: right;">(2x1) + (2x1)</p>	(4)
4(b)	<p>Any three from the following:</p> <ul style="list-style-type: none"> • movement of card removes insulating tongue (1) • contacts on module allowed to touch (1) • piezoelectric crystal acts as tiny speaker (1) • pre-programmed sound stored in integrated circuit (1) • requires battery (1) <p style="text-align: right;">(3x1)</p>	(3)

Question Number	Answer	Mark
4(c)	<p>Any four from the following:</p> <ul style="list-style-type: none"> • Top transparent electrode (1) • Bottom electrode (1) • Clear fluid (1) • Negatively charged black pigment (1) • Positively charged white pigment (1) • Labels for +/- charges (1)  <p>Sketch must show top transparent electrode and bottom electrode (2) Then any two further points <i>Max 2 marks if no electrodes shown</i> <i>Max 3 marks for accurate sketch with no annotation</i> <i>Max 3 marks written answers without sketches</i></p> <p style="text-align: right;">(4x1)</p>	(4)
Total for question 4		11

Question Number	Answer	Mark
5(a) (i)	<p>Parison:</p> <ul style="list-style-type: none"> • Extruded polymer tube created by die head (1) • Air is blown through parison to create bottle shape (1) • The mould seals the bottom of the parison (1) <p><i>[focus must be on parison and not whole blow moulding process]</i></p>	(2)
5(a) (ii)	<p>Cooled mould:</p> <ul style="list-style-type: none"> • Freezes polymer on contact (1) • Due to quick cooling allows high speed production (1) 	(2)
5(b)	<ul style="list-style-type: none"> • Pressure (1) • Heated die (1) • Backing plate (1) • Foil reel (1) • Rewind reel (1)  <p>Sketch must show Heated Die (1) Then any three further points <i>Max 3 marks if no heated die shown</i> <i>Max 3 marks for accurate sketch with no annotation</i> <i>Max 3 marks written answers without sketches</i></p>	(4)

(4x1)

Question Number	Answer	Mark
5(c) QWC	<p>A response that identifies any six of the following marking points. There must be both sides of the argument: points for and points against . Max 5 marks if only one side of discussion put forward.</p> <p>For (max five)</p> <ul style="list-style-type: none"> • lightweight so will not increase weight of product (1) • strong/tough/durable/rigid (1) • generally water resistant (1) • formed well/form intricate shapes (1) • easily printed on (1) • inexpensive (must be clarified in comparison to other materials) (1) • speed of production (must be clarified in comparison to other materials) (1) • shock absorbent (1) • recyclable (1) • can be transparent so contents can be seen (1) <p>Against (max five)</p> <ul style="list-style-type: none"> • consume large amounts of energy in conversion/production (1) • use up non-renewable earth resources (1) • slow degrading/pollute environment/cause rubbish/pollution (1) • labour intensive for recycling/uneconomical (1) • add to land fill (1) • can be hazardous to health (1) <p style="text-align: right;">(6x1)</p>	<p style="text-align: right;">(6)</p>
	Total for question 5	14

Question Number	Answer	Mark
6(a) QWC	<p>Justified responses:</p> <ul style="list-style-type: none"> • heavier than polymer (1) giving feeling of quality (1) • structurally tough (1) giving product protection (1) • sustainable material (1) so doesn't use non renewable resources (1) • surface capable of taking various finishes (1) due to no grain (1) • decomposes quicker than polymer (1) so doesn't effect landfill (1) • not commonly used (1) so adds to gimmick value (1) • easily laser cut (1) enabling batch production (1) <p><i>Justified responses relevant to presentation box</i></p>	(6)

Question Number	Answer	Mark
6(b) QWC	<p>A response that identifies any six of the following marking points. There must be both sides of the argument: advantages and disadvantages. Max 5 marks if only one side of discussion put forward.</p> <p>Advantages (max 5)</p> <ul style="list-style-type: none"> • produces an accurate quality prototype for evaluation by designer/user (1) • reduces time in manufacture of quality prototype in comparison to traditional methods (1) • gives the designer a good idea of the final look/3D look of the product (1) • allows communication between designer and user (1) • gives the designer the opportunity to show the user a product for an active participation in the design process (1) • allows design flaws to be seen in early stages of development (1) • reduces costs for designer in development (1) • gives designer a high quality product for development (1) • allows testing of product/materials (1) • reduces design time to market (1) • allows direct link between CAD and CAM (1) • helps refine product (1) • produces scale prototype for marketing (1) <p>Disadvantages (max 5)</p> <ul style="list-style-type: none"> • expensive process may be passed onto customer through increased costs (1) • May cause the designer to constantly redevelop the product for perfection (1) • May slow the development process (1) • Regular upgrading of software (1) • Prototype limited by size of machine/may have to be scaled down in size (1) • Consumables can be expensive (1) • Prototypes maybe fragile (1) • Cost of maintenance could be high (1) • Training maybe required (1) <p style="text-align: right;">(6x1)</p>	<p style="text-align: right;">(6)</p>
	Total for question 6	12

