

Mark Scheme (Results)

Summer 2008

GCSE

GCSE Engineering & Manufacturing (5318) Paper 3

Unit 5318/03 Textiles and Clothing

Section A

Question Number	Answer	Mark
1(a)	<ul style="list-style-type: none"> • Scissors (1) • Blended yarns (1) <p>If 3 boxes ticked max marks = 1 mark. If 4 boxes or more ticked no marks.</p> <p style="text-align: right;">(2x1)</p>	(2)
1(b)	<ul style="list-style-type: none"> • Neoprene glove (1) • High visibility jacket (1) <p>If 3 boxes ticked max marks = 1 mark. If 4 boxes or more ticked no marks.</p> <p style="text-align: right;">(2x1)</p>	(2)
2(a)	<ul style="list-style-type: none"> • Button (1) <p style="text-align: right;">(1x1)</p>	(2)
	<ul style="list-style-type: none"> • Velcro (1) <p style="text-align: right;">(1x1)</p>	
2(b)	<p>An answer that makes reference to TWO of the following points:</p> <ul style="list-style-type: none"> • To fasten / open items quickly (1) • To create a secure but non bulky fastening e.g. baby wear / detachable items (1) <p style="text-align: right;">(2x1)</p>	(4)
	<ul style="list-style-type: none"> • To support or tighten a product (1) • Used in waistbands, cuffs or appropriate area (1) • Can create a better fit (1) <p style="text-align: right;">(2x1)</p>	
Total mark		10

Question Number	Answer	Mark														
3	<p>Key terms linked to a key area</p> <table border="0"> <thead> <tr> <th>Term</th> <th>Key Area</th> </tr> </thead> <tbody> <tr> <td>Sewing machine</td> <td>Information & Communications Technology (ICT)</td> </tr> <tr> <td>Polyester</td> <td>Control technology</td> </tr> <tr> <td>Spreadsheets</td> <td>Information & Communications Technology (ICT)</td> </tr> <tr> <td>Acrylic</td> <td>Modern materials</td> </tr> <tr> <td>Programmable logic controllers (PLCs)</td> <td>Control technology</td> </tr> <tr> <td>Word processing</td> <td>Information & Communications Technology (ICT)</td> </tr> </tbody> </table> <p>No mark for any term linked to more than one area.</p> <p>(6x1)</p>	Term	Key Area	Sewing machine	Information & Communications Technology (ICT)	Polyester	Control technology	Spreadsheets	Information & Communications Technology (ICT)	Acrylic	Modern materials	Programmable logic controllers (PLCs)	Control technology	Word processing	Information & Communications Technology (ICT)	(6)
Term	Key Area															
Sewing machine	Information & Communications Technology (ICT)															
Polyester	Control technology															
Spreadsheets	Information & Communications Technology (ICT)															
Acrylic	Modern materials															
Programmable logic controllers (PLCs)	Control technology															
Word processing	Information & Communications Technology (ICT)															
Total mark		6														

Question Number	Answer	Mark
4(a)(i)	<p>Appropriate <u>product</u> such as:</p> <ul style="list-style-type: none"> • Biker gloves (1) • Rucksacks (1) • Swimsuits (1) • fire protective suit (1) • bullet proof vest (1) • performance sports clothing (1) • oven gloves (1) • performance sports footwear (1) <p>Accept brand name of a specific product</p> <p><i>This list is not exhaustive; accept any product that contains Textiles and clothing products or association with the sector.</i></p> <p style="text-align: right;">(1x1)</p>	(1)
4(a)(ii)	<p>Appropriate explanation of what the product does, may include reference to features and function</p> <ul style="list-style-type: none"> • To protect hands (1) of bike rider (1) • To hold products (1) and carry (1) • For streamline comfort (1) in water (1) <p>The gloves can be worn by the bike rider (1) to protect his / her hands (1) whilst holding handle bar or to protect if they fall (1)</p> <p><i>If product given in 4(a)(i) is not from this sector but is from one of the other engineering manufacturing sectors then allow follow through up to one mark. No answer to 4(a)(i) no marks for 4(a)(ii)</i></p> <p style="text-align: right;">(2x1)</p>	(2)
4(b)(i)	<p>Note: Stage needs to be relevant to the product named in part (a)(i)</p> <ul style="list-style-type: none"> • production planning (1) materials - supply and control (1) processing / production (1) assembly / finishing (1) packaging / dispatch (1) <p><i>If product given in 4(a)(i) is not from this sector but is from one of the other engineering manufacturing sectors then allow follow through. No answer to 4(a)(i) no marks for 4(b)(i) Accept a process that is within any of the stages (e.g. making / sewing / printing) must be appropriate to the product stated in 4(a)(i)</i></p> <p style="text-align: right;">(1x1)</p>	(1)

Question Number	Answer	Mark
4(b)(ii)	<p>One mark for identifying advantage. One mark for why Appropriate advantage to the manufacturer e.g. production planning, materials - supply and control, processing / production, assembly / finishing, packaging / dispatch</p> <p>Production planning</p> <ul style="list-style-type: none"> • speed (1) - faster than human application (1) <p>materials - supply and control</p> <ul style="list-style-type: none"> • cost control (1) - by less waste / faulty parts (1) • waste control (1) - by monitoring processes and quality control of processes (1) <p>processing / production</p> <ul style="list-style-type: none"> • energy conservation (1) - by control of energy into process (1) • waste control (1) - by monitoring processes and quality control of processes(1) • competitiveness (1) - faster rates of production (1) • product consistency (1) - by control of processes (1) • cost control (1) - by less waste / faulty parts (1) • efficiency (1) - by less waste / faulty parts (1) • speed (1) - faster than human application (1) <p>assembly / finishing</p> <ul style="list-style-type: none"> • energy conservation (1) - by control of energy into process (1) • waste control (1) - by monitoring processes and quality control of processes(1) • product consistency (1) - by control of processes (1) • cost control (1) - by less waste / faulty parts (1) • efficiency (1) - by less waste / faulty parts (1) • speed (1) - faster than human application (1) <p>packaging / dispatch</p> <ul style="list-style-type: none"> • packaging consistency (1) - by control of processes (1) • cost control (1) - by less waste / faulty parts (1) • efficiency (1) - by less waste / faulty parts (1) • speed (1) - faster than human application (1) • energy conservation (1) - by control of energy into process (1) • waste control (1) - by monitoring processes and quality control of processes (1) <p><i>Low response (1) or two low responses or detailed response. If the answer in part (i) is a Manufacturing stage, allow follow through up to 2 marks.</i> <i>No answer to 4(b)(i) no marks for 4(b)(ii)</i></p>	(2)

Question Number	Answer	Mark
4(c)(i)	<ul style="list-style-type: none"> • Fusable interlining (1) - Vilene (1) • bonding (1) • Velcro (1) • Lycra (1) • Teflon coated nylon (1) • Reflective tape (1) • Coated fabrics (1) • Rubber (1) • Mesh (1) • Polyester (1) <p>other appropriate modern materials - a material currently used for the given application</p> <p>Accept brand name of a specific material</p> <p><i>If product given in 4(a)(i) is not from this sector but is from one of the other engineering manufacturing sectors then allow follow through.</i></p> <p><i>No answer to 4(a)(i) no marks for 4(c)(i)</i></p> <p style="text-align: right;">(1x1)</p>	(1)
4(c)(ii)	<p>One mark for identifying improvement. One mark for how.</p> <ul style="list-style-type: none"> • density (1) - lower / weight (1) • handle (1) - improves the touch of fabric (1) • drape (1) - improves the way a garment hangs (1) • texture (1) - improves the way it feels (1) • colour (1) - improves appearance (1) • softness (1) - improves the comfort (1) • shape (1) - garment fits better in body (1) • fit (1) - allows the garment to stretch and fit (1) • reflective (1) allows the garment to reflect in dark (1) <p>Any other appropriate functional / aesthetic characteristic that relates to the improvement.</p> <p><i>If answer in part 4(ai) is inappropriate but the material given in 4(ci) is appropriate allow follow through up to 2 marks. If no answer is given in part 4(ai) but the answer to part 4(cii) relates to the material stated in part 4(ci) allow follow through up to 1 mark. If no answer or incorrect answer given in part 4(ci) no marks awarded.</i></p> <p style="text-align: right;">(2x1)</p>	(2)
Total mark		9

Question Number	Answer	Mark
5(a)(i)	<ul style="list-style-type: none"> • materials supply (supplier details / raising orders) (1) • materials control (materials location) (1) • stages in manufacturing (list of processes / standard times) (1) • process control (statistics / references to standards) (1) • storage (location / description) (1) • distribution (customer location / packaging requirements / routing information) (1) • stock control (location / type of stock / critical re-order levels / stock taking / EPOS) (1) • marketing and mailshots (customer listing / customer orders) e.g. questionnaire (1) • queries and searches (product / customer / cost / supplier) (1) <p><i>Do not accept 'software' names</i></p> <p style="text-align: right;">(1x1)</p>	(1)
5(a)(ii)	<p>One mark for identifying the benefit, one mark for how. Two low responses - only one mark</p> <p>Must relate to example given. No answer in (i) no marks, otherwise, allow follow through to one mark.</p> <ul style="list-style-type: none"> • reduced ordering times (1) - supplier identified automatically (1) • maintaining quality (1) - consistency (1) • reduced wastage (1) - correct process used (1) • improved efficiency (1) - faster access to knowing material location (1) • better process control (1) - easier access to quality standards (1) • reduced labour / costs (1) - less time spent searching for data (1) • reduced storage space (1) - less paper work (1) • efficient marketing (1) - mailmerge / mailshots (1) <p><i>If answer in part 5(ai) is inappropriate allow follow through up to 2 marks. If no answer given in part 5(ai) allow follow though up to 1 mark.</i></p> <p><i>Do not accept 'easier' without explanation</i></p> <p style="text-align: right;">(2x1)</p>	(2)

Question Number	Answer	Mark
5(b)(i)	<p><i>One mark per relevant example x 2</i></p> <ul style="list-style-type: none"> • Mobile phone / infra-red / blue tooth (1) • Email / messaging (1) • Internet / wireless / WIFI (1) • Video conferencing (1) • Electronic point of sale (EPOS) (1) • EDI (1) • ISDN (1) • Texting (1) • Phone (1) • Fax / facisimile (1) • Walkie Talkie (1) • Voice over internet protocol - VoIP (1) <p><i>Do not accept any of the following below:</i></p> <p><i>Television / TV / Radio / Database / Computer/ CAD / Laptop</i></p> <p style="text-align: right;">(1x1)</p>	(1)

Question Number	Answer	Mark
5(b)(ii)	<p>Must relate to example given. No answer in (i) no marks, otherwise, allow follow through to one mark.</p> <ul style="list-style-type: none"> • Mobile phone (1) - flexibility / roaming location (1) • Email (1) - immediate permanent record (1) • Internet (1) - immediate vast access to information (1) • Video conferencing (1) - no travel expenses / less time wasted in travelling (1) • Electronic point of sale (EPOS) (1) - faster / more accurate (1) • EDI (1) - immediate transfer of information / no hard copies needed / less storage space (1) • ISDN (1) - more data transferred in parallel (1) • Texting (1) - stored record of transaction (1) • Phone (1) - immediate two way conversation (1) • Fax (1) - hard copy record (1) • Walkie Talkie (1) - Roaming location / flexibility / cost (1) <p>Other benefits may be seen in the light of:</p> <p><i>Speed, accuracy, JIT, information retrieval, meets consumer demands, quicker, increased sales, reduced stock levels, reduced running costs, reduced lead times, calculation of sales, stock taking quicker/easier, storage space reduced, or any other appropriate response</i></p> <p><i>Benefits must relate to the manufacturer</i> <i>2 low responses 1 mark only.</i></p>	(2)

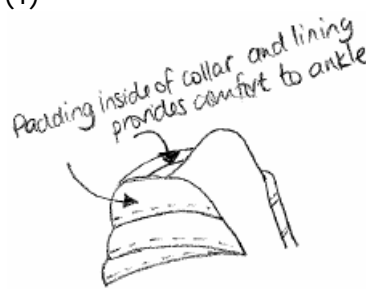
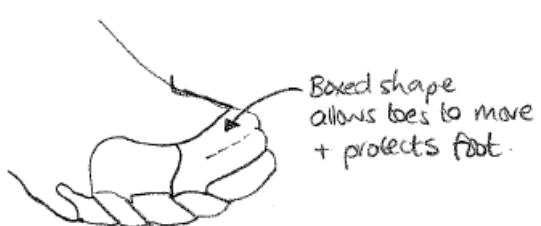
(2x1)

Question Number	Answer	Mark
5(c)	<p>Benefit must relate to the retailer</p> <p>One mark for identifying the benefit, one mark for how. If two low responses given - one mark e.g. cheaper and quicker - only one mark</p> <p>Any combination of the answers below as long as appropriately linked e.g. better quality products (1) therefore more profit (1)</p> <ul style="list-style-type: none"> • Less returns (1) - more consistent products (1) • Lower purchase price (1) - increase sales (1) • Shorter order times (1) - greater use of appropriate software / automated orders (1) • Increase sales (1) - more profit (1) • Better reputation / customer satisfaction (1) - more reliability (1) • Increased profits (1) - fewer waste products / faster throughput (1) • Better quality products (1) - systems reject faulty products or stop them being produced (1) <p style="text-align: right;">(2x1)</p>	(2)
Total mark		8

Question Number	Answer	Mark
6	<p>Two different examples</p> <ul style="list-style-type: none"> • process control (1) • PLCs (1) • Embedded computers (1) • Robotics (1) • CIM (1) • CAD / CAM links (1) • CAM (1) • CIE (1) • Quality control (1) • Automation (1) <p><i>Don't accept examples that are about handling data and information e.g. databases / spreadsheets , CAD, computers, CNC</i></p> <p style="text-align: right;">(1x1) (1x1)</p> <hr/> <p>Two different methods used</p> <ul style="list-style-type: none"> • Cam timers (1) • Manual operations associated with the sector (1) • Manual placing (1) • Manual testing (1) • Manual recording (1) • Manual measurement (1) • Physical activity / employees (1) <p><i>Must be a feasible replacement</i></p> <p>If answer in 6(a) is not appropriate allow follow through If no answer in 6a no mark for 6(b)</p> <p style="text-align: right;">(1x1) (1x1)</p>	

6 cont	<p>Explain two different benefits One mark for identifying the benefit. One mark for how</p> <p>Examples</p> <ul style="list-style-type: none"> • Reduce the time (1) testing is quicker (1) • Reduce the money spent (1) lower stock level / JIT techniques (1) • lower labour costs (1) reduction in staffing (1) • Increased overall productivity (1) via increased throughput (1) • Improve quality (1) more consistent processes (1) • Continuous production (1) machines work 24/7 (1) <p><i>Benefits must relate to new methods and the manufacturer.</i> <i>Low response (1) or two low responses (1) or detailed response (2). Allow follow through up to one mark providing either (a) or (b) is answered for each example.</i></p> <p style="text-align: right;">(2x1) (2x1)</p>	(8)
Total mark		8

Question Number	Answer	Mark
7(a)	<p>One mark for identifying the benefit One mark for how</p> <ul style="list-style-type: none"> • reduced ordering times (1) - automatic monitoring (1) • improve quality / quality / accuracy (1) - control of processes (1) • reduced wastage (1) - optimise production methods(1) • improved efficiency (1) - faster / quicker throughput (1) • better process control (1) - in process monitoring (1) • reduced labour (1) - automated processes (1) • lower costs (1) - reduced wastage / faster / continuous production (1) • safer processes (1) - less manual input (1) <p><i>Do not accept 'easier' without explanation</i></p>	(2)
7(b)	<ul style="list-style-type: none"> • More consistent products (1) - process reliability (1) • Lower purchase price (1) - increased efficiency / productivity (1) • Shorter delivery times (1) - automated systems (1) • Customer satisfaction (1) - availability of different products (1) • Quality product (1) - fit for purpose (1) • Product guarantee (1) - ability to design / produce products to higher standards (1) • Product flexibility (1) - more variation within processes (1) <p><i>1 mark for benefit, 1 mark for how. Low response (1) or detailed statement (2) or two low responses (2)</i></p> <p>Example: <i>Readily available products of good quality (1) means fewer complaints about sub-standard products (1)</i></p> <p><i>Any combination of the answers above as long as appropriately linked e.g. more consistent product (1) fit for purpose (1)</i></p>	(2)
Total mark		4
Total marks for section A		45

Question Number	Answer	Mark
8(a)	<p>An answer that makes reference to three of the following points. Diagrams and notes up to 3 marks</p> <ul style="list-style-type: none"> • Provides comfortable padding around ankle (1) • Keeps trail debris out of boot (1) • Helps reduce friction (1) • 'Wicks' moisture / removes moisture away from foot (1) <div style="text-align: center;">  </div> <p>Answer must contain both notes and sketches. Max two marks if only notes or sketches used.</p> <p style="text-align: right;">(3x1)</p>	(3)
8(b)	<p>An answer that makes reference to three of the following points. Diagrams and notes up to 3 marks</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> • Holds shape to protect the front of foot (1) • Boxed shape allows toes to wiggle (1) • Protects forefoot from rocks (1) • Increases wear life of boot (1) <p>Answer must contain both notes and sketches. Max two marks if only notes or sketches used.</p> <p style="text-align: right;">(3x1)</p>	(3)
Total mark		6

Question Number	Answer	Mark
9(a)(i)	<ul style="list-style-type: none"> • Stage 1 - Design / product development (1) • Stage 4 - Material supply and control / purchasing / material supply / material control / supply of components / supply of parts (1) <p><i>Do not accept development on its own for stage 1</i> <i>Do not accept product on its own for stage 1</i> <i>Do not accept design ideas for stage 1</i> <i>Do not accept material on its own for stage 4</i></p> <p style="text-align: right;">(2x1)</p>	(2)
9(a)(ii)	<ul style="list-style-type: none"> • Marketing (1) • Stage 2 / stage two (1) • 2 / two (1) <p style="text-align: right;">(1x1)</p>	(1)
9(b)(i)	<p>Low response (1) or three low responses (3) or up to three marks for detailed response (3)</p> <p>Appropriate descriptions including three of the following points:</p> <p><u>Production</u></p> <ul style="list-style-type: none"> • use the available resources (1) • Materials, parts and components used (1) • Processes that are used (1) • Used of available equipment and machinery (1) • Following the sequence of production (1) • Carrying out inspection and quality control (1) • Complying with health and safety factors (1) <p><i>The stage where hiking boots are produced from available resources (1) to allow manufacture and assembly of the correct components (1) to complete the product on a production line following a planned sequence (1) through quality checks.</i></p> <p style="text-align: right;">(3x1)</p>	(3)

Question Number	Answer	Mark
9(b)(ii)	<p>Low response (1) or three low responses (3) or up to three marks for detailed response (3)</p> <p>Appropriate descriptions including three of the following points:</p> <p><u>Assembly and finishing</u></p> <ul style="list-style-type: none"> • Assembly activities (1) • Putting together component parts (1) • Stitching (1) • Adding laces (1) • Pairing the boots (1) • Finishing (1) • Checking loose threads (1) • Packaging (1) • Adding swing tickets (1) • Any assembly process (1) <p style="text-align: right;">(3x1)</p>	(3)
Total mark		9

Question Number	Answer	Mark
10(a)(i)	<p>1 mark per named material</p> <ul style="list-style-type: none"> • Polyester (1) • Polyurethane (PU) (1) • Goretex (1) • Microban (1) • Thinsulate (1) • Polartec (1) • Brass (1) • Nickel (1) <p><i>Do not accept any generic term - 'metal' / 'plastic'</i></p> <p style="text-align: right;">(1x1)</p>	(1)
10(a)(ii)	<p>1 mark for improvement, 1 mark for how If no answer in 10(a)(i) then no marks. Allow follow through up to 1 mark if incorrect material is given in 10(a)(i)</p> <ul style="list-style-type: none"> • Comfort (1) • Gives warmth (1) • Durability (1) • Versatile (1) • Waterproof (1) • Dry (1) • Breathable (1) • Ergonomics (1) • Aesthetics (1) <p style="text-align: right;">(2x1)</p>	(2)

Question Number	Answer	Mark
10(b)(i)	<p>1 mark for low response. 2 marks for detailed response. 2 marks for 2 low responses.</p> <ul style="list-style-type: none"> • Provides flexibility underfoot (1) • Provides comfort (1) • Stabilises foot (1) • Supports foot (1) • Increases arch support (1) • Prevents twisting on uneven terrain (1) <p style="text-align: right;">(2x1)</p>	(2)
10(b)(ii)	<p>1 mark per feature. Up to 2 marks</p> <ul style="list-style-type: none"> • Moulded sole for flexibility (1) • Padded tongue (1) • Secure lace fastening (1) • Ankle loop to aid putting on boot (1) • Padded collar / lining (1) <p style="text-align: right;">(2x1)</p>	(2)
10(c)	<p>Low response (1) or three low responses (3) or up to three marks for detailed response (3)</p> <p>Appropriate explanation including three of the following points:</p> <ul style="list-style-type: none"> • Lower cost (1) • Colours (1) • Improved accuracy (1) • Durability (1) • Smaller size (1) • Easier manufacturing (1) • Functionality (1) • More varieties (1) • Higher performance levels of products (1) • New markets (1) <p style="text-align: right;">(3x1)</p>	(3)
Total mark		10

Question Number	Answer	Mark
11(a)	<p>Must have relevant automation technology link Low response (1) or two low responses (2) or detailed response (2)</p> <p>Example of automation</p> <ul style="list-style-type: none"> • PLC (1) to control processes in production (1) • Automated embroidery machines (1) to add logo (1) • Automated cutting machines (1) to cut fabric (1) • Robots (1) dealing with the box products (1) • Use of systems (1) to move parts of the packaging about (1) • Pick and Place (1) to fit boxes of finished products (1) • Embedded computers (1) to perform dedicated functions (1) • Remotely operated vehicles (1) moving boxed products to dispatch or storage (1) <p><i>Do not accept 'CIM' or 'CNC' without links to automation</i></p> <p style="text-align: right;">(2x1) (2x1)</p>	(4)

Question Number	Answer	Mark
11(b)	<p>Benefits to manufacturer</p> <p>If answer in 11(a) is inappropriate, allow follow through up to one mark. If no answer given in part (a), no mark. 2 x 1 mark for low response or 2 x 2 marks for detailed responses.</p> <p>Must be appropriate to those described in (a) and relate to the manufacturer e.g.</p> <ul style="list-style-type: none"> • Flexible production (1) leads to meeting customer requirements better (1) • Consistent results and quality (1) achieved through accurate use of technology (1) • Reduced human intervention (1) of plant means safer operation (1) • Accurate printing (1) better registration (1) • Reduced labour costs (1) as less people involved (1) • Safer method (1) as humans have less exposure (1) • Reduced customer complaints (1) as better quality product (1) • Control of costs (1) lower unit cost as less waste (1) • Retailer confidence (1) through less complaints (1) • Customer confidence increased (1) through more reliable systems • Reduced waste (1) by less mistakes being made (1) • Reduced energy costs (1) through increased efficiency (1) • Improved production rates (1) through reduced downtime (1) • Gives customers variation of products in a quicker time (1) faster production changeovers (1) <p style="text-align: right;">(2x1) (2x1)</p>	(4)

Question Number	Answer	Mark
11(c)	<p>Benefit to consumer</p> <p>If answer in 11(a) is inappropriate, allow follow through up to one mark. If no answer given in part (a), no mark. 2 x 1 mark for low responses. 2 x 2 marks for detailed responses</p> <p>Must be appropriate to those described in (a) and relate to the consumer e.g.</p> <ul style="list-style-type: none"> • Consistent product (1) controlled better (1) • Product reliability (1) more likely to be produced to specification (1) • Reduced time to retail / shorter delivery times (1) as manufacturer can vary product to meet demand (1) • Less wastage (1) as processes monitored better (1) • Lower prices (1) less waste / quicker production (1) • Better availability (1) due to faster throughput • Better quality (1) through improved process control (1) • Better value (1) because production costs are reduced (1) • Product guarantee (1) as confidence in process (1) • Customer satisfaction (1) because of consistent products <p style="text-align: right;">(2x1) (2x1)</p>	<p style="text-align: center;">(4)</p>
Total mark		12

Question Number	Answer	Mark
12(a)(i)	<p>1 mark for change.</p> <ul style="list-style-type: none"> • Smaller in size (1) • Higher level of skills / better educated less employment for unskilled (1) • Work patterns (1) • Higher pay (1) <p style="text-align: right;">(1x1)</p>	(1)
12(a)(ii)	<p>Low response (1) or two low responses (2) or up to two marks for a more detailed response (2)</p> <ul style="list-style-type: none"> • Smaller in size - more responsibility (1) for undertaking a variety of operations (1) / different skills required (1) which are less traditional (1) • Higher level of skills / better educated / less employment for unskilled - more able people required (1) with the ability to re-train often (1); ability to cope with constant change (1) and to undertake complex work (1) / but less overall cost for company (1) • Work patterns - shifts often necessary (1) resulting in better paid staff (1) / often working with different people (1) hence ability to communicate vital (1) <p>Up to 2 marks each response</p> <p style="text-align: right;">(2x1) (2x1)</p>	(4)
12(b)(i)	<p>1 mark for change.</p> <p>Positive answers</p> <ul style="list-style-type: none"> • Increased efficiency (1) • Lower emissions / reduced global warming (1) • Increased productivity (1) • Less fuel used (1) • Reduced wastage in production (1) <p>Negative answers</p> <ul style="list-style-type: none"> • Greater use of machinery (1) • Higher emissions (1) • Use of finite resources to manufacture control technologies (1) • Greater overall volume of products generated (1) <p style="text-align: right;">(1x1)</p>	(1)

Question Number	Answer	Mark
12(b)(ii)	<p>Low response (1) or two low responses (2) or up to two marks for a more detailed response (2)</p> <p>Positive answers</p> <ul style="list-style-type: none"> • Increased efficiency - lower emissions: resulting in less consumption (1) and a reduction in the increase in global warming (1) / improved manufacturing control (1) meaning less waste and pollution (1) • Increased productivity - less fuel used: less use of fossil fuels (1) resulting in lower consumption and emissions (1) / technology that is less dependant on finite resources (1) and makes efficient use of finite resources (1) or can use sustainable alternatives (1) • Reduced wastage in production: less materials used in production (1) resulting in less waste thrown into landfill (1) / ability to adapt process (1) to reduce rework / waste (1) <p>Negative answers</p> <ul style="list-style-type: none"> • Greater use of machinery - higher emissions: resulting in greater consumption (1) and an increase in the rate of global warming (1) / issues associated with acid rain (1) and toxic gases (1) • Use of finite resources to manufacture control technologies: increased consumption of raw materials (1) leading to increased likelihood of overuse / lack of supply (1) / issues associated with disposal of technologies (1) and use of finite resources for disassembly (1) • Greater overall volume of products generated: distribution network increased (extra fuel) (1) meaning higher CO₂ emissions (1) / higher quality products leading to greater demand (1) and reduced product lifespan (1) <p>Up to 2 marks each response</p> <p><i>If answer in 12(b)(i) is inappropriate allow follow through up to 1 mark each. If 12(b)(i) has no answer, no mark for 12(b)(ii)</i></p> <p style="text-align: right;">(2x1) (2x1)</p>	(4)
Total mark		10

Question Number	Answer	Mark
13(a)	<p>An explanation that makes reference to four of the following points. Low response (1) or four low responses (4) or detailed response (up to 4) The following could be either positive or negative influences.</p> <ul style="list-style-type: none"> • Climate change (1) • CO₂ emissions (1) • Land fill (1) • Environmental contamination (1) • Burning fossil fuels in manufacturing processes (1) • Renewable energy (1) • Global expansion (1) • Lifespan of product (1) • Disposal of hardware e.g. computers / machinery (1) • Disassembly costs (1) • Recycling (1) • Polymer shredding (1) • Biodegradable (1) <p>Positive example The use of biodegradable materials (1) has lessened the need for landfill (1) and reduced environmental contamination (1) which could lead to the reduction of CO₂ emissions (1) because of less decomposition of the product.</p> <p>Negative example The difficulty of the disposal of hardware / computers (1) has led to disassembly costs (1) and reduced the scope for recycling (1) because of limited lifespan of computer products (1) and increased the need for landfill (1)</p> <p>Up to 4 marks</p>	<p>(4x1)</p> <p>(4)</p>

Question Number	Answer	Mark
13(b)	<p>An explanation that makes reference to four of the following points. Low response (1) or four low responses (4) or detailed response (up to 4) The following could be either positive or negative influences.</p> <ul style="list-style-type: none"> • Research and development time / costs (1) • life cycle costs (1) • sales / profits (1) • Long term savings (1) • Transferring technology into further new products (1) • Wider product range (1) • Risk evaluation (1) • Waste (1) • Manufacturing efficiencies (1) • Derivative products i.e. smaller / larger versions / faster to develop (1) <p><i>The application of new materials can have a high initial development cost (1) due to the time taken in researching and testing the product(1), but can result in savings in the long term(1) due to lower product costs meaning increased sales and profits (1) which could result in increased product range (1) or transference of technology into new product ranges (1)</i></p> <p>Up to 4 marks</p> <p style="text-align: right;">(4x1)</p>	(4)
Total mark		8
Total Marks for section B		55
Total marks for paper		100