

Mark Scheme (Results)

Summer 2007

GCE

GCE Design & Technology
(6150/01)

Product Design: Textiles Technology (6150/01)

<i>Question Number</i>			<i>Question / Expected answers</i>	<i>Mark allocation</i>	
6150_01_Q01ai			Name a natural fibre made of cellulose.		
1	(a)	(i)	<p>Candidates may give any natural fibre from:</p> <ul style="list-style-type: none"> • Linen / flax (1) • Cotton (1) • Ramie (1) • Jute (1) • Kapok (1) • Hemp (1) • Sisal (1) • Manila (1) • Coir (1) <p>Only answers.</p>	1x1	(1)
6150_01_Q01aii			Give the name of the only natural filament.		
1	(a)	(ii)	<p>Candidates should give this answer:</p> <ul style="list-style-type: none"> • Silk (1) <p>Only answers.</p>	1x1	(1)
6150_01_Q01bi			State TWO properties of linen		
1	(b)	(i)	<p>Candidates may give any TWO properties from:</p> <ul style="list-style-type: none"> • Absorbent OR Hydrophilic (1) • Drape OR Stiff OR Firm OR Crisp (1) • Strong (1) • Durable (1) • Flammable (1) • Creases easily (1) • Stains easily (1) • Non-static (1) • Dyes well (1) • Cool to wear (not cool on its own) (1) • Bio-degradable OR recyclable OR renewable (1) <p>Only answers.</p>	2x1	(2)

Question Number			Question / Expected answers	Mark allocation	
6150_01_Q01bii			Name ONE Type of finish which could be added to linen.		
1	(b)	(ii)	<p>Candidates may give ONE finish from the following:</p> <ul style="list-style-type: none"> • Resin (1) • Easy care (1) • Teflon (1) • Silicone (1) • Anti-stain OR Scotchgard OR Stain resist (1) • Calendering (1) • Crease resist OR non-iron OR anti creasing (1) • Flame resist OR retardant (1) • Bleach OR dyeing (1) <p>Only answers.</p>	1x1	(1)
6150_01_Q01biii			State why the finish named in (b)(ii) would improve the performance of linen.		
1	(b)	(iii)	<p>Candidates may give any answer from the following:</p> <ul style="list-style-type: none"> • Resin - crease resistance (1) • Easy care - crease resistance (1) • Teflon - easy clean (do not accept non-stick) (1) • Silicone - easy clean / easy iron (1) • Anti-stain / Scotchgard - stain resistance (1) • Calendering - lustre / smoothness (1) • Flame resist - to stop it catching fire / for safety reasons (1) • Crease resist - will not need ironing (1) <p><i>Do not accept 'so it doesn't crease'</i> <i>Do not accept bleaching or dyeing</i></p>	1x1	(1)

<i>Question Number</i>		<i>Question / Expected answers</i>	<i>Mark allocation</i>	
6150_01_Q01c		Explain why natural fibres are comfortable to wear.		
1	(c)	<p>Candidates may give an explanation that makes reference to two of the following points:</p> <ul style="list-style-type: none"> • Absorbent (1) - so don't feel sweaty / non static (1) • Softness / fineness (1) - next to skin comfort (1) • Cotton / linen (1) - keeps wearer cool (1) • Silk (1) - can keep warm or cool (1) • Wool (1) - keeps wearer warm / traps air (1) • Non static (1) - does not cling / contains moisture (1) 	2x1	(2)
6150_01_Q01d		Explain why static is more likely to occur in synthetic fibres than in natural fibres.		
1	(d)	<p>Candidates may give an explanation that's makes reference to two of the following points:</p> <ul style="list-style-type: none"> • Synthetic fibres are less absorbent than natural fibres (1) • Static only occurs when fibres are absolutely dry (1) • Amount of static is related to absorbency (1) • Moisture held in natural fibres stops static forming / being conducted (1) 	2x1	(2)
(Total 10 marks)				

Question Number		Question / Expected answers		Mark allocation	
6150_01_Q02a		Name the SIX parts of the melt spinning process identified in Figure 1 above. Put your answers in the boxes provided.			
2	(a)		Six parts identified:		
		Box 1	<ul style="list-style-type: none"> • Molten polymer OR • melted raw material (1) 	1x1	
		Box 2	<ul style="list-style-type: none"> • Metering pump • meter • pump (1) 	1x1	
		Box 3	<ul style="list-style-type: none"> • Spinneret (1) 	1x1	
		Box 4	<ul style="list-style-type: none"> • Cold air • cool air • to set fibres • to solidify fibres (1) <p>(Do not accept 'just air')</p>	1x1	
		Box 5	<ul style="list-style-type: none"> • Drawing • Straighten • Stretching • Smoothing • Pulling • thinning out (1) 	1x1	
		Box 6	<ul style="list-style-type: none"> • Winding • reeling • rolling • roller • spool • bobbin • cop (1) <p>Only answers.</p>	1x1	(6)

Question Number		Question / Expected answers	Mark allocation	
6150_01_Q02b		Name ONE of the fibres that would be made using the melt spinning process.		
2	(b)	<p>Candidates may give any fibre from:</p> <ul style="list-style-type: none"> • Nylon OR Polyamide (1) • Polyester (1) <p>Only answers.</p>	1x1	(2)
6150_01_Q02c		Explain how the melt spinning process produces filaments.		
2	(c)	<p>Candidates may give an explanation that's makes reference to three of the following points:</p> <ul style="list-style-type: none"> • Polymer is melted / molten (1) (do not allow "dissolve") • Passes through the metering pump at a regular speed (1) • Pushed / Extruded through spinneret / Showerhead (1) • Cold air (1) • Solidifies / hardens the filaments (1) • Filament are drawn out and wound on to spools (1) <p><i>Accept any three in correct order</i></p>	3x1	(3)
6150_01_Q02d		Describe how a fabric mixture is produced.		
2	(d)	<p>Candidates may give a description that makes reference to two of the following points:</p> <ul style="list-style-type: none"> • 2 different types of yarns (1) one made of each fibre / Separate yarns of different fibres (1) • Suitable example given e.g. linen union (1) made of linen threads/yarns and cotton threads/yarns (1) • Alternate yarns placed in warp / or weft at intervals (1) to create an effect e.g. checks/uneven texture (1) <p>If candidate refers to warp and weft both must be present for award of marks e.g. Yarns made of one fibre in the warp and made of another in the weft (2)</p>	2x1	(2)
(Total 12 marks)				

Question Number	Question / Expected answers	Mark allocation
6150_01_Q03a	Use the grid below to show the construction of a herringbone twill weave.	
3	<p data-bbox="247 365 295 398">(a)</p> <p data-bbox="443 394 999 465"><i>One mark for V shape</i> <i>One mark for staggered opposite V Shape</i></p> <p data-bbox="443 499 1246 566">V shaped lines - any number of blocks as long as the V shape is obvious - 1 mark</p> <div data-bbox="576 622 1007 1064" data-label="Image"> </div> <p data-bbox="443 1115 1235 1149">V shaped lines with the black and white reversing - 2 marks</p> <div data-bbox="557 1182 991 1624" data-label="Image"> </div>	<p data-bbox="1313 801 1361 835">2x1</p> <p data-bbox="1425 801 1465 835">(2)</p>

Question Number		Question / Expected answers	Mark allocation	
6150_01_Q03b		Describe TWO of the following textile finishing processes: Mercerising / Raising / Piece dyeing		
3	(b)	<p>Candidates may give any TWO descriptions from:</p> <p>Mercerising:</p> <ul style="list-style-type: none"> • Finish added to cotton (1) • Uses caustic soda to soak fibres (1) • chemical finish (1) • Increases lustre (1) • Diagram comparing cross sections of cotton fibres (1) • Increase strength (1) • Swells fibre (1) <p style="text-align: center;">OR</p> <p>Raising:</p> <ul style="list-style-type: none"> • Brushed finish / no chemicals / mechanical process (1) • Fine flexible wire brushes / tiny wire hooks (1) • Weakens fabric (1) • Creates nap (1) • Soft / fluffy / warm / fleece (1) <p style="text-align: center;">OR</p> <p>Piece dyeing:</p> <ul style="list-style-type: none"> • Done to complete piece of fabric (1) • Done in greige (grey) state (1) • Open width fabric passed through dye bath/pad bath (1) • Squeezed between rubber rollers to give even dyeing/pad mangle (1) • Continual process / pad dyeing (1) 	3x1 + 3x1	(3) (3)
(Total 8 marks)				

Question Number		Question / Expected answers	Mark allocation	
6150_01_Q04a		Outline THREE safety procedures which could be implemented during the assembly process in a textile factory and briefly describe how they could prevent accidents.		
4	(a)	<p>Candidates may give any THREE safety procedures from:</p> <ul style="list-style-type: none"> • Procedure - Walkways kept clear (1) / • Prevention - avoid tripping over things (1) • Procedure - Workforce trained to use equipment safely / follow safety procedures / fire exits (1) • Prevention - reduce risks using materials / machinery / processes (1) • Procedure - Use risk assessment to identify potential hazards e.g. catching fingers (1) • Prevention - e.g. don't put hands under needle (1) • Procedure - safety rules written down / health & safety policy (1) • Prevention - eliminate / minimise risks (1) • Procedure - well lit workshops / factory or equipment checked / maintained / safety guards on machinery / protective clothing / metal detectors / machines turned off / emergency stop button / dress sensibly / hair tied back / no jewellery (1) • Prevention - safe working environment / injury free workforce (1) <p><i>2 marks available for each bullet available if details of action and reason for action given</i></p>	2x1 2x1 2x1	(6)

<i>Question Number</i>		<i>Question / Expected answers</i>	<i>Mark allocation</i>	
6150_01_Q04b		Explain how ONE of the following is used to produce a quality textiles product: Specification / Tolerance		
4	(b)	<p>Candidates may give an explanation that makes reference to four of the following points:</p> <p>Specification</p> <ul style="list-style-type: none"> • Design specification sets out criteria for design and development of product (1) • Production specification sets out criteria for manufacture of product (1) • Gives criteria to measure against (1) • Specification is determined by type of user e.g. age group of user (1) • Gives performance requirements for product / materials / components (1) • Sets quality standards / e.g. needed (1) • Sets safety standards / e.g. needed (1) • Sets aesthetic standards (1) <p style="text-align: center;">OR</p> <p>Tolerance</p> <ul style="list-style-type: none"> • Acceptable level of variation (1) • Sets criteria for making up to specific size (1) • Ensures product fits together accurately (1) • Positive tolerance better than negative in sizing so finished product is not too small (1) • Products that are out of tolerance will be rejected by quality control (1) • Smaller tolerance for bespoke garments, larger for mass production (1) 	4x1	(4)
(Total 10 marks)				

Question Number		Question / Expected answers	Mark allocation	
6150_01_Q05a		Give THREE reasons why ripstop nylon fabric is an appropriate material for the child's jacket.		
5	(a)	<p>Candidates may give any THREE reasons from:</p> <ul style="list-style-type: none"> • Tear resistant / abrasion resistant (1) • Waterproof / windproof / weather proof (1) • Strong / durable / long lasting (1) • Fabric construction means that small tears do not become large tears / will only tear to next strong line of threads (1) • Wipe clean / easy to wash / stain resistant (1) • Lightweight / crease resistant / packs into small space (1) <p><i>One mark per bullet point</i></p>	3x1	(3)
6150_01_Q05b		Give THREE reasons why a plastic zip is an appropriate component for the child's jacket.		
5	(b)	<p>Candidates may give any THREE reasons from:</p> <ul style="list-style-type: none"> • Suitable weight for nylon garment / lightweight (1) • Will not rust like metal might (1) • Colour can match the fabric / co-ordinate (1) • Easy for child to use / easy to fasten and unfasten (1) • Plastic less likely to cause injury /pain than metal if skin is trapped / no sharp edges (1) • Easily washable (1) <p><i>(Do not accept 'cheap or easy to insert / attach')</i></p> <p><i>One mark per bullet point</i></p>	3x1	(3)
6150_01_Q05c		Name ONE piece of equipment which would be used during the assembly process for this jacket.		
5	(c)	<p>Candidates may give any piece of equipment from:</p> <ul style="list-style-type: none"> • Zipper attachment OR foot (1) • Overlocker (1) • Heatsealer (1) • Lockstitch machine (1) • Poppa machine (1) • Heat press (1) <p><i>(Do not accept sewing machine or embroidery machine)</i> Only answers.</p>	1x1	(1)

Question Number		Question / Expected answers	Mark allocation	
6150_01_Q05d		Describe ONE quality check that would be performed during the assembly process for this jacket.		
5	(d)	<p>Candidates may give a description that makes reference to:</p> <ul style="list-style-type: none"> • Zip working properly (1) - Pull (1) • Zip attached securely (1) - visual (1) • Smooth seams (1) - visual / check for puckering (1) • Straight seams (1) - visual (1) • Accurate shape of pockets (1) - template (1) • Accurate position of pockets (1) - template / measure (1) • Accurate positioning of logo (1) - visual inspection (1) • Neat / even stitching (1) - visual inspection (1) <p><i>Do not accept 'checks on fabric or final check'</i></p>	2x1	(2)
6150_01_Q05e		Explain how Computer Aided Design (CAD) would be used to, made sure that the minimum amount of fabric was used in cutting out the pattern pieces.		
5	(e)	<p>Candidates may give an explanation that makes reference to three of the following points:</p> <ul style="list-style-type: none"> • Development of lay plan (1) • Use of pre programmed shapes (1) • Programmed to keep pieces on straight of grain (1) • Pattern pieces graded (1) • Single size (1) /multi size lays (1) • Marker making (1) • Individual pieces moved around to optimize layout (1) • Cutting instructions downloaded direct to cutting machine (1) • Pattern pieces shaped to minimise waste (1) 	3x1	(3)
(Total 12 marks)				

Question Number		Question / Expected answers	Mark allocation	
6150_01_Q06a		Explain TWO ways in which ICT can make the ordering and moving of materials more efficient.		
6	(a)	<p>Candidates may give any TWO explanations from:</p> <ul style="list-style-type: none"> • JIT (1) - stock is ordered when needed and so does not need storage space / no need to unload, put away and get out again / Reduction of stock levels as reorders only happen when stock is needed / Manufacturers can respond more efficiently to changes in demand / Level of production can be related to the size of the order (1) • Stock response (1) - stock is ordered according to sales / costing can be more accurate as predictions of goods needed is more precise / materials not ordered for goods that will not sell / monitor stock levels (1) • EDI(electronic data interchange) (1) - information comes directly from sales to identify demand for goods / what sells quickly / what needs replacing / email / barcodes (1) • Use of robots (1) for moving materials (1) • Use of internet (1) - wider market available (1) • database of supplies / customers / spreadsheet (1) - assists stock control (1) <p><i>Up to 2 marks per bullet point for detail explanation given Maximum 3 marks if only ordering or moving is addressed.</i></p>	2x1 2x1	(4)

Question Number		Question / Expected answers	Mark allocation	
6150_01_Q06b		Explain TWO ways in which computers are used in the control of materials in a textile factory.		
6	(b)	<p>Candidates may give any TWO explanations from:</p> <ul style="list-style-type: none"> • Stock control (1) - barcodes / scanning (1) • Laying out of fabric / spreading / cutting (1) - more accurate than manual (1) • Bundling (1) - identified with barcodes (1) • Gerber system (1) - everything moving on hangers around coded at all points / tracked by computers (1) • Automation (1) - use of robotic machines to move goods from operative to operative (1) • Packaging at end of process (1) - correlating orders and goods (1) • CNC machines / computerised sewing machine / computerised knitting machine (1) (must be explained) <p><i>Up to 2 marks per bullet point for detail given</i></p>	2x1 2x1	(4)
(Total 8 marks)				

<i>Question Number</i>		<i>Question / Expected answers</i>	<i>Mark allocation</i>	
6150_01_Q07a		Select ONE of the following design movements and discuss three of the identifying characteristics for this design movement. Arts and Crafts / Art Nouveau / Art Deco		
7	(a)	<p>Arts and Crafts</p> <p>Identify characteristic (1) Discussion point (1)</p> <p>Any three linked 2 marking points from:</p> <ul style="list-style-type: none"> • Nature (1) / flowing shapes (1) • Anti industry (1) • Simple designs (1) • Handcrafted (1) • Practical / comfortable (1) • Functional yet decorative (1) • Not over decorated / ornate (1) • William Morris / Pugin / Ruskin (1) • Wooden / textiles / wallpapers (1) <p style="text-align: center;">OR</p> <p>Art Nouveau</p> <p>Identify characteristic (1) Discussion point (1)</p> <p>Any three linked 2 marking points from:</p> <ul style="list-style-type: none"> • Influenced by Arts & Crafts (1) • Simple natural forms (1) • Curved lines (1) • Curved shapes (1) • Geometric forms / Japanese art (1) • Rejection of mass production (1) • Mixture of art and industry / saw themselves as artist rather than designers (1) • Expensive (1) • Poiret / Ballet Russe / Gustav Klimt (1) • Soft / muted colours (1) • Stained glass / wrought iron (1) <p style="text-align: center;">OR</p>	3x2	
			3x2	

Question Number	Question / Expected answers	Mark allocation	
	Select ONE of the following design movements and discuss three of the identifying characteristics for this design movement. Arts and Crafts / Art Nouveau / Art Deco		
	<p>Art Deco</p> <p>Identify characteristic (1) Discussion point (1)</p> <p>Any three linked 2 marking points from:</p> <ul style="list-style-type: none"> • Influenced by Art Nouveau (1) • Anti mass production (1) • One off, expensive products (1) • Precious materials (1) • Decorative rather than functional (1) • Geometric shapes (1) • Zig zag patterns (1) • Poiret / Chanel / Lanvin / Schiaparelli / Lalique / Sonia Delaney (1) • Bold / striking / harsh colours(1) • Jewellery / metal / sculpture (1) • African / Egyptian Cubism (1) <p><i>Must give explanation / detail for 2nd mark</i> <i>Must give correct name for movement chosen</i></p>	3x2	(6)

Question Number		Question / Expected answers	Mark allocation	
6150_01_Q07b		Explain the term 'smart material'.		
7	(b)	<p>Candidates may give an explanation that makes reference to two of the following points:</p> <ul style="list-style-type: none"> • React to external conditions / sense and react (1) • Change properties (1) • Interactive / multifunctional (1) 	2x1	(2)
6150_01_Q07c		Explain how Microencapsulation can be used in ONE of the following textiles products: Underwear / Medical textiles		
7	(c)	<p>Candidates may give an explanation that makes reference to two of the following points:</p> <p><i>Must relate to product</i></p> <p>Underwear (allow socks)</p> <ul style="list-style-type: none"> • Microscopic polymer bubbles (1) • Release fragrance / antiseptic (1) • Activated by rubbing / movement (1) <p style="text-align: center;">OR</p> <p>Medical textiles</p> <ul style="list-style-type: none"> • Microscopic polymer bubbles (1) • Release antibiotics / antiseptics / enzymes (1) • insect repellent (1) • Activated by rubbing / movement (1) • Bandages / dressings (must be explained) (1) 	2x1	(2)

Question Number		Question / Expected answers	Mark allocation	
6150_01_Q07d		Explain how Thermochromic dyes can be used in ONE of the following textiles products: T-shirts / Expedition wear		
7	(d)	<p>Candidates may give an explanation that makes reference to two of the following points:</p> <p><i>Must relate to product</i></p> <p>T-shirts</p> <ul style="list-style-type: none"> • Change colour with changes of temperature (1) • Used for safety (1) • Aesthetics / appearance / novelty (1) <p style="text-align: center;">OR</p> <p>Expedition wear</p> <ul style="list-style-type: none"> • Change colour with changes of temperature (1) • Used for safety (1) • Aesthetics / appearance / novelty (1) 	2x1	(2)
(Total 12 marks)				

Question Number		Question / Expected answers	Mark allocation	
6150_01_Q08a		Explain how computers have speeded up the design process.		
8	(a)	<p>Candidates may give an explanation that makes reference to four of the following points:</p> <ul style="list-style-type: none"> • Use of drawing packages such as Speedstep / Photoshop / Igrafx / Fittingly Sew (1) • Colourways / designs on fabric / details can be changed easily without re-drawing / texture mapping (1) • Pattern production can be developed electronically / layplans / blocks / grading / use of measurements (1) • Fast style changes in both 2d and 3d (1) • Can be viewed from all angles giving full detail instantly for customers (1) • Evaluation and modification can be done without producing actual prototypes (1) • 3d manikins used in multimedia productions / realistic impression of designs for customer (1) • Reduces time /costs (<i>must give realistic reason for mark</i>) (1) • Designs developed / stored (1) • shared electronically / emailed (1) • virtual products can be created (1) • Presentations / charts / graphs (1) • Research(must explain) (1) • Digitiser for improved measurements (1) <p>Do not accept ' testing of fabrics'</p>	4x1	(4)

Question Number		Question / Expected answers	Mark allocation	
6150_01_Q08b		Explain why accurate body measurements are important to both retailers and consumers.		
8	(b)	<p>Candidates may give an explanation that makes reference to four of the following points:</p> <p><i>(must address both retailers and consumers for full marks)</i></p> <ul style="list-style-type: none"> • Body shapes have changed (1) • current sizing are not accurate (1) • Too much variation between different retailers (1) • customers prepared to pay more as clothes will fit customers better (<i>must give reason for paying more</i>) / Customers want clothes that fit / more flattering when they fit properly (1) • gives retailers USP / increased sales as customers getting individual service / customer loyalty (1) • Confidence in product consistency (1) • Different shops have different sizes (1) • Different target markets have different body shapes (1) • Standard size (1) 	4x1	(4)
(Total 8 marks)				
TOTAL FOR PAPER: 80 MARKS				