

Mark Scheme (Results) Summer 2008

GCE

GCE Design and Technology (6151) Paper 1

Question Number	Answer	Mark
1(a)	<p>(i) Lyocell</p> <ul style="list-style-type: none"> • Technical textiles - must give example (protective clothing / workwear / coated fabrics / sewing threads) (1) • Special papers - must give example (tea bags / air, smoke, oil, coffee filters / map papers / printing papers / high-strength envelopes) (1) • Non-wovens - must give example (medical wipes / medical dressings / wet wipes / leather substitutes / filters / interlinings) (1) • Fashion textiles - suitable garment named / children's clothing / denim / chino / casual clothes / bath towels (1) <p><i>NOT sportswear / underwear</i></p> <p style="text-align: right;">(1x1)</p>	
	<p>(ii) Nomex</p> <ul style="list-style-type: none"> • Motor racing - protective overalls / clothing to protect from fire (1) • Fire fighter uniforms (1) • Police protective clothing (1) • Armed forces protective clothing (1) • Fire / chemical / oil / solvent protection (1) • Hot air balloons (1) <p><i>NOT protective clothing on its own</i></p> <p style="text-align: right;">(1x1)</p>	
	<p>(iii) Kevlar</p> <ul style="list-style-type: none"> • Bulletproof vests (1) • Equipment for hot air ballooning / extreme sports (1) • Cables and ropes for bridges / ships / space vehicles (1) • Protective gloves / motorcycle wear / motor racing (1) • Skis / helmets / tennis racquets (1) • Tyres / car hoses / aircraft structures / boats (1) • workwear / shoes (1) <p><i>NOT protective clothing on its own</i></p> <p style="text-align: right;">(1x1)</p>	3

Question Number	Answer	Mark
1(b)(i)	<ul style="list-style-type: none"> • Visual / rather than using phone (1) - can see body language / personal / face to face (1) • Can be in several different locations (1) - virtual meetings can still be held (1) • Designer can have faster access to client (1) - without having to travel (1) • Presentations can reach a variety of marketing organisations more easily (1) - larger client base is possible (1) • Training can take place more easily (1) - all staff can receive same training regardless of location (1) • Remote manufacturing can take place (1) - physical presence of designer is not needed (1) • Cost issues / travel costs / hotel costs (1) - suitable example needed of cost savings (1) • Time issues / travel time / time differences (1) - getting everyone together in the same place at the same time / suitable examples of time saving (1) • Eco issues (1) - reduces carbon footprint (1) <p style="text-align: right;">(2x1) (2x1)</p>	4
(b)(ii)	<ul style="list-style-type: none"> • Viewer can 'move' through a virtual world (1) - can show furnishings in any situation / digitally enhanced background (1) • Virtual catwalk (1) - shows clothing on models body / movement / how garment will really look (1) • Garments can be tested (1) - to show drape / flow / texture mapping (1) • Can show a total design concept (1) • Virtual dressing room (1) / fits garment to customer's own measurements / size (1) • Allows problems to be addressed / can be changed (1) - no prototype needed (1) • Colourways (1) <p>NOT layplans</p> <p style="text-align: right;">(1x1) (1x1) (1x1)</p>	3
	Total Marks	10

Question Number	Answer	Mark
2(a)(i)	<ul style="list-style-type: none"> • Customer can now buy from wider range of retailers (1) more choice available (1) • Customers no longer need to be geographically positioned to buy from retailers (1) / can buy anywhere in the world / shop at home / convenience (1) • Enables customers to have a much wider choice of goods (1) not limited to what is available locally / in shops (1) • No need to spend time travelling (1) / cuts travel costs (1) • Compare prices (1) / value for money (1) • Access to products (1) / disabled, elderly, those unable to get to shops (1) <p style="text-align: right;">(2x1) (2x1)</p>	4
(a)(ii)	<ul style="list-style-type: none"> • Cannot try on garments before buying (1) size may be wrong / may not fit / may need to send back for refund (1) • Reproduction of colour on website may not be accurate (1) colour may be different from what is required / colour may not suit(1) • Cannot see quality of material (1) product may be over-priced / may be made of poor quality of material (1) • Delivery issues (1) need to be at address to receive parcel / not available immediately that money is paid (1) / waiting in for delivery (1) • Card fraud / security (1) / advertising not accurate (1) / no guarantee about retailer (1) • Viruses / pop ups / unwanted adverts / spam (1) <p style="text-align: right;">(2x1)</p>	2

Question Number	Answer	Mark
2(b)	<ul style="list-style-type: none"> • Sets standards that ensure quality products are produced (1) / authorises use of kite mark / standards certificates /BSI number (1) • Sets quality assurance processes to fulfil needs of customers / helps reputation of company / increase sales (1) • Provides testing procedures for manufacturers to meet legislation / safety e.g. fire safety / keep up to date with regulations / less likely to produce faulty goods / less likely to be prosecuted (1) • Ensures standards for fibres, yarns and fabrics so that test ensure they are of suitable quality (1) • Higher prices / better quality / fewer returns / competitive edge (1) • Tests for properties of fabrics (1) e.g. appearance, handle, flexibility, creasing, shrinkage, strength, stretch - so fabrics perform as expected (1) • Standards for colourfastness, finishes, aftercare (1) so products last for suitable lifetime (1) • Sets standards for industrial machinery - safe use, good performance (1) • Technical, factual details (1) against which to test (1) • Standard sizes and measurements for all products, garments (1) guarantee correct fit / size (1) <p style="text-align: right;">(1x1) (1x1)</p>	2

Question Number	Answer	Mark
(c)	<ul style="list-style-type: none"> • All advertisements must be legal, decent, honest, truthful /anything they claim must be shown to be true (1) ASA can have advertisements stopped from publication / broadcasting (1) • Must show responsibility to consumer and society (1) must not promote anything that will harm either consumer or society (1) suitable for expected audience • Follow business principles of 'fair' competition (1) must not 'run down' other firms or products / must not libel others / must not take unfair advantage of competitors (1) • Follows up complaints (1) Makes firms offer apologies / ensures suitable action is taken • Recalls (1) / safety issues (1) • Monitors / checks (1) safety / legal / moral issues e.g. racism (1) <p style="text-align: right;">(2x1) (2x1)</p> <p><i>Allow example if clarification of point made</i></p>	4
	Total Marks	12

Question Number	Answer	Mark
3(a)	<p><i>Cannot answer under wrong heading</i></p> <p>Materials production</p> <ul style="list-style-type: none"> <li>• Fast repetition (1) of patterns / designs / colour repeats in knitted / woven fabrics (1) <li>• Electronic patterning (1) for garments / garment patterns produced automatically (1) <li>• Spinning machines (1) / winding bobbins / spools / cops (1) <li>• 3D knitted products (1) computer production (1) <li>• Control of looms (1) producing woven fabrics (1) <li>• Printing / embossing (1) <li>• Jacquard loom / knitting machine control (1)for production of complicated designs (1) <li>• Digital stitch control (1)improved quality maintaining set size, number and shape of stitches (1) <li>• Broken yarn detectors (1) / quality checks / sensors (1) <li>• Control over finishing processes (1) / coating (1) <p>Materials handling</p> <ul style="list-style-type: none"> <li>• Spreading of fabrics (1) / many layers / vacuum table / straightening of fabrics (1) <li>• Automatic moving systems / Gerbermover / conveyor belts (1) moving of part made products from one work station to next / large quantities (1) <li>• Hanging garment storage (1) bar coding for products(1) <li>• Tracking / barcodes / stock control (1) distribution systems / intelligent tags / global track and trace (1) <li>• Packaging of products (1) <p>(2x1)</p> <p>(2x1)</p>	4

Question Number	Answer	Mark
(b)	<ul style="list-style-type: none"> • Fabrics do not need to be kept in stock (1) so less storage space is needed / storage space is expensive (1) • Fabrics are not bought until needed (1) reducing costs (1) • Finished goods are not kept in stock / only correct number is produced (1) avoids overstocking (1) • Increased flexibility (1) more cost effective batch sizes / adapt to change in demand (1) • Smooth flow through of operations (1) so no build up of stock (1) • Eliminates waste (1) by only making to order (1) <p style="text-align: right;">(2x1) (2x1)</p>	4
	Total Marks	8

Question Number	Answer	Mark
4(a)	<p>Machine embroidery</p> <ul style="list-style-type: none"> • Creation of design / editing / simplification of design to become suitable (1) • Scanning in of design (1) • Allocation of stitches to individual parts of design (1) • Allocation of colour to individual parts of design (1) • Programming machine (1) • Use of correct foot / removal of presser foot / lowering of feed dogs (1) • Threading of machine / use of embroidery thread / reference to bobbin thread (1) • Use of appropriate stabiliser / stitch and tear / backing (1) • Correct position for embroidery (1) • Hooping / Frame / ring (1) • Testing to check tension (1) <p>Appliqué</p> <ul style="list-style-type: none"> • Creation of design - simple shapes needed (1) • Division of design into separate shapes / individual stencils / templates (1) • Planning of order of construction (1) • Planning of order of construction (1) • Position on product / lining up into correct place (1) • Selection of materials / colour / threads / preparation of fabrics - ironing (1) • Stabilising of pieces to avoid fraying / bonding of individual pieces (1) • Cutting out of pieces (1) • Position on product / line up / in place (1) • Pin / tack / bondaweb (1) • Selection of stitches for each piece / zigzag / satin stitch (1) <p><i>NOT stitching or bonding to product / in place</i></p> <p style="text-align: right;">(5x1)</p>	5

Question Number	Answer	Mark
4(b)	<p>Reflective textiles</p> <ul style="list-style-type: none"> <li>• Use of minute glass beads or mini satellite reflector dishes (1) reflect light / safety (1) <li>• Melt spinning of glass beads and resin to produce reflective fibres (1) not obvious in daylight but become reflective in dark (1) <li>• Can be monofilaments or hollowfibres / Reflective webbing / Reflective tape / Scotchlite / Reflective Velcro / Thin layer of metal bonded to fabric (1) Aesthetic or functional (1) <li>• Colours changes <li>• Meet legal safety requirements (1) cyclists / workwear / emergency services (1) <p><i>NOT 'safety wear' on its own</i></p> <p>(2x1)</p> <p>Biostoning</p> <ul style="list-style-type: none"> <li>• Use of enzymes to remove dye from fabric (1) / does not cause damage to the fabric (1) <li>• Does not use pumice stones to remove dye (1) / more environmentally friendly (not on it's own) (1) <li>• Produces stone washed / worn effect / on denim (1) / removes dye from fabric (1) <p>(2x1)</p>	4
	Total Marks	9

Question Number	Answer	Mark
5(a)	<ul style="list-style-type: none"> • Modified during manufacture / size of spinneret / shape of spinneret (1) to meet the requirements of specific end uses (1) • Can be woven, knitted or non-woven depending on the end use (1) e.g. woven tarpaulins, warp knitted geo-textiles, non-woven horticultural fleece (1) • Use of microfibres (1) to blend / mix (1) / with other fibres to enhance properties (1) • Can be coated with PVC / PTFE / Teflon (1) to make waterproof / stain resistant (1) <p><i>NOT laminates</i></p> <p style="text-align: right;">(1x1) (1x1)</p>	2
(b)	<p><i>Manufacturer NOT Consumer</i> <i>Clear explanation needed for second mark</i></p> <ul style="list-style-type: none"> • Faster production time (<i>needs explanation</i>) (1) no seams / no cutting out needed (1) • Eliminates labour-intensive stages (1) so reducing time / saving money / labour costs (1) • No waste as pieces are produced to exact size / better fit (1) cheaper production / saves money (1) • Use of CAD (1) means that everything is planned accurately / so can produce to customer orders (1) • Different sizes of products can be produced (1) without cutting and sewing (1) • Enables quick response and on-demand production (1) meets customer demands more easily / faster / more accurately (1) • Suitable example e.g. car seat covers / sofa covers / jumpers / tights (1) <p><i>Clear explanation needed for second mark</i></p> <p style="text-align: right;">(2x1) (2x1)</p>	4

Question Number	Answer	
5c(i)	<p><i>Explanation needed for second mark</i></p> <ul style="list-style-type: none"> • Reduction in costs (1) for raw materials as using fewer of them(1) • Reduced dependency (1) on raw materials as materials being recycled(1) • Customer support / good image (1) as people become more environmentally aware (1) • Raw materials such as plastic bottles (1) for making polyester easily available (1) • Eco issues (1) / products more desirable (1) <p style="text-align: right;">(2x1)</p>	2
c(ii)	<p><i>Explanation needed for second mark</i></p> <ul style="list-style-type: none"> • Time and effort needed (1) to plan an approach to recycling (1) • Separation out of fibres / fabrics (1) blends difficult to deal with (1) • Could damage fibres / loss of properties (1) / quality of product might not be as good (1) • Investment in suitable machinery (1) for extraction of suitable materials (1) • Cost - Expensive processes (1) / more expensive than buying new fabrics (1) • Education of public needed (1) to ensure recyclable materials are considered (1) • Choice of fabrics / finishes limited (1) not everything recyclable (1) / large volume needed to select quality fibres (1) <p style="text-align: right;">(2x1)</p>	2
	Total Marks	10

Question Number	Answer	Mark
6(a)	<p>Relevant annotation to show :</p> <ul style="list-style-type: none"> • Reflective textiles (1) • UV reactive (1) • Kevlar (1) • Gortex / Sympatex (1) • Coolmax (1) • Outlast(1) • Tencel / lyocell (1) <p><i>NOT Nomex as it is not suitable for the child's vest</i> <i>Max 1 mark for safety features</i></p> <ul style="list-style-type: none"> • Mobile phone / satnav / GPS / whistle / personal alarm / tracking device / use of Kevlar or reflective textiles for safety e.g. specific panel / design (1) <p style="text-align: right;">(3x1)</p>	3
(b)	<p><i>Do NOT allow justification of material if not used on design</i> <i>Do not allow justification of safety feature</i></p> <p>Reflective textiles</p> <ul style="list-style-type: none"> • Show up in the dark / reflected in car headlights / increase visibility (1) <p>UV reactive</p> <ul style="list-style-type: none"> • Show when sun is strong / warn of need for sun protection (1) <p>Kevlar</p> <ul style="list-style-type: none"> • Very strong / knife resist / bullet resist / protection when falling over (1) <p>Gortex / Sympatex</p> <ul style="list-style-type: none"> • Waterproof but breathable / protect from wind / rain /keep dry / not sweaty (1) <p>Coolmax</p> <ul style="list-style-type: none"> • Waterproof but breathable / protect from wind / rain /keep dry / not sweaty (1) <p>Sympatex</p> <ul style="list-style-type: none"> • Waterproof but breathable / protect from wind / rain /keep dry / not sweaty (1) <p>Outlast</p> <ul style="list-style-type: none"> • Temperature regulation / warm when cold / cool when hot / phase change <p>Tencel / lyocell</p> <ul style="list-style-type: none"> • Soft but strong / absorbent (1) <p><i>Allow justification of material even if not used on design</i> <i>Do not allow justification of safety feature</i></p> <p style="text-align: right;">(2x1)</p>	2

Question Number	Answer	Mark
(c)	<ul style="list-style-type: none"> • Pattern pieces made to tessellate (1) / therefore no waste (1) • Use of CAD for planning layout (1) - careful planning to avoid waste (1) • Automated processes / machinery (1) • Binding on edges (1) instead of hems (1) • Overlocked seams (1) - smaller seam allowances so less fabric used (1) • Velcro / zip (1) - instead of ties (1) • Smaller strips of reflective tape / simpler components / remove decoration / simplify design / omit pockets (1) • Cheaper fabric / blends for main body of vest / economies of scale / bulk buying (1) • All one size / S,M,L / general sizes not age specific (1) • Use of JIT / accurate purchasing (1) • Omit tracking device / sell device separately (1) <p style="text-align: right;">(3x1)</p>	3
(d)	<p><i>Explanation needed for second point</i></p> <ul style="list-style-type: none"> • Source of materials used (1) use of non-renewables for some of materials(1) • Disposal at end of life (1) recycling / textile bank / charity shop / landfill / synthetics / some cannot be recycled (1) • Natural fibres (1) / biodegradable / recyclable (1) • Life Cycle Analysis (1) need for manufacturer to balance all aspects of production (1) • Power / machinery used to manufacture product (1) use of renewable / non-renewable fuels (1) • Off shore manufacture (1) / transport costs (1) • Use of chemicals in synthetic production (1) / effect of chemicals on the environment (1) • Use of dyes (1) / pollution (1) <p style="text-align: right;">(4x1)</p>	4
	Total Marks	12

Question Number	Answer	Mark
7(a)	<p><i>One mark for brief point, two marks if explanation given</i></p> <ul style="list-style-type: none"> <li>• Need to know how many products will be sold (1) to forecast planning (1) / cost planning / direct and indirect finances (1) <li>• Spread costs of production (1) by using equipment for a wider variety / larger number of products (1) <li>• Materials / components cost less if bought in bulk (1) larger amounts cost proportionally less (1) / e.g. Primark (1) <li>• Lower capital costs from finance providers for larger loans (1) more effective to 'think big' (1) <li>• Machinery costs (1) / start-up / running (1) <li>• Train workers for specific jobs (1) work faster / more effectively (1) <li>• Use skilled workers for specific tasks (1) to produce more efficiently (1) <li>• Locate to an area where similar industries are placed (1) for suitable supply network / cut back on transport costs (1) <li>• Scale of production (1) / batch versus mass (1) <p style="text-align: right;">(2x1)</p> <p style="text-align: right;">(2x1)</p>	4

Question Number	Answer	Mark
(b)	<p><i>One mark for action, second mark for explanation</i></p> <ul style="list-style-type: none"> • Cut back on the waste produced / Minimise waste (1) reduce amount going into landfill sites (1) • Use cleaner technology / biotechnology / enzymes / cut back on any polluting materials / processes (1) reduce pollution in atmosphere / water / stop greenhouse effect / green energy (1) • Use of renewable energy sources (1) / wind / water / tides / solar / geothermal (1) • Conserves / manages/ recycles / reuse / resources (1) so they do not run out (1) • Considers effect on environment (1) to protect it for future generations (1) • Links environmental and economic issues in decision making (1) Meet essential human needs for work / energy / water / sanitation (1) • Harvest raw materials so that the quality / quantity is maintained (1) consider essential needs of world's poorer peoples / improve standards of living in LDCs (1) • Fair wages / fair trade (1) / ensure quality of life for workers (1) • Government support / grants available (1) maintains / improves standard of living as well as making profits for manufacturers / financiers (1) • Offset carbon footprint (1) • Cradle to grave (1) / throw away culture (1) / longer life cycle / repair rather than replace (1) <p style="text-align: right;">(4x1)</p>	4
	Total Marks	8

Question Number	Answer	Mark
8(a)	<p><i>One mark for method, second mark for explanation</i></p> <ul style="list-style-type: none"> <li>• Change power for machinery / production (1) use of greener sources of energy / geothermal / wind / hydro / solar / biomass (1) <li>• Change type for transport / need for cleaner engines in lorries (1) use of trains and water transport / biofuels (1) <li>• Use more natural / regenerated fibres - (1) less need for synthetics from oil / coal (1) <li>• Reduce transport (1) harvesting then manufacture closer to source to cut back on transport costs / use of fossil fuels (1) <li>• Synthetic fibres blend with natural fibres (1) less petrochemicals used for fibre production / cuts amount non-renewables needed (1) <li>• Recycling within the process / synthetics can be recycled if used 100% in products (1) blends cannot be recycled (1) <li>• Regenerated fibres renewable source (1) but power for needed for manufacture (1) <li>• Modal / Viscose / Tencel / Lyocell (1) made from softwoods grown in managed / sustainable forests (1) / fewer pesticides (1) 	

Question Number	Answer	Mark
8(a) con't	<ul style="list-style-type: none"> • Environmentally friendly production (Lyocell / Tencel) (1) / use of renewable raw materials / closed loop system to re-use / recycle chemicals / water (1) • Environmental management system (1) to ensure use of materials is efficient (1) • Improve output (1) so raw materials are used effectively (1) • Treat waste more effectively (1) reduce costs / cut pollution (1) / use of non-toxic dyes (1) • Disposal of waste material (1) reuse or recycle as much as possible (1) • Use of waste products in other industries (1) waste fibres used as fertiliser for horticulture (1) / • Redesigning of products / processes (1) make more efficient use of materials (1) / well made / quality items that last longer (1) • Increase environmental awareness of consumers (1) consumer loyalty to environmentally friendly companies (1) • Efficient management of resources (1) wastes less / efficient layplanning (1) / TGM (1) • Products designed so they can be fully or partially re-used or recycled (1) cuts cost of raw materials and processing (1) • Use of biotechnology (1) / organic cotton / naturally grown coloured cotton / natural dyes / fewer pesticides (1) <p style="text-align: right;">(2x1) (2x1) (2x1)</p>	6

Question Number	Answer	Mark
8(b)	<p><i>All points to be justified. No one word answers.</i></p> <ul style="list-style-type: none"> • Instant information available so trends can move fast(1) / told what is in fashion more quickly / new season fashions (1) • Role models / celebrities / celebrity culture / music industry / film stars (1) all seen in latest fashions / copy style / desire to look good (1) • Fashion is seen on TV / internet / magazines (1) / before it is in the shops / shops make copies asap (1) • Fashion magazines suggest trends sooner than before (1) information on availability (1) • Big City Fashion weeks widely reported (1) • Advertising makes changes seem essential (1) • Marketing / brand image / sport / endorsement deals (1) • Negative effect - what is out of fashion / use of sweat shops / moral issues / worn by people with 'wrong' image / what not to wear (1) • Easier to buy - internet marketing (1) • Persuades that fashion is affordable (1) • Consumers encouraged to buy more / shop more frequently (1) • Environmental awareness / Fairtrade cotton / skin cancer / UV awareness (1) • Promotes throw away society / always want the next best thing / short lived fashion (1) <p><i>Allow single reference to a suitable example</i></p> <p style="text-align: right;">(5x1)</p>	5
Total Marks for question		11
Total marks for paper		80