Mark Scheme (Standardisation)
Summer 2008 Final

GCE D&T (6151/01)

A PEARSON COMPANY

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)	**(i) Lyocell** • 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) *NOT sportswear/underwear* (1x1)	
	(ii) Nomex • 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) *NOT protective clothing on its own* (1x1)	
	(iii) Kevlar • Bulletproof vests (1) • Equipment for hot air ballooning / extreme sports (1) • Cables and ropes for bridges / ships / space vehicles (1) • Protective gloves /motorcycle wear (1) • Skis / helmets /tennis racquets (1) • Tyres / car hoses / aircraft structures / boats (1) • workwear / shoes (1) *NOT protective clothing on its own* (1x1)	3

Question Number	Answer	Mark
1(b)(i)	- 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 (1) / travel costs / hotel costs / suitable example needed of cost savings (1) - Time issues (1) / travel time / time differences / getting everyone together in the same place at the same time / suitable examples of time saving (1) - Eco issues (1) / reduces carbon footprint (1) (2x1) (2x1)	4
(b)(ii)	- 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) NOT layplans (1x1) (1x1) (1x1)	3
	Total Marks	10

Question Number	Answer	Mark
2(a)(i)	• 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) (2x1) (2x1)	4
(a)(ii)	• 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) (2x1)	2

Question Number	Answer	Mark
2(b)	- 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) (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) (1x1) (1x1)	2

Question Number	Answer	Mark
(c)	- 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) (2x1) (2x1) *Allow example if clarification of point made*	4
	Total Marks	**12**

Question Number	Answer	Mark
3(a)	*Cannot answer under wrong heading* **Materials production** • Fast repetition (1) of patterns / designs / colour repeats in knitted / woven fabrics (1) • Electronic patterning (1)for garments / garment patterns produced automatically (1) • Spinning machines (1) / winding bobbins / spools / cops (1) • 3D knitted products (1) computer production (1) • Control of looms (1) producing woven fabrics (1) • Printing / embossing (1) • Jacquard loom / knitting machine control (1)for production of complicated designs (1) • Digital stitch control (1)improved quality maintaining set size, number and shape of stitches (1) • Broken yarn detectors (1) / quality checks / sensors (1) • Control over finishing processes (1) / coating (1) **Materials handling** • Spreading of fabrics (1) / many layers / vacuum table / straightening of fabrics (1) • Automatic moving systems / Gerbermover / conveyor belts (1) moving of part made products from one work station to next / large quantities (1) • Hanging garment storage (1) bar coding for products(1) • Tracking / barcodes / stock control (1) distribution systems / intelligent tags / global track and trace (1) • Packaging of products (1) (2x1) (2x1)	4

Question Number	Answer	Mark
(b)	• 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) (2x1) (2x1)	4
	Total Marks	**8**

Question Number	Answer	Mark
4(a)	**Machine embroidery** • 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 / needle (1) • Threading of machine (1) • Use of appropriate stabiliser / stitch and tear (1) • Correct position for embroidery (1) • Hooping (1) • Testing to check tension etc (1) **Appliqué** • Creation of design – simple shapes needed (1) • Division of design into separate shapes / individual stencils / templates (1) • (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) • Pin / tack / bondaweb (1) • Selection of stitches for each piece / zigzag / satin stitch (1) (5x1)	5

Question Number	Answer	Mark
4(b)	**Reflective textiles** • Use of minute glass beads or mini satellite reflector dishes (1) reflect light / safety (1) • Melt spinning of glass beads and resin to productive reflective fibres (1) not obvious in daylight but become reflective in dark(1) • Can be monofilaments or hollowfibres / Reflective webbing / Reflective tape / Scotchlite / Relective Velcro / Thin layer of metal bonded to fabric (1) Aesthetic or functional (1) • Colours changes • Meet legal safety requirements (1) cyclists / workwear / emergency services (1) *NOT 'safety wear' on its own* (2x1)	
	Biostoning • Use of enzymes to remove dye from fabric (1) / does not cause damage to the fabric (1) • Does not use pumice stones to remove dye (1) / more environmentally friendly (not on it's own) (1) • Produces stone washed / worn effect / on denim (1) /removes dye from fabric (1) (2x1)	4
	Total Marks	9

Question Number	Answer	Mark
5(a)	• 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). eg woven tarpaulins, warp knitted geo-textiles, non-woven horticultural fleece.(1) • Use of microfibres (1) to blend (1) / with other fibres to enhance properties (1) • Can be coated with PVC / PTFE / Teflon (1) to make waterproof / stain resistant (1) *NOT laminates* (2x1)	2
(b)	*Manufacturer NOT Consumer* *Clear explanation needed for second mark* • Faster production time (*needs explanation*) (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, etc (1) *Clear explanation needed for second mark* (2x1) (2x1)	4

Question Number	Answer	
5c(i)	*Explanation needed for second mark* • 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) (2x1)	2
c(ii)	*Explanation needed for second mark* • 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) (2x1)	2
	Total Marks	10

Question Number	Answer	Mark
6(a)	Relevant annotation to show : • Reflective textiles (1) • UV reactive (1) • Kevlar (1) • Gortex (1) • Coolmax (1) • Outlast(1) • Tencel / lyocell (1) *NOT Nomex as it is not suitable for the child's vest* *Max 1 mark for safety features* • Mobile phone / satnav / GPS / whistle / personal alarm / tracking device / use of Kevlar or reflective textiles for safety e.g. specific panel / design (1) (3x1)	3
(b)	*Allow justification of material even if not used on design* *Do not allow justification of safety feature* **Reflective textiles** • Show up in the dark / reflected in car headlights / increase visibility (1) **UV reactive** • Show when sun is strong / warn of need for sun protection (1) **Kevlar** • Very strong / knife resist / bullet resist / protection when falling over (1) **Gortex** • Waterproof but breathable / protect from wind / rain /keep dry / not sweaty (1) **Coolmax** • Waterproof but breathable / protect from wind / rain /keep dry / not sweaty (1) **Sympatex** • Waterproof but breathable / protect from wind / rain /keep dry / not sweaty (1) **Outlast** • Temperature regulation / warm when cold / cool when hot / phase change **Tencel / lyocell** • Soft but strong / absorbent (1) *Allow justification of material even if not used on design* *Do not allow justification of safety feature* (2x1)	2

Question Number	Answer	Mark
(c)	• Pattern pieces made to tessellate (1) / so 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) (3x1)	3
(d)	*Explanation needed for second point* • 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) / biodegrable / 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) (4x1)	4
	Total Marks	12

Question Number	Answer	Mark
7(a)	*One mark for brief point, two marks if explanation given* • Need to know how many products will be sold (1) to forecast planning (1)) / cost planning / direct and indirect finances (1) • Spread costs of production (1) by using equipment for a wider variety / larger number of products (1) • Materials / components cost less if bought in bulk (1) larger amounts cost proportionally less (1) / e.g. Primark (1) • Lower capital costs from finance providers for larger loans (1) more effective to 'think big' (1) • Machinery costs (1) / start-up / running (1) • Train workers for specific jobs (1) work faster / more effectively(1) • Use skilled workers for specific tasks (1) to produce more efficiently (1) • Locate to an area where similar industries are placed (1) for suitable supply network / cut back on transport costs (1) • Scale of production (1) / batch versus mass (1) (4x1)	4

Question Number	Answer	Mark
(b)	*One mark for action, second mark for explanation* • 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 don 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) (4x1)	4
	Total Marks	8

Question Number	Answer	
8(a)	*One mark for method, second mark for explanation* • Change power for machinery / production (1) use of greener sources of energy / geothermal / wind / hydro / solar / biomass (1) • Change type for transport / need for cleaner engines in lorries (1) use of trains and water transport / biofuels (1) • Use more natural / regenerated fibres -(1) less need for synthetics from oil / coal (1) • Reduce transport (1) harvesting then manufacture closer to source to cut back on transport costs / use of fossil fuels (1) • Synthetic fibres blend with natural fibres (1) less petrochemicals used for fibre production / cuts amount non-renewables needed. (1) • Recycling within the process / Synthetics can be recycled if used 100% in products (1) blends cannot be recycled (1) • Regenerated fibres renewable source (1) but power for needed for manufacture (1) • Modal, viscose, Tencel, lyocell (1) made from softwoods grown in managed / sustainable forests (1) / fewer pesticides (1)	

Question Number	Answer	

8(a) con't	• 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)
	
	                                                                          (2x1)
	                                                                          (2x1)
	                                                                          (2x1)
		6

Question Number	Answer	
8(b)	*All points to be justified. No one word answers.* • 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) (5x1) *Allow single reference to a suitable example*	5
	Total Marks	11
	Total marks for paper	80