

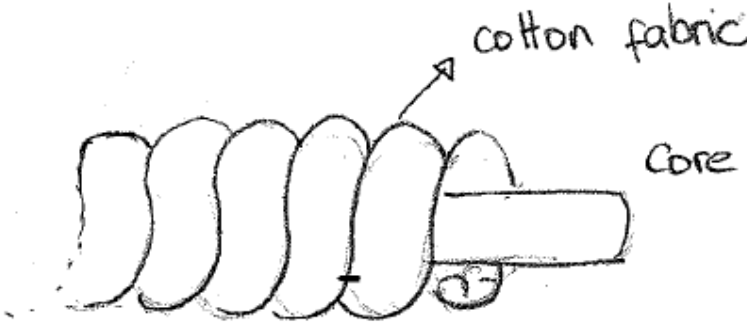
Mark Scheme (Results) Summer 2008

GCE

GCE Design and Technology (6150) Paper 1

Unit 6150/01 Knowledge and Understanding of Product Design

Question Number	Answer	Mark
1 (a)(i)	<ul style="list-style-type: none"> • High strength (1) • Dyes well (1) • Can be textured / bulked / heat set (1) • Can be developed to be a fine micro fibre or coarse fibre so can fit a wide variety of purposes (1) • Non- absorbent / prone to static (1) • Very good wicking properties (1) • Windproof / hydrophobic (1) • Resistant to weak acids / alkalis / solvents / mildew / fungus (1) • Crease resistant (1) • Good soil & stain release but not oil or grease & non allergenic (1) • Resilient / abrasion resistant (1) • Easy care (1) <p><i>Do not accept 'Thermoplastic'</i></p> <p style="text-align: right;">(2x1) (2x1)</p>	4
(ii)	<ul style="list-style-type: none"> • Acrylic (1) • nylon (polyamide) (1) • Polypropylene (1) • PVC / Poly vinyl chloride (1) <p style="text-align: right;">(2x1)</p>	2
(b)	<p>Fleece jackets</p> <ul style="list-style-type: none"> • Bulkier (1) / thicker yarn- higher yarn count (1) • Warmer (1) - traps air in crimps / coils or loops (1) • Softer (1) - fluffed up fibres (1) <p>Tights</p> <ul style="list-style-type: none"> • soft handle (1) - structure remains loose and flexible (1) • more elastic (1) - different shrinkage rates / good crease recovery / better fit (1) • warmth-traps air (1) / crimps / coils or loops (1) <p>Underwear</p> <ul style="list-style-type: none"> • Absorbent (1) - increases the moisture transport (1) • more elastic (1) - different shrinkage rates / good crease recovery (1) • Softer (1) - gentler against the skin (1) <p style="text-align: right;">(2x1)</p>	2

Question Number	Answer	Mark
(c)	<ul style="list-style-type: none"> • Thermoplastic polymers (1) soften when heated / become hard again when cool (1) • Melts (1) when exposed to high temperatures / changes shape / shrinks / will stick to the iron (1) <p><i>Do not accept 'high temperatures on it own'</i></p> <p style="text-align: right;">(2x1)</p>	2
(d)	<ul style="list-style-type: none"> • Wrapped fibre / sheath (1) • Core (usually lycra / elastane) (1) <p><i>Must have diagram and labels for full marks.</i></p> <div style="text-align: center;">  </div> <p style="text-align: right;">(2x1)</p>	2
	Total Mark	12

Question Number	Answer	Mark
2 (a)	<ul style="list-style-type: none"> • Flatbed machines knit rectangular shaped panels for garments / jersey fabric / weft knit / flat pieces / 2D fabric (1) • Circular knitting machines produce single or double jersey fabric / weft / warp knit / tubes / circles of fabric / 3D fabric / total garment technology TGM (1) / e.g. suitable example <p><i>Allow 'weft knit & jersey' once only unless qualified</i></p> <p style="text-align: right;">(1x1) (1x1)</p>	2
(b)	<ul style="list-style-type: none"> • Very stretchy (1) so fits over a wide range of shapes and sizes (1) • Great elasticity widthways (1) can retain its shape after wide stretch (1) • Decorative effect (1) distinction between / looks better than a plain pair (1) <p style="text-align: right;">(2x1)</p>	2
(c)(i)	<p>Positive</p> <ul style="list-style-type: none"> • Stretchy to wear (1) • Comfortable / warm to wear (1) • Very good crease resistance (1) • Machine washable (1) • Less likely to cause an allergic reaction (1) • Hand knitting / pleasurable / no machines (1) <p style="text-align: right;">(1x1) (1x1)</p>	2
(c)(ii)	<p>Negative</p> <ul style="list-style-type: none"> • Loops interlock horizontally (1) may ladder / dropped stitch may make a hole, unravels easily / less durable (1) • Is very stretchy (1) and can lose shape easily (1) • Has a wrong and a right side (1) more care taken when planning pattern lay / cutting (1) • Iron with care / thermoplastic fibres (1) • Edges curl in (1) • Loses shape easily (1) when washed unless dried flat (1) <p style="text-align: right;">(2x1) (2x1)</p>	4

Question Number	Answer	Mark
(d)	<ul style="list-style-type: none"> • Tubes of fabric made quickly (1) - can be cut open to create flat fabric / seamless (1) • Can be used for a range of products from socks to t-shirts (1) the size of machine depends on the product it will make e.g. Jacquard-flatbed (1) • CAM systems are used for continuous production (1) time / efficiency qualifications (1) • CAD / CAM allow versatility in designing & pattern transfer (1) - coloured yarns can be fed into stitch type at the amount of colour needed / correct speed (1) • Machinery can be programmed (1) to create CAD design / range of type of fabric produced (1) • TGM / exact measurements needed (1) <p style="text-align: right;">(1x1) (1x1)</p>	2
(e)	<ul style="list-style-type: none"> • Warm properties (1) • It is hard wearing and the pile does not flatten as easily so wears well (1) • Soft surface / nap / comfort (1) • The cords can be varying widths for the smaller frame (1) • Appearance (1) • Washable / easy to care for (1) <p style="text-align: right;">(1x1) (1x1)</p>	2
	Total Mark	14

Question Number	Answer	Mark
3(a)	<p>Coating - Teflon, PVC (plastic coating)</p> <ul style="list-style-type: none"> • Wipeable (1) • Long-lasting protection for fabric (1) <p>Stain-resistant</p> <ul style="list-style-type: none"> • Minimises damage to bag from leaking purchases (1) <p>Water-repellent</p> <ul style="list-style-type: none"> • Keep products dry in wet weather (1) <p>Mercerising</p> <ul style="list-style-type: none"> • Stronger (1) <p style="text-align: right;">(1x1) (1x1)</p>	2
(b)	<ul style="list-style-type: none"> • Neaten top / hem top edge (1) • Press sides / on seam line (1) • Cut off corners diagonally / at the bottom (1) • Mitred corners (1) • Position in place / pin or tack (1) • Sew 3 sides (1) • Reinforce top corners (1) <p><i>Accept any logical order, 1 mark per bullet point. Must end with application to get full 6 marks. Must have both notes and diagrams for full 6 marks. Accept hand or manufactured.</i></p> <p style="text-align: right;">(6x1)</p>	6
(c)	<ul style="list-style-type: none"> • Manual tugging (1) check seam strength (1) • Ergonomically designed (1) can fit fingers / hand (1) • Bulky corners (1) corners are square and prominent (1) • Placement of the pocket (1) flat at right angle (1) • Pocket is at marked position (1) (using template to mark the position / visual check) • Topstitching is neat (1) equally spaced Straight seams (1) <p style="text-align: right;">(2x1) (2x1)</p>	4
	Total Mark	12

Question Number	Answer	Mark
4(a)	<p>Preparation of production patterns</p> <ul style="list-style-type: none"> • Patterns can be designed and altered quickly to meet client specifications (1) • Use of virtual modelling for accuracy (1) • Mark notches and sewing guides automatically(1) • Developed from a basic block (1) • Stored in database (1) • Accurate sizing (1) • Downloading to cutting (CAM) (1) • Time / cost efficient (1) <p>Grading</p> <ul style="list-style-type: none"> • Patterns will be adjusted to the correct sizes without the need of manual drawing (1) • Rapid calculations / accurate sizing (1) • Digitising (1) <p>Designing the lay plan</p> <ul style="list-style-type: none"> • Marker making / utilises CAD to speed up pattern lay (1) • Minimises waste / works to fit in the pattern pieces in the most efficient way into a set amount of fabric (1) • Correct layout for type of fabric e.g. Pile / grain (1) <p><i>Do not allow same answers in different sections</i></p> <p style="text-align: right;">(2x1) (2x1)</p>	4
(b)	<p>Spreading</p> <ul style="list-style-type: none"> • Cloth can be automatically wound off a roll and spread using a driven carriage (1) • Plies spread quickly and efficiently (1) <p>Combined</p> <ul style="list-style-type: none"> • Integrated pattern development with grading, marker making, spreading & labelling before cutting (1) <p>Cutting</p> <ul style="list-style-type: none"> • Match patterns, checks or stripes & cutting through plies of fabric (1) • No need for physical cutting marker with modern CAD system / direct download of layplan (1) • Cutting machines are automated (1) • Cutting through plies of fabric up to 100 (1) • Reduces human error / accuracy (1) <p style="text-align: right;">(2x1)</p>	2

Question Number	Answer	Mark
(c)	<ul style="list-style-type: none"> • Companies can display the Kitemark logo (1) that assures customers that the product has been independently tested and is of a high quality (1) • Fit the safety standards (1) • Status symbol (1) • Manufacturers can charge a higher price (1) for higher quality (1) • Manufacturers can eliminate unseen problems (1) by requesting controlled tests to be performed by the BSI / external sources can be more reliable / have standardised standards (1) • Cost savings / reduced amount to faulty goods (1) • CE marked products have passed an international standard (1) and can be sold around Europe in the knowledge that they conform to EC standards (1) <p><i>Name of testing form- 1 mark, must explain point for 2 marks</i></p> <p style="text-align: right;">(2x1) (2x1)</p>	4
	Total Mark	10

Question Number	Answer	Mark
5(a)	<p>Virtual modelling</p> <ul style="list-style-type: none"> • Allow a 'virtual' mannequin to be dressed (1) designs altered on 2D patterns, and then alterations transferred back to dressed mannequin to check fit & accuracy / presentation to client (1) • Use anthropometrical data (1) to alter the size and fit on a life like body image as the patterns are being designed (1) • Can make changes easily (1) • Show Texture mapping (1) that creates 'photo-realistic' 3D rendering of designs, surfaces, colours textures & patterns / drapes (1) • Saves time and money on prototyping / materials (1) <p>2D / 3D modelling can:</p> <ul style="list-style-type: none"> • Graphic workstations allow designers to create sketches, illustrations, print and knit & weave designs (1) • Can make changes easily (1) • Can be seen from different angles (1) • Digital cameras are used to input information (1) - they can show using plain fabric of similar weight how it performs, style and fit (1) • CAD for store displays (1) • Saves time and money on prototyping (1) <p style="text-align: right;">2x1 2x1</p>	4

Question Number	Answer	Mark
(b)(i)	<p>ICT software</p> <ul style="list-style-type: none"> • PDM software (manages & monitors all the manufacturing information) (1) stock control (1) • Word processing (1) presentation of communication / organisation • E - mail (1) easy communication (1) • Database (1) to produce a master scheduling programme / access (1) • Excel spreadsheets (1) wages / costs / numbers • Graphs & charts (1) Sales / state of production • Gantt chart (1) time plan (1) • Single mark for mention of layplan (1) • Grading (1) digitising (1) <p style="text-align: right;">2x1 2x1</p>	4
(b)(ii)	<ul style="list-style-type: none"> • Allocating work in the most profitable way (1) - work orders / deadlines / production techniques (1) • Providing information to other departments (1) about the progress of orders (1) • Adjusting programme schedules (1) to meet changing situations / schedules / time restraints / time plans (1) • Identifying CCP's (1) • Risk assessment (1) • Stock control / equipment (1) • Costs (1) <p style="text-align: right;">2x1</p>	2
Total Mark		10

Question Number	Answer	Mark
6(a)	<p data-bbox="395 300 699 331">'Make through' system</p> <ul data-bbox="427 367 1161 1137" style="list-style-type: none"> <li data-bbox="427 367 1129 434">• Single operator carries out the main construction (1) highly skilled (1) <li data-bbox="427 439 746 470">• Unique / original (1) <li data-bbox="427 474 1123 542">• More expensive fabrics / components / products (1) <li data-bbox="427 546 1101 613">• Less skilled workers (1) do the preparatory and finishing work (1) <li data-bbox="427 618 798 649">• Personal satisfaction (1) <li data-bbox="427 654 1101 721">• Can be more intricate designs than products of quick cellular response system (1) <li data-bbox="427 725 1158 815">• Teams of 8-10 skilled operators share the responsibility for complete batches / assembly line (1) <li data-bbox="427 819 1114 887">• Can be produced in batches according to sizes / fast fashion / season (1) <li data-bbox="427 891 1059 922">• Standard / average sizes / 95 percentile (1) <li data-bbox="427 927 1123 994">• Economies of scale / bulk buying / standardised fabrics / components / products (1) <li data-bbox="427 999 1142 1066">• More motivating resulting in high quality products (1) <li data-bbox="427 1070 999 1137">• Simplified designs / products for easier manufacture (1) <p data-bbox="395 1173 916 1205"><i>Must address both areas for full marks</i></p> <p data-bbox="1114 1205 1161 1236">2x1</p> <p data-bbox="1114 1240 1161 1272">2x1</p> <p data-bbox="1114 1276 1161 1308">2x1</p>	6

Question Number	Answer	Mark
(b)	<ul style="list-style-type: none"> • Automated and robotic devices (1) are able to do repetitive tasks / uniformly / more frequent testing is a possible / reliable product outcome (1) • Faster and efficient (if qualified) (1) • Fatigue can work for (24hrs)(1) - do not need breaks and reduce human error / numbers too great for human checking (1) • Safety checks (1) • Consistent pressure / testing / accuracy (1) • No rights (1) - so no union intervention (1) • Electronic sensors screen & monitor (1) different manufacturing processes checking for faults e.g. broken yarn detectors, tension devices / more immediate pick up of faults (1) • Programmed QC's (1) allow the production of high quality identical products / quicker (1) <p><i>Do no allow reference to labour costs</i></p> <p style="text-align: right;">2x1 2x1 2x1</p>	6
	Total Mark	12

Question Number	Answer	Mark
7(a)(i)	<ul style="list-style-type: none"> • Fast changing fashion (1) quick turn around from catwalk to high street (1) • Consumers prepared to shop around so manufacturers have to remain competitive (1) cost / variety (1) • Quick response systems available (1) • Available to fit a range of standard sizes (1) • Cheap fashion readily available (1) economies of scale (1) • Wider choice of products available / to a wide audience ready to wear products (1) <p style="text-align: right;">2x1 2x1</p>	4
(ii)	<ul style="list-style-type: none"> • Promotes the throw away society (1) • People expect lower quality (1) e.g. Decorations fall off • Can encourage extortion of less developed countries (1) • Loss of individuality (1) <p style="text-align: right;">2x1</p>	2
(b)	<ul style="list-style-type: none"> • Isolation from families (1) as jobs concentrated in the cities (1) • Over crowded (1) - as families move to find work in factories (1) • Environmental issues (1) must qualify for 2nd point (1) • Fair trade (1) - consumers give backing to better work ethics (1) • Provision of work (1) better living conditions (1) • Exploitation by brand names for greater profit (1) • Cottage industries and traditional craft methods could not compete against mass production (1) so workers went into factories to find jobs (1) • Mass production led to 'sweat shop' / poor working conditions (1) • Economy / wealth taken away from workers country (1) <p><i>Allow subjective views if qualified</i></p> <p style="text-align: right;">2x1 2x1</p>	4
Total Mark for question		10
Total marks for paper		80