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Mark Scheme (Post-Standardisation)
Summer 2011

GCSE

GCSE Design & Technology (5TT02/01)

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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	**D**	**(1)**

Question Number	Answer	Mark
2	**A**	**(1)**

Question Number	Answer	Mark
3	**C**	**(1)**

Question Number	Answer	Mark
4	**C**	**(1)**

Question Number	Answer	Mark
5	**B**	**(1)**

Question Number	Answer	Mark
6	**A**	**(1)**

Question Number	Answer	Mark
7	**D**	**(1)**

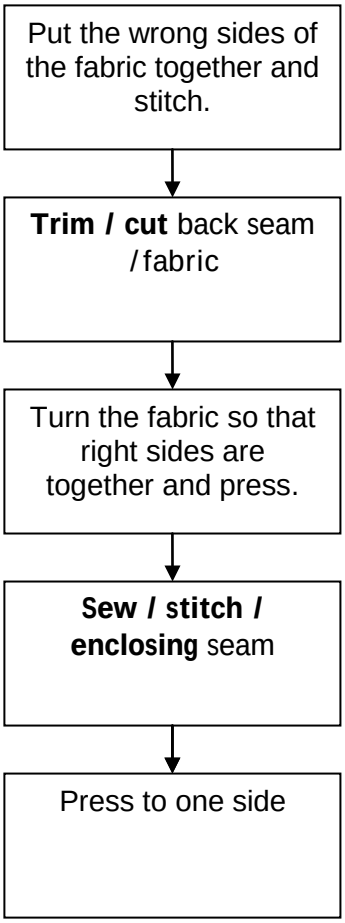
Question Number	Answer	Mark
8	**A**	**(1)**

Question Number	Answer	Mark
9	**A**	**(1)**

Question Number	Answer	Mark
10	**B**	**(1)**

Question Number	Answer	Mark
11(a) 1.7 Comp, mat, equip & pro.	**Button (1)** — To open and close a product Sewing machine — To **quickly** and **securely** sew/ stitch/attach together fabric/material. Create machine stitching)/ decorative stitching **(1)** Iron — To use heat to get rid of **creases**. To **make a crease** or pleat. To **flatten** when making. To make a product more **presentable**. Iron clothes. Bond fabrics together. Press **(1)** **Tape measure / measuring tape / tape for measuring (1)** — Measuring **1X1** **1X1** **1X1** **1X1**	**(4)**

Question Number	Answer	Mark
11(b)1.5 Fabrics	Characteristic **What** **Why** • Sizes of 'wale'/ thickness (rib) can differ (1) appropriate size for body chosen (1) • Distinct pattern (1) attractive & traditional in children's clothing (1) • Comfortable/soft (1) texture due to nap raised fibres / less irritable against the skin/often made in cotton/cotton mixtures (1) • Colour/tone change (1) aesthetic qualities enhances appearance (1) • Strong/durable/practical (1) suitable for active wear/ playing in • Warm (1) as ribs form an insulated cushion of air (1) *Candidates will get 1 mark for characteristic wherever it appears and a 2nd mark for the reason* **1X1** **1X1**	**(2)**

Question Number	Answer	Mark
11(c)(i) 2.4 joining & finishing techniques	Correct **two** stages identified:  **1X1** **1X1**	**(2)**

Question Number	Answer	Mark
11(c)(ii) 2.4 joining & finishing techniques	One advantage from: **Seam is** **What it does** • Hardwearing / durable/strength/secure (1) withstand frequent washing / actively strengthened with two rows of stitching/will not tear at the seam-play (1) • More comfortable(1) gives a soft edge to the seam/ good for sensitive skin / less friction (1) • Seam enclosed (1) Neater, professional finish, attractive / has no raw edges exposed/ prevents fraying (1) **1X1** **1X1**	**(2)**

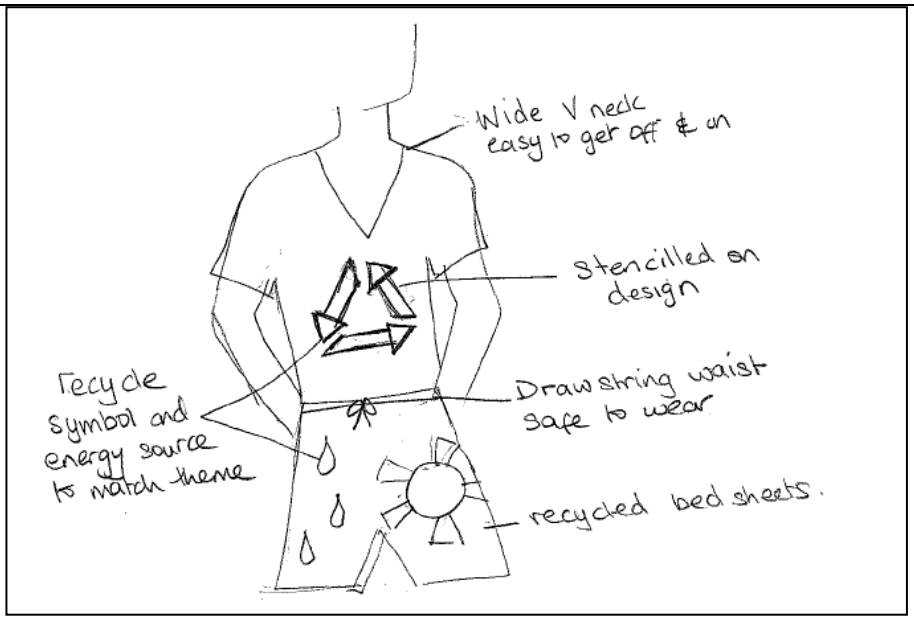
Question Number	Answer	Mark
11(d) 2.5 Finishing processes	**Two** finishes given from: • Easy-care (1) • Anti-static (1) • Anti-felting (1 • Shrink resistant (1) • Bleaching (1) • Mercerising (1) • Shrink resistant (1) • crease resistant (1) • Stain resistant (1) • Flame/fire- resistant/ proofing/ Proban (trade name)(1) • Water/ shower- proofing/ repellent / resist (1) • Laminating (1) • Coating (1) **1X1** **1X1**	**(2)**

Question Number	Answer	Mark
11(e) 3.3 Manufacturing processes	**Two** reasons given from: • allows for **checks** to be **built in**to the manufacturing process/identical products (1) • so that **high quality products** are made (1) • so that costly **mistakes** are **avoided** in production (1) • through tests they get vital **feedback** information on materials and production (1) • to maintain manufacturers **reputation** (1) • So that **less** products are **returned** (1) *Not about safety* **1X1** **1X1**	**(2)**

Question Number	Answer	Mark
11(f) 1.5 Fabrics	**Two** reasons given from: • It will need to be **placed** carefully so that the pattern / nap/garment **matches up (1)** • **More fabric** to get pattern pieces in the **right place** / more potential for **waste** and **higher cost (1)** • The patterned fabric may be printed in **one direction** so you are not always able to turn pattern **upside down (1)** • Different **size pattern pieces** could cause **joining in different places. Grading issues**. **(1)** **1X1** **1X1**	**(2)**

Question Number	Answer	Mark
11(g) 2.1 Scale of production	**Three** benefits given from: • fixed number of identical products produced at once **(1)** • relatively inexpensive production system/ saves money in production eg repetitive processes **(1)** • Easy to modify **(1)** • Seasonal changes/fast / high fashion **(1)** • Number of products can be changed to meet demand **(1)** • Machinery & equipment can be changed in between batches/ flexible production **(1)** • Storage cost reduced due to JIT **(1)** • Skilled workers/ get less bored as skills can be adapted/to meet new batch requirement **(1)** *('cheaper' and 'quicker' not allowed on their own they must have a reason with them)* **1X1** **1X1** **1X1**	**(3)**

Question Number	Answer	Mark
12 **4.3** **Application of knowledge and understanding**	**Design idea 1** Candidates may answer any specification point in either graphical form or by annotation. **No marks are awarded for the quality of graphical communication.** • **1.be suitable for 14-16 year olds (1):** eg use colours (earthy, bold, eye-catching), trims, design and images, style • **2.Clearly reflect the theme (1):** Obvious link to the environment. Factories, pollution, nature, water, wind, rain etc • **3.be cheap to make (1):** eg inexpensive fabrics (eg felt)/ few components or decorations/ recycled fabric/ production method eg CAD/CAM • **4.be safe to wear(1):** eg non-flammable fabric, no loose pieces no tripping, secure components (can be visual, only once) • **5.be easy to put on and take off** (not related to the head dress) **(1):** eg uncomplicated design eg opens all the way down the front, easy to use components, tie opening, use of Velcro, no back fastening on bodice, stretchy fabric eg Jersey, lycra®, stretchy product, T-Shirt. • **6.Use decorative techniques (1):** eg appliqué, embroidery, fake fur trim, different coloured fabrics, frills, piping etc • **7.Consist of two separate garments(1):** eg two clearly defined and identified pieces of clothing • **8.Be suitable for one off production in the classroom (1):** eg evidence that the process is suitable for one-off production, eg (unusual) shape, nothing that requires advanced skills, hand processes eg sequins, features or decoration (eg hand painting/ stencilling) which make it more suitable for one -off **8X1**	**(8)**

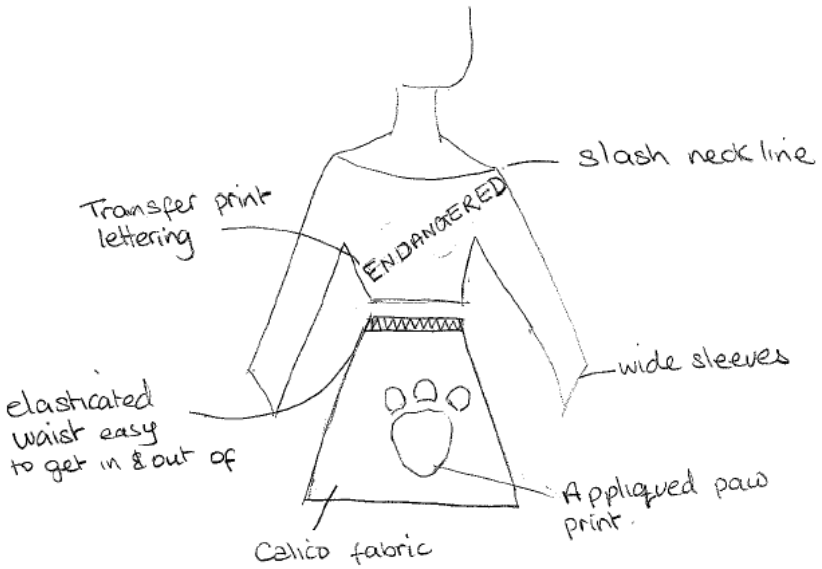


(8)

Design idea 2

Marks for design idea 2 can only be awarded where specification points are resolved differently than in design idea 1.

Example of candidate response:



8X1

Question Number	Answer	Mark
13(a) 1.3 Synthetic polymers	**Two** properties and linked justification from: • **Property:** Lightweight (1) • **Justification:** not bulky or heavy so wearer is able to manoeuvre around (1) • **Property:** Easy to wash/ easycare (1) • **Justification:** Can be cleaned after use / does not require dry cleaning (1)	

	• **Property:** Very Strong/ durable/ resilience(1) • **Justification:** Hardwearing so won't tear easily during activity / synthetic fibre (1) *Interchangeable P & J* • **Property:** Inexpensive (1) • **Justification** So cost of product is reasonable (1) • **Property:** Insulates / warm (1) • **Justification:** For shield against the wind/ outdoor weather (1) • **Property:** Crease resistant/ good elasticity/recovery (1) • **Justification:** Trousers will remain neat/ smart whilst worn/ low heat or no need to iron (1) • **Property:** Non-absorbent/ water resistant (1) • **Justification:** stains resistant (1) 2X1 2X1	**(4)**

Question Number	Answer	Mark
13(b) 2.6 Printing processes	**One** description given from: *(computer)* **Transfer printing** • **Computer** needed to transfer design **(1) printed** onto **special transfer paper**(**1)** • Design is then **transferred face down onto fabric (1) using heat press or ironing(1)** *(heat)* **Transfer printing** • **Design printed onto special paper (wax crayons/ special pens** in classrooms) **(1) (sublimation) paper** with coating on it (1) then transferred onto fabric using **special heated rollers (1) onto fabric with 50% + synthetic content (1)** *(**created image** not rewarded on its own)* **2X1**	**(2)**

Question Number	Answer	Mark
13(c)(i) 3.1 Analysing products	1 mark- brief mention of how the outfit has high visibility 2 marks – a developed explanation of how the outfit has high visibility **Why** **How** • **Reflective braces** (1) easily visible when light hits them (1) • **Bright blue and orange** (1) **contrasting** colouring stands out (1) • **Dye** is **eye catching** (1) because it is **fluorescent** (1) *Allow for similar words for eg 'eyecatching'* **2X1**	**(2)**

Question Number	Answer	Mark
13(c)(ii)3.1 Analysing products	1 mark- brief mention of how the outfit is adjustable for wearer 2 marks – a developed explanation of how the outfit is adjustable for wearer • **Velcro** fastening on braces (1) adjustable so can allow for differences in **height/ size** / length(1) • **Elastic** (1) **expands/ stretches** so **accommodates different sizes/fit/shape** (1) 2X1	**(2)**

<table>
<tr><th>Question Number</th><th>Answer</th><th>Mark</th></tr>
<tr><td>13(d) 3.1 Analysing products
QWC</td><td>Evaluation to address the following issues:
<table>
<tr><th>Outfit A</th><th>Outfit B</th></tr>
<tr><td>Reflective braces can stand out in the dark (1) relies on a light source (1)</td><td>Dark plain colour (1) Does not stand out in bright/dim light (1)</td></tr>
<tr><td>Elasticated waist and Velcro simple to use / put on/take off(1)</td><td>Buttons more fiddly to get in & out of(1)</td></tr>
<tr><td>100% cotton breathable and cooler (1)</td><td>Nylon – can get hot and sweaty (1)</td></tr>
<tr><td>Printed motif simple to make. (1) Bright colours / patterned fabric eye catching. (1)</td><td>Plain T shirt and Plain pastel trousers dull (1) Less eye catching because of fewer colour and patterns used so less suitable for theme (1)</td></tr>
<tr><td>Shape matches idea of clown (1) zipped pockets sub assembly relatively same production time (1)</td><td>Less attractive (1) button fly sub assembly relatively same production time (1)</td></tr>
<tr><td>Added security pocket/ easy to operate with zip (1) valuables don’t fall out (1)</td><td>Large pockets hold objects to keep hands free at parties (1) Objects can fall out (1)</td></tr>
<tr><td colspan="2">Loose fit and unisex (1 mark max) for a mention of either of these.</td></tr>
</table></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	Candidate identifies the area(s) of comparison with no development OR identifies and develops one area. Shows limited understanding of the comparison. Writing communicates ideas using everyday language but the response lacks clarity and organisation. The candidate spells, punctuates and uses the rules of grammar with limited accuracy.
Level 2	3-4	Candidate identifies some areas of comparison with associated developments showing some understanding of the comparison. Writing communicates ideas using D&T terms accurately and showing some direction and control in the organising of material. The candidate uses some of the rules of grammar appropriately and spells and punctuates with some accuracy, although some spelling errors may still be found.
Level 3	5-6	Candidate identifies a range of areas of comparison with associated developments showing a detailed understanding of the comparison. Writing communicates ideas effectively, using a range of appropriately selected D&T terms and organising information clearly and coherently. The candidate spells, punctuates and uses the rules of grammar with considerable accuracy.

Question Number	Answer	Mark
14(a) (i) **5.3 CAD/CAM technology**	**One** statement from: Layplanning • Layplan designed using CAD so sizes/templates can be **arranged efficiently** (1) • **Profit** made by **less wastage** of fabric (lower costs)(1) • Sent **direct to CAM** machines/ plotters (1) • **Save time** rather than moving templates/ cutting by hand (1) • **Less human error** must qualify **(1)** **1X1**	**(1)**

Question Number	Answer	Mark
14(a) (ii) 5.3 CAD/CAM technology	**Two** reasons given from: • **Tracks stocks of materials & components**(1) • **Large storage facilities not needed (JIT)** (1) • **Money spent when needed** not in advance(1) • **Improves efficiency, accuracy, speed -** reduces human error (or any other clearly linked justification) **(1)** • **Computer based system** gets everything in the right place at the right time(1) • **Barcodes** used to assist with tracking & counting**/(EPOS)** system supports retail stock maintenance **(1)** *Last point related to ICT but links clearly to computer assisted manufacturing* **1X1** **1X1**	**(2)**

Question Number	Answer	Mark
14(b) 5.2: Digital media and new technology	Any description from: 1st • Tiny particles of eg chemicals or scents, **gas/liquids/solids** are enclosed (1) in microscopic bubbles and protected from outside environment (1) 2nd • Contents slowly **released when friction** applied or contact with skin (1) shielding material **broken** into (1) **2x1**	**(2)**

Question Number	Answer	Mark
14(c) 3.3 Manufacturing processes	**Any** advantage and disadvantage given from **one** of the following: **Fibre** Advantage – At the fibre stage the **dye penetrates well (1) so depth of colour can be achieved evenly**. (1) **Colours can be blended (1) so more choice of shades and tone**. (1) Disadvantage – Colours must be **decided early** (1) It relies on **accurate predictions and forecasting** (1) **Fabric** Advantage – The fabric colour can be **decided later (1) so there is more knowledge of current markets/trends**(1) Disadvantage - there are **large amounts of fabric (1)** to handle so more **risk of uneven dyeing/ achieving colour accuracy** (1) **Garment** Advantage – the decision of colour choice can be made at the **latest possible stage(1) so accurate predictions can be made**.(1) Colourist's information is more **up-to date** (1) so latest trends can be met (1) Disadvantage – **dye may not penetrate evenly (1)** so colouration may **not be as thorough** (1) not cost effective (1) as so many products need to be dyed and finished 2X1 2X1 *Must give an advantage and disadvantage for full marks*	**(4)**

Question Number	Answer	Mark
14(d) 2.5: Finishing processes	**One description** from the following: Enzymes / Bacteria (1) are used to attack cellulosic fibre ends on the surface of the fabric / make it softer, smoother and less likely to pill/bobble (1) **2X1**	**(2)**

Question Number	Answer	Mark
14(e) 1.6: Modern and smart materials	**One** benefit from: • **Filtration of bacteria (1)** as fibre particles are so tiny(1) • Can **incorporate medical properties (1)** that kill viruses and bacteria (1) • **Stain resistant**(1) able to manipulate properties in fibres at a molecular level to stop stains adhering/ to fabric (repels) (1) **2X1**	**(2)**

Question Number	Answer	Mark
14(f) 6.1: Minimising waste QWC	Evaluation to address the following issues: **Raw materials, energy use and manufacture** • Choose **non-woven materials** because they miss out the spinning stage and weaving stage. • Use **naturally coloured fibres** or **GM** cotton therefore no dyeing necessary. • Surgical garments use less **intense seasonal colours** so less dye needed. • Fibre choice -Suitable natural fibres like **linen** with natural **anti-bacterial properties** so less finishing needed. • Natural fibres use **pesticides, land usage** and **soil erosion therefore social and environmental implications are increased** • Synthetic fibres - **consumption of vital non-renewable** resources that damage the environment. • **Waste water** containing chemicals is released from dyeing /finishing will need to be **re-used or treated** before release to recover waste. • **Enzymes** can be used to clean waste eg water. • **Layplanning and cutting** need careful CAD/CAM planning to reduce wasted fabric. **Use and aftercare** • **Short life cycle** so garments need to be strong but not necessarily durable. • **Sterile** garments needed so aftercare could involve **high temperature washing** to achieve this and use large amount of detergents which produce waste water. • **Synthetic** fibres can be washed at **lower temperatures** and dry fairly quickly so use less energy. Unlikely to be used as does not suit end use & aftercare. **Disposal** • **Disposable** products are **more hygienic** but can cause waste issue/ landfill. **Re-use / recycle** • **Biodegradable fabrics will** decompose. Synthetic fabrics do not break down creating landfill issues. • Surgical garments are unlikely to be reused or recycled because of **contamination** issues so recycling waste is an environmental issue. Likely to be **incinerated** causing air pollution • Tencel® clean technology and recycled fibre	**(6)**

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