

Mark Scheme (Results)

November 2020

Pearson Edexcel GCSE
In Design & Technology (1DT0)

1E: Textiles

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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.

Section A – Core content

| Question number | Answer | Mark |
|-----------------|---|------|
| 1 (a) (i) | Any one property from: good resistance to corrosion (1) good fluidity / casts well (1) machinability (1) | (1) |

| Question number | Answer | Mark |
|-----------------|---|------|
| 1 (a) (ii) | Any one property from: water proof / water resistant (1) durable / long lasting (1) plasticity / softened when heated (1) tough / impact resistance (1) | (1) |

| Question number | Answer | Mark |
|-----------------|---|------|
| 1 (a) (iii) | excellent for scoring / bending / folding (1) rigid (1) hygienic / safe for food use / non-toxic (1) pure with no smell or taste (1) good printability (absorbency) / takes ink well (1) stiffness (1) | (1) |

| Question number | Answer | Additional guidance | Mark |
|-----------------|--|--|------|
| 1 (a) (iv) | Any one property from: hard / resistant to wear / indentation (1) tough / impact resistance (1) good compressive strength (1) | Do not accept strong / high strength | (1) |

| Question number | Answer | Additional guidance | Mark |
|--------------------|--|--|------|
| 1 (b) | A calculation that includes: • correct working 1.35 x 3.55 = 4.7925 (1) • correct answer to the nearest penny / 2 decimal places £4.79 (1) | Award full marks for correct numerical answer without working. Allow for ECF if candidate gets part of calculation wrong. | (2) |

| Question number | Answer | Mark |
|-----------------|---|------|
| 1 (c) | Any one advantage for using polyester for the school tie (1) and a linked justification of that advantage (1). It is stain resistant (1) so it will not mark / stain if food / drink gets spilt on it (1) It hangs / drapes well (1) which means it will look nice / presentable when worn / tied (1) It dries quickly (1) so it can be washed overnight and be ready for school the next day (1) It is resistant to abrasion (1) which means it will not get damaged / scarred if it rubs on a blazer / desk (1) It can be recycled (1) which means it does not have to end up in landfill (1) It does not shrink (1) therefore will not lose shape when it gets washed / wet (1) Polyester has good colour retention (1) so colour will not fade over time / resists fading in sunlight (1) Do not accept generic statements related to the fabric construction rather than the polyester fibres. | (2) |

| Question number | Answer | Additional guidance | Mark |
|-----------------|---|-------------------------|------|
| 2 (a) | Any one manufactured timber from: MDF / Medium Density Fibre board (1) Plywood (1) Chipboard (1) Blockboard (1) Laminboard (1) | Do not accept hardboard | (1) |

| Question number | Answer | Mark |
|-----------------|--|------|
| 2 (b) | Any one reason for using SMAs (1) and a linked justification of that reason (1). | (2) |
| | If they have been plastically deformed / bent into a shape that is not right / not big enough they can be heated (1) which means they go back to their original shape / can be used again to test a new shape / saves resources (1) Once the correct shape / size / profile has been achieved the material can be heated (1) which means it will go back to its | |
| | original shape / can be used for something else (1) It is easier to reset / straighten the SMA wire in comparison to copper wire (1) because it can be heated rather than pulled through a die (1) | |

| Question number | Answer | Additional guidance | Mark |
|-----------------|-------------------------------------|---------------------------------|------|
| 2 (c) (i) | A calculation that includes: | Award full marks for | (2) |
| | correct working | correct numerical | |
| | 3/5 x 35 (1 | answer without working. | |
| | | | |
| | correct answer | Allow for ECF if candidate gets | |
| | 21 mm (1 | part of calculation | |
| | • | wrong. | |
| | Alternative method 35/5 x 3 = 21 mm | | |
| | (2 | | |

| Question number | Answer | | Additional guidance | Mark |
|-----------------|--|-----|---------------------------------|------|
| 2 (c) (ii) | A calculation that includes: | | Award full marks for | (2) |
| | correct working | | correct | |
| | п x 3.5 ² | | numerical | |
| | | (1) | answer without | |
| | correct answer 38cm² | | working. | |
| | | (1) | Allow for ECF if candidate gets | |
| | Accept 38.4895 for 1 mark | | part of calculation | |
| | | | wrong e.g. they | |
| | | | have used mm | |
| | | | instead of cm | |

| Question number | Answer | Mark |
|-----------------|---|------|
| 2 (d) | Any one reason for using copper for the flowers (1) and a linked justification of that reason (1). | |
| | It is malleable / easily bent / formed (1) which means it will hold its shape once formed / stay in that shape permanently without any other form of treatment (1) It is a ductile material (1) which means it can be drawn out into the required long thin wires (1) It is a nice colour (1) and can be left without any additional surface finishing / will tarnish / natural finish (1) It will not rust (1) which would result in the jewellery changing colour / leaving a mark / stain on any clothing (1) | |

| Question number | Answer | Additional guidance | Mark |
|-----------------|---|--------------------------|------|
| 3 (a) | Any one property from: | Do not accept | (1) |
| | good electrical insulator (1) lightweight (1) durable / long lasting / hard-wearing (1) | tough / impact resistant | |

| Question number | Answer | Mark |
|-----------------|--|------|
| 3 (b) | Any one reason for using corrugated board (1) and a linked justification of that reason (1). Excellent impact resistance (1) meaning it will cushion / absorb shock / withstand being thrown about in transit / protect the product (1) Excellent strength to weight ratio (1) therefore it provides good protection without adding additional cost to the postal costs (1) It is recyclable (1) which means it does not have to end up being | (2) |
| | sent to landfill (1) Corrugated board is a cost-effective material / cheap (1) which means it maximises the profits / returns (1) | |

| Question number | Answer | Mark |
|-----------------|---|------|
| 3 (c) | Any one explanation that references the use of robotic materials (1) and a linked justification of that use (1). | (2) |
| | They can be used to sense movement by the hand (1) and so can act as steering / directional controllers (1) They can sense pressure / being squeezed (1) therefore eliminating the use of additional buttons (1) Can be used to communicate with users (1) which means that some sensations can be generated back to the hands / vibrations / pulses (1) Robotic materials can be used for computational purposes within the material (1) therefore reducing the number of internal components (1) | |

| Question number | Answer | Additional guidance | Mark |
|--------------------|----------------------------------|------------------------------|------|
| 3 (d) | A calculation that includes: | Award full marks | (2) |
| | a correct working | for correct numerical answer | |
| | • correct working | | |
| | <u>19 – 12.50</u> x 100 12.50 | without working. | |
| | (1) | Allow for ECF if | |
| | correct answer | candidate gets | |
| | 52% | part of calculation | |
| | (1) | wrong. | |

| Question number | Answer | Mark |
|-----------------|--|------|
| 3 (e) | Any two explanations that references environmental issues (1) and a linked justification of the issues (1). New materials are required to make the bodies for new games controllers (1) therefore putting pressure on the extraction / mining of finite resources to make plastics (1) Many old controllers are not correctly disposed of / dumped (1) which adds to landfill / increased demand on space / takes hundreds of years to break down (1) Games controllers should be properly disposed of / WEEE regulations (1) which means they are broken down / rare materials / elements taken out for recycling /because they contain hazardous substances / reducing the amount of materials going to landfill / incineration (1) Demand for energy used for materials / during manufacture / fuel for transportation (1) which results in additional demand on finite resources / pollution generated (1) | (4) |

| Question number | Answer | Mark |
|-----------------|--|------|
| 4 (a) | One electronic sensor given from: Thermistor (1) Thermocouple (1) Thermometer (1) | (1) |

| Question number | Answer | Mark |
|-----------------|---|------|
| 4 (b) | Any one disadvantage that references the wearing of the uniform (1) and the linked justification of the disadvantage (1). | (2) |
| | Lack of breathability (1) which means they will sweat / be hot to wear (1) | |
| | They are heavy to wear (1) which will sap their energy / slow them down / only able to wear them for a short time / restrict mobility (1) | |
| | • Lack of flexibility / stiffness / bulky (1) which makes it difficult for them to move around easily (1) | |

| Question number | Answer | Mark |
|-----------------|---------------------|------|
| 4 (c) (i) | + - - - | (1) |

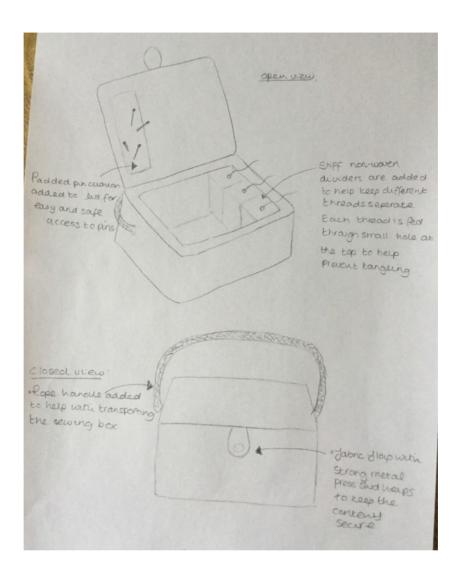
| Question number | Answer | | Additional guidance | Mark |
|-----------------|--|-----|--|------|
| 4 (c) (ii) | A calculation that includes: | | Award full marks for correct numerical | (2) |
| | correct substitution / transposition | | answer without | |
| | $350 = 1000 \times 0.7$ | | working. | |
| | hours | | | |
| | hours = 1000 x 0.7 / 350 = 2 hours | | Allow for ECF if | |
| | - | | candidate gets part | |
| | | (1) | of calculation | |
| | correct answer in minutes | | wrong. | |
| | 120 | | | |
| | | (1) | | |

| Question number | Indicative content | Mark |
|-----------------|--|------|
| 4 (d) | Candidates might refer to some/all of the following in their response, but candidates should be rewarded for other pertinent contextualised answers Saves time travelling and reduces cost / expense of travelling/ | |
| | lost time because of travelling Reduction in pollution caused because of travelling Can be recorded to be replayed and shown to those who could not attend Serves as a record of what was discussed and agreed Allows files to be shared over the internet More opportunities for collaborative design Allows for screens to be shared so others can work on ideas and add notes Requires an investment into physical hardware Needs access to the internet which might not always be available Susceptible to internet reliability and security so might be difficult to access in certain areas and not always able to discuss confidential / sensitive material It relies on a certain etiquette in terms of not interrupting | |

| Level | Mark | Descriptor |
|---------|-------|---|
| | 0 | |
| Level 1 | 1 - 2 | Attempts to interrogate and deconstruct information but connections and logical chains of reasoning are flawed. |
| | | An unbalanced appraisal of the information/issues, containing |
| | | judgements that show a limited awareness of the interrelationships between factors or competing arguments. |
| Level 2 | 3 – 4 | Interrogates and deconstructs information and provides some |
| Level 2 | 3-4 | connections and logical chains of reasoning. |
| | | A balanced appraisal of the information/issues, containing |
| | | judgements that show an awareness of the interrelationships |
| | | between factors or competing arguments. |
| Level 3 | 5 - 6 | Interrogates and deconstructs information and provides sustained |
| | | connections and logical chains of reasoning. |
| | | A well-balanced appraisal of the information/issues, containing |
| | | judgements that show a thorough awareness of the |
| | | interrelationships between factors or competing arguments. |

Section B – Textiles

| number | Answer | Mark |
|--------|---|------|
| 5 (a) | Marks will be awarded for understanding of design and technology, not graphical skills. Notes and sketches that include: Be able to be transported around the house easily (1) and have a lid that can be secured (1) e.g. handle / loops added / fastening added e.g. magnetic press stud Provide a storage place for pins and needles (1) which can be easily accessed (1) e.g. pin cushion / storage pockets added / positioned on lid / inside of box for easy access as the lid can be opened wide Allow for three reels of thread to be stored (1) without them | (6) |
| | getting tangled (1) e.g. elastic loops around sides / dividers / to hold or store threads into place / holes to guide threads through so that they don't get tangled Example of candidate response. | |



Annotated notes:

Open view: Stiff non-woven dividers are added to help keep different threads separate. Each thread is fed through a small hole at the top to help prevent tangling.

Padded pin-cushion added to lid for easy and safe access to pins.

Closed view: Rope handle added to help with transporting the sewing box.

Fabric flap with strong metal press stud helps to keep the contents secure.

| Question number | Answer | Mark |
|-----------------|--|------|
| 5(b) | Any two explanations that include a way the tags meet or fail to meet the requirement (1) and a linked justification of that way (1). The punched hole allows the tags to be attached (1) for easy identification (1) The simplified fruit image identifies the jam's flavour (1) therefore allowing the customer to select the flavour they require (1) Many of the images of fruit may look similar / be open to personal interpretation (1) which means that customers may confuse the flavour of the jam inside the jars (1) The felt might not last very long / stay looking presentable / identifiable (1) as they may get wet / jam spilled on it (1) The fruit icons are only clearly visible on one side of the label (1) meaning the image on the rear-side would be messy / less defined (1) | (4) |

| Question number | Answer | Mark |
|-----------------|--|------|
| 6 (a) | Any two factors which include an explanation (1) and a linked justification (1) Supply of polyester fabric may be limited / increased demand for polyester fabric (1) means that a range of different suppliers may be needed (1) The market price of polyester fabric may change (1) increasing demand for the fabric by other industries (1) | (4) |
| | Polyester is made from a finite raw material / made from oil (1) and so availability factors may occur when raw materials run out / are a finite resource (1) Polyester fibre cannot be extracted from blended fabrics (1) therefore the demand for new fibre is increased / cannot be recycled (1) | |

| Question number | Answer | Additional guidance | Mark |
|-----------------|---|--|------|
| 6 (b) | Marks will be awarded for understanding of design and technology, not graphical skills. Notes and sketches that include: Place fabric on top of wadding / sandwich wadding between fabric (1) Pin / tack / baste layers together to ensure they are held in place (1) Machine or hand stitch the required pattern stitching through all layers (1) Rows/stitches must be evenly spaced / sized / neat (1) Always work out from the centre of the fabric (1) | Cap at 3 marks if no sketches or all sketches and no notes | (4) |
| | Place WS of fabric on top of wadding-tack into place. Straight machine straight machine straight shared lines to form a cross in the centre-Remember to adways ware autwards. Continue to add machine straight shared lines ensure that they are all paralel and equally spaced apara | | |
| | Annotated notes: Place fabric on top of wadding – tack into place Straight machine stitch two lines to form a cross in the centre – remember to always work outwards Continue to add machine straight stitched lines – ensure that they are all parallel and equally spaced apart. | | |

| Question number | Answer | Mark |
|-----------------|---|------|
| 6 (c) | Any one explanation that includes a reason for buying 137cm wide fabric (1) and a linked justification for that reason (1). This is a standard width of fabric (1) which means that the manufacturer can prepare the lay plan / ensure efficient use of materials (1) The manufacturers machinery will be set up to use standard size fabric (1) meaning no specialist alterations have to be made (1) 137cm fabric is widely available (1) which will help them to keep costs lower / specialist materials do not have to be sought (1) | (2) |

| Question number | Answer | Additional guidance | Mark |
|-----------------|--|--------------------------------|------|
| 6 (d) | Any two explanations that include a property (1), plus two linked justifications of that property (1) + (1). It is a durable fibre (1) which means that it will withstand physical use without easily ripping (1) therefore will maintain a presentable appearance (1) It is non-absorbent (1) which means that rain water will run off the fabric (1) keeping the dog dry when out walking in the rain (1) It is hydrophobic (1) which means that it does not absorb stains easily (1) and therefore easier to launder (1) It has good tensile strength (1) which means it is capable of physical use without easily stretching (1) therefore it will retain its original shape (1) | Do not accept crease resistant | (6) |

| Question number | Answer | Additional Guidance | Mark |
|-----------------|--|---|------|
| 7 (a) | One from: Zig-zag / satin stitch (1) Overlocked stitch (1) Blanket stitch (1) | Do not accept machine stitching, hand stitching, invisible stitching or turned under and sewn | (1) |

| Question number | Answer | Mark |
|-----------------|--|------|
| 7 (b) | Any two explanations that include an advantage of using a template (1) plus a linked justification for the advantage (1). They can be quickly drawn / traced around (1) therefore saving time / speeds up production time (1) Each one will be identical (1) therefore ensuring that each / subsequent part will marry up / line up (1) The template could also be used to mark out additional features such as tailors tacks / balance points / fastening position / fold lines (1) therefore ensuring that all the other parts will fit correctly into place (1) They require little skill when using them (1) therefore they can be used by workers with little / limited skill / require no specific | (4) |
| | technical knowledge (1) | |

| Question | Answer | Additional | Mark |
|----------|--|------------------|------|
| number | | guidance | |
| 7 (c) | A calculation that includes: | Award full marks | (5) |
| | | for correct | |
| | • Conversion of units either at the start or at the | numerical | |
| | end | answer without | |
| | (1) | working. | |
| | Calculation of rectangular area | Allow ecf if | |
| | | candidate gets | |
| | $20 \times 10 = 200 \text{ cm}^2$ | part of | |
| | (1) | calculation | |
| | | wrong. | |
| | Calculation of area of circle | | |
| | $\pi r^2 = 3.142 \times 10^2 = 314.2 \text{ cm}^2$ | | |
| | (1) | | |
| | Calculation of area of semi-circle | | |
| | 244.2./2457.42 | | |
| | $314.2 / 2 = 157.1 \text{ cm}^2$ | | |
| | (1) | | |
| | Total waste area rounded to nearest whole cm² | | |
| | | | |
| | 200 - 157.1 = 42.9 rounded up to 43 cm ² | | |
| | (1) | | |

| Question number | Answer | Mark |
|-----------------|---|------|
| 7 (d) | Any two explanations that includes a reason for using a laser cutter (1), plus two linked justifications of that use (1) + (1). The initials could be etched / partially burned / rasterised (1) to engrave / remove the surface of the fabric (1) which would show different coloured effects / texture (1) The fabric of the glasses case could be cut through (1) to form a clear/ blank space (1) and another colour of fabric could be placed underneath / to create a reverse appliqué effect (1) The initials could be cut out of another fabric on the laser cutter (1) and then applied / glued / stitched to the glasses case (1) therefore providing a relief feature (1) A stamp could be made on the laser cutter from foam / rubber (1) which could be used to transfer paint/ink (1) allowing it to be duplicated anywhere on the surface / over the surface (1) | (6) |

| Question number | Answer | Mark |
|-----------------|--|------|
| 8 (a) | Any one explanation that includes a reason for using micro encapsulation (1) and a linked justification of that reason (1). A fragrance could be microencapsulated into the fabric (1) keeping the wearer smelling fresh throughout their exercise session (1) An anti-bacterial agent could be microencapsulated into the fabric (1) which would make the nylon tights more hygienic to wear (1) A moisturiser could be microencapsulated into the fabric (1) which would help to keep the wearer's skin smooth whilst wearing (1) An insect repellent could be added (1) which may prevent the wearer being bitten in certain climates (1) | (2) |

| Question number | Answer | Mark |
|-----------------|--|------|
| 8 (b) | Any one explanation that includes a reason for using a stock denier yarn (1), plus one linked justification of that reason (1) + (1). It means the manufacturer can buy lots of the same weight of yarn / bulk purchase (1) which means they will get a better / cheaper price (1) therefore reducing overall costs / improve profit margin (1) | (3) |
| | They do not need to have lots of different weights of yarn (1) which reduces the need for adapting machine set-up (1) therefore reducing downtime / waste / machining time / processes (1) | |

| Question number | Answer | Mark |
|-----------------|---|------|
| 8 (c) | Any two explanations that include a reason (1) and a linked justification of that reason (1). Nylon is made from oil / coal / finite resources (1) which means they will run out and not be available for future manufacturing (1) Nylon will not biodegrade (1) which means it will be left in landfill for a long time (1) The production of nylon gives off greenhouse gases (1) which contributes to global warming (1) The production of nylon uses large amounts of water / energy (1) which places a large demand on natural resources (1) | (4) |

| Question number | Indicative content | Mark |
|-----------------|--|-------------|
| - | Indicative content AO3 (9 marks) Candidates might refer to some/all of the following in their response, but candidates should be rewarded for other pertinent contextualised answers • A staple item, non-fashion item which has a high demand • Demand may be seasonal as 200 denier tights are warm to wear • Running tights are worn by adults from all cultures and so are sold in many different countries • The lifespan of the running tights is relatively short and they are often thrown away as cannot be reused • Nylon running tights will get thinner over time meaning they | Mark (9) |
| | Nylon running tights will get thinner over time meaning they will be discarded and replaced more often Nylon running tights are made from synthetic materials which uses up the earth's finite resources of oil The nylon running tights have been microencapsulated and so consumers may be charged a higher price for them Micro-encapsulated materials will lose their substance over time and during repeated washing Running is increasing in popularity with many people participating therefore consumer demand is higher The tights do not have a brand logo and so the manufacturer will sell at a reasonable price / the price is not inflated because of a brand name The tights do not show a designer label and so may not appeal to a large section of the market Knitted nylon is stretchy and will adapt to a variety of body shapes and forms so the size range can be limited to avoid wastage and obsolescence Microencapsulation finish might be more popular in some countries — especially those that are hot / humid / malarial | |

| Level | Mark | Descriptor |
|---------|-------|---|
| | 0 | |
| Level 1 | 1 - 3 | Attempts to interrogate and deconstruct information but connections and logical chains of reasoning are flawed. An unbalanced appraisal of the information/issues, containing |
| | | judgements that show a limited awareness of the interrelationships between factors or competing arguments. |
| | | A conclusion may be presented but it is likely to be generic assertions rather than supported by relevant judgements. |
| Level 2 | 4-6 | Interrogates and deconstructs information and provides some connections and logical chains of reasoning. A balanced appraisal of the information/issues, containing judgements that show an awareness of the interrelationships between factors or competing arguments. A conclusion is presented that is partially supported by relevant judgements. |
| Level 3 | 7-9 | Interrogates and deconstructs information and provides sustained connections and logical chains of reasoning. A well-balanced appraisal of the information/issues, containing judgements that show a thorough awareness of the interrelationships between factors or competing arguments. A conclusion is presented that is fully supported by relevant judgements. |