**Design & Technology**

**AQA GCSE** Logo

Description automatically generated with low confidence

**Properties of materials**

**Materials required for questions**

* Pencil
* Rubber
* Calculator

**Instructions**

* Use black ink or ball-point pen
* Try answer all questions
* Use the space provided to answer questions
* Calculators can be used if necessary
* For the multiple choice questions, circle your answer

**Advice**

* Marks for each question are in brackets
* Read each question fully
* Try to answer every question
* Don’t spend too much time on one question

**Good luck!**

**Q1.** Why is lightweight property important for corrugated cardboard packaging?

**A** To make it more colourful

**B** To avoid adding significant weight to the package

**C** To increase its thermal insulation

**Q2.** High carbon steel is used in screwdrivers primarily because it is:

**A** Hard and durable

**B** Cheap to produce

**C** Highly flexible

**Q3.** Why is breathability important for gym wear?

**A** To make it waterproof

**B** To reduce fabric weight

**C** To enhance comfort during exercise

**Q4.** What is the primary function of liquid crystals in displays?

**A** To generate sound

**B** To emit or block light electronically

**C** To increase screen weight

**Q5.** The table below shows a range of products

|  |  |  |
| --- | --- | --- |
| Royal Mail PIP Boxes for Postal Packaging (White) - Size C7/A7 - 110 x 110  x 20 mm - Pack of 50 | Junior Tee Baseball Bat | Flat Blade Screwdriver |
| Mail packaging | Baseball bat | Screwdriver blade |
| Good Baby Tippy Cups 4 Pack | Strength Wear - Tank Top ONLY SIZE S — Strength Shop | Smart Meters | Help | Utilita Energy |
| Babys drinking cup | Gym wear | Electronic device with display |

**Q5a**. Name the specific main material/component of your chosen product **(1 mark)**

**Q5b**. Name one property of the material of your chosen product **(1 mark)**

**Q5c**. Describe why the property is needed for the product to function properly **(2 marks)**

**Answers**

**Q1**. B

**Q2**. A

**Q3**. C

**Q4**. B

**Q5**.

|  |  |  |  |
| --- | --- | --- | --- |
| **Product** | **Specific main material** | **Property of the material** | **Why is the property**  **needed for the product to**  **function properly?** |
| Mail packaging | * Corrugated cardboard | * Lightweight * Impact resistance * Thermal protection | * Does not add to package weight significantly. * Protection against penetration |
| Baseball bat | * Ash * Hickory | * Tough * Durable * Springy wood | * Prevents excessive marking due to ball impact. |
| Screwdriver blade | * Steel * Chrome vanadium steel * High carbon steel | * Hardness * Durability | * Ability to turn a screw head without stripping screwdriver tip. |
| Baby’s drinking cup | * Polypropylene * Polycarbonate * Melamine | * Heat resistant * Moisture resistant * Soft touch polymer | * Dishwasher safe. * Non-reactive – does not taint food. * Resist knocks and impacts. * Scratch resistant. * Soft so not hard on baby’s gums. |
| Gym wear | * Cotton * Nylon * Nylon microfibre * Polyester * Polyester microfibre * Knitted fabric | * Breathable * Lightweight * Wear resistant * Durability * Flexibility * Washable | * Comfortable to wear – hugs the body. * Improved long term performance after washing. * Stretchy, dries quickly (not for cotton), crease resist (not for cotton). |
| Electronic device with display | * Liquid Crystal Display (LCD) or Light-emitting Diode (LED) | * Conductivity | * Liquid crystals respond electronically to emit light. |