

Design & Technology

AQA GCSE

Selection of materials or components

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. What is not part of a products aesthetics?

- A** Texture
- B** Colour
- C** Anthropometrics

Q2. Buying materials in large quantities to reduce expenses is part of which factor?

- A** Material cost
- B** Development cost
- C** Design cost

Q3. FSC stands for?

- A** Forest safety council
- B** Forest Stewardship Council
- C** Fair Source Certification

Q4. What is bulk buying?

- A** Buying only the highest-quality materials
- B** Purchasing large quantities to reduce per-unit costs
- C** Sourcing products from multiple small suppliers

Q5. Give two aesthetic considerations when selecting materials and/or components to make prototypes **(4 marks)**

Q6. Explain how the two factors given below would be considered when selecting materials or components **(2 x 3 marks)**

Availability:

Cultural and social factors:

Q7. Explain why each factor below would need to be considered by a manufacturer when sourcing materials/components **(2 x 2 marks)**

Bulk buying

Ethical factors

Answers

Q1. C

Q2. A

Q3. B

Q4. B

Q5.

- Surface finish – does the surface need to be shiny or matt?
- Texture – does the surface have a visual appearance? • Colour – does the material or component need to be coloured in some way?
- Pattern – some materials have a pattern e.g., wood grain, fabric design to enhance appearance.
- Matching – does the material being used match or sit well with other materials used in the prototype?

Responses may also look at:

- will the base material absorb or take a good finish? A material that won't stain or is too flexible to be painted may be rejected.
- will the aesthetics (looking good) be maintained for a long time? E.g., how long before an object needs re-plating or painting or waxing? etc

Q6.

Availability

Sourcing – some materials are easier to get hold of, eg local supply. There can be seasonal factors, supply, (political problems, local supply etc.), and changing demand to consider. Materials that are difficult to extract, take a long time to grow or transport are not as easily available.

Stock forms – some materials are only available in stock forms. Specialised or personalised materials will incur additional costs. Manufacturers can calculate waste easier using stock forms.

Components – where possible manufacturers try to use standard components as they are readily available, easy to source and replace if required. Many modern products try to use a limited number of standard components. This brings benefits of economies of scale and increased potential suppliers to get the best price possible.

Cultural and social factors

Cultural factors – values and beliefs of particular communities/countries. In China red signifies good luck, but in parts of Africa it is a colour of mourning. Care would need to be taken in sourcing paints or fabrics in these colours depending on where products are to be sold.

Social factors – dealing with family, gender, age, wealth, religion and lifestyle. In a multicultural society, different groups may look at a product in a totally different way to another. Manufacturers have to be sensitive to this, eg animal testing of cosmetics, the use of animals in products, eg skins and hides. Many people are increasingly concerned with the environment and the planet. They may want to know where materials have been sourced and if they are sustainable, eg FSC timber.

Q7.

Bulk buying

Economies of scale – buying in bulk will allow for reduced material/components costs and these can be passed on to the customer for a more competitive price. Manufacturers will secure discounts that can be passed on to the customer.

Stock forms – buying exactly the quantity of materials required for a product or range of products knowing they can be used without waste

Standard components – bought in bulk to secure discounts and reduce final product cost

Ethical factors

Finite v renewable – avoid unnecessary consumption of finite resources that will run out. Use sustainable materials where possible.

Provenance – where do the materials come from? Are they from an ethical source eg Forest Stewardship council (FSC) or Fairtrade.

Working conditions – the promotion and support of people and communities in developing countries to ensure they are not exploited, having a detrimental impact on education, health and general well-being