

Design & Technology

Eduqas GCSE

Fibres and textiles

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. Which fibre comes from silkworm cocoons?

- A** Silk
- B** Linen
- C** Viscose

Q2. Which of these is a synthetic fibre?

- A** Cotton
- B** Nylon (polyamide)
- C** Wool

Q3. Which fibre can stretch 500% to 700% of its length?

- A** Polyester
- B** Acrylic
- C** Elastane (Lycra)

Q4. What is the difference between blending and mixing fibres?

- A** Blending combines fibres before they are spun into one yarn; mixing combines different yarns when the fabric is made
- B** Blending only uses natural fibres; mixing only uses synthetic fibres
- C** There is no difference

Q5. How are felted fabrics made?

- A** By interlocking loops of yarn
- B** By interlacing warp and weft yarns
- C** By matting wool fibres together using heat, moisture and pressure

Q6. Which fibre is a cheap alternative to wool but pills easily and is highly flammable?

- A** Acrylic
- B** Polypropylene
- C** Silk

Q7. A knitted jumper is manufactured from a natural animal polymer.

Q7a. Name a natural animal polymer that could be used to manufacture the jumper. **(1 mark)**

Q7b. Describe why the jumper has been knitted and made from a natural animal polymer. **(3 marks)**

Q8. This question is about fabric construction.

Q8a. Complete the following sentences using words from the list: Knitted, Woven, Looped, Weft, Warp. **(3 marks)**

..... fabrics are constructed using interlocking yarns. The yarns that run horizontally are called yarns. The yarns that run vertically down the length of the fabric are called yarns.

Q8b. Two ties are identical in design but one is made from silk and the other from polyester. Discuss the properties of silk and polyester that make them suitable fabrics for the ties. **(3 marks)**

Q9. Cushions are covered in recycled fabric made from sewn patchwork shapes.

Q9a. The fabrics used for the patchwork shapes are made from either synthetic or natural fibres. In the table below, name an example of a synthetic and a natural fibre. **(2 marks)**

	Fibre example
Synthetic	
Natural	

Q9b. Synthetic fibres can be blended with natural fibres. Describe one advantage of fibre blending. **(2 marks)**

Q10. This question is about knitted fabrics.

Q10a. Children's T-shirts are made from knitted fabric. Give two reasons why a knitted construction is chosen for this type of child's clothing. **(2 marks)**

Q10b. A bag is made from a PVC coated nylon fabric. Describe one reason why a knitted fabric would be an unsuitable choice for the bag. **(2 marks)**

Q11. A range of products is made from denim fabric.

Q11a. State the main fibre content of denim fabric. **(1 mark)**

Q11b. State another fibre that is often blended with the fibre stated in Q11a to improve the flexibility of denim. **(1 mark)**

Q11c. Discuss the reasons why denim is such a versatile material in the construction of products. **(6 marks)**

Q12. Analyse the benefits of using natural fabrics instead of synthetic fabrics when manufacturing textile products. **(5 marks)**

Answers

Q1. A

Q2. B

Q3. C

Q4. A

Q5. C

Q6. A

Q7a.

Wool (1) or cashmere (1). (Alpaca, camel and mohair are natural animal polymers but were not accepted for the jumper shown in the original question.)

Q7b.

Answers must relate to the properties of wool/cashmere or the knitted structure for a jumper. 1 mark for each evaluative point, up to 3. Two reasons described can be awarded full marks. For example:

- Wool is an excellent insulator as it traps heat close to the body (1) between the crimped fibres (1)
- Wool absorbs up to 30% of its weight in moisture without feeling damp, wicking moisture away and keeping the wearer warm and dry (2)
- Wool acts as a temperature regulator in both cold and warm conditions (2)
- Wool is slightly water repellent, so light rain runs off and the wearer stays warm (2)
- Wool is "warm when wet", keeping 80% of its insulating value when saturated (2)
- However, wool dries slowly, so when fully soaked it is a poor insulator (2)

Q8a.

Woven (1) fabrics are constructed using interlocking yarns. The yarns that run horizontally are called weft (1) yarns. The yarns that run vertically down the length of the fabric are called warp (1) yarns. Do not credit any other response.

Q8b.

One mark for each suitable property, up to two. Maximum marks if the properties are discussed clearly. For example: silk and polyester both have good tensile strength, so they won't tear or wear easily (3). Both have good elasticity, so they won't crease and look unsightly (3). Other points:

- Both are durable, light in weight and easily dyed any colour
- Both have a high lustre; silk has a smooth aesthetic that reflects light
- Both don't need ironing; both are flammable
- Polyester is washable, while silk is usually dry cleaned
- Both are fine fibres (1), so the woven fabric is fine/compact (1) and drapes well (1)

Q9a.

Synthetic: polyester, nylon (polyamide), acrylic, polypropylene, Tactel, elastane (1). Natural: cotton, linen, wool, silk, hemp, jute (1). Do not accept regenerated fibres (viscose, Tencel).

Q9b.

Up to 2 marks for a described advantage; one mark for an advantage without description. For example:

- Improves the properties of the fabric (1), e.g. more crease resistant (1)
- Improves the aesthetics/texture (1), e.g. a higher lustre or shine (1)
- Reduces the cost of the fabric (1), e.g. polyester is cheaper than cotton (1)
- Improves the function of the fabric (1), e.g. finer fibres improve drape (1)

Q10a.

1 mark per reason, two required:

- Knitted fabric stretches, which prevents creasing (1)
- It stretches to fit a range of body shapes and sizes (1)
- It is more insulating than woven fabric (1)
- It is comfortable next to the skin (1)
- It can be made on a circular knitting machine, a cheaper method of manufacture (1)

Q10b.

1 mark for a reason and 1 mark for a description. For example: knitted fabric stretches (1), so the bag would lose its shape when storing items (1). Knitted fabrics are harder to laminate/coat (1) due to their open structure (1), giving an uneven finish that isn't as attractive (1).

Q11a.

Cotton (1). Only acceptable answer.

Q11b.

Elastane (1) or Lycra (1).

Q11c. (6 marks)

Answers must relate to three properties of cotton (credit references to a cotton/elastane blend). 1 mark for each property and 1 mark for a justification, up to 6 marks. A maximum of three marks if three properties are stated without supporting comments. For example: denim is made from cotton, which is absorbent (1), so it is comfortable to wear (1). It is used for clothing (1) as it washes easily (1). It is durable (1), so it can be used for bags that are thrown on the floor without damage (1). Properties:

- Good handle, soft to touch
- Absorbent and cool to wear
- Easy to care for, washes well at a variety of temperatures
- Good tensile strength and durability, so it has a long life
- Easily dyed, so available in a variety of colours
- Blended with elastane, it creases less and gives a better fit to the body contour

Q12. (5 marks)

Indicative content (not prescriptive):

Natural fabrics: benefits	Synthetic fabrics: negatives
Breathable	Not breathable
Comfortable next to the skin	Not as comfortable next to the skin

Good insulators but can be worn all year round	Not insulating as such (acrylic is made to improve this)
Hypoallergenic	Not hypoallergenic, as they don't let the skin breathe
Biodegradable; plant fibres can be regrown	Don't biodegrade easily; made from non-renewable fossil fuels
Produce useful by-products, e.g. linseed and cotton seed oil, lanolin from wool	No by-products, but can be recycled
However: expensive to process, use a lot of energy and water, pesticides/fertilisers cause concern, harder to care for (crease, shrink, felt)	However: cheaper to produce, durable and long lasting

Band	Marks	Descriptor
3	4 to 5	A coherent answer with detailed, relevant knowledge and understanding of the benefits of natural fabrics over synthetic ones. Relevant examples and a well-developed logical chain of reasoning, sustained throughout.
2	2 to 3	Some coherence, with partial knowledge and understanding. Mostly relevant examples and a logical chain of reasoning, which may not be sustained.
1	1	Basic knowledge and understanding. Limited relevant examples or logical reasoning.
0	0	Incorrect or irrelevant answers.