
A-LEVEL DESIGN AND TECHNOLOGY

7562/1 Paper 1
Report on the Examination

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General Comments

Paper 1 concerns the technical principles of the specification subject content and is a mixture of short answer and extended response questions. It is imperative that students have a good awareness of the whole of the specification content; in particular this series there was a lack of very basic knowledge in many responses. Students would benefit from focusing on the following areas of the specification: classification of materials (3.1.1) through to performance characteristics of fibres to fabrics (3.1.2). Some students had taken the opportunity to prepare for Paper 1 as responses to the extended response questions showed a good knowledge of the topics covered. In general, the majority of students attempted most questions with the exception of a few which were more challenging.

The following points should be noted:

- Where students are asked to analyse and evaluate or compare and contrast (AO3) both positive and negative points were often required to gain the higher marks.
- When students are asked to explain (AO4), general points may gain a few marks but detailed and relevant points/examples within the response will gain the higher marks, especially for questions where there is a requirement for examples or a specific set of criteria that was requested.
- Students who planned their answers for higher tariff questions tended to gain more marks.
- It was important for students to focus on the wording of the question; some offered detailed knowledge and understanding of topics not relevant to the question and so lost the opportunity to gain marks.
- Some students were unsure how to calculate answers for maths questions but showed their working out, which was the right approach as credit could be awarded for using the correct method even if the final answer was incorrect.

Comments on Individual Questions

Question 1.1

Describe the structure of twill weave.

Overall, students struggled with this question. Most students were credited with only one out of three available marks, often for correctly identifying the 'diagonal structure' of a twill weave. Few students were able to correctly describe the structure of the weave itself. This has been asked in previous series, and should demonstrate basic knowledge of the fabric structure. Too many responses gave examples of the properties of twill weave fabric, eg, they can fray easily, hide dirt or are strong fabrics; these responses were not credited.

Question 1.2

Describe the structure of weft knitted fabric.

Few students were able to describe the structure of a basic weft knitted fabric, with only a small number of responses gaining full marks. Most students did recognise that weft knitted fabrics are

made with a looped structure but many gave properties of weft knitted fabric - eg, unravels, snags, is thermally insulating and ladders easily, which were not credited. There was a lack of basic knowledge of the structure of the fabric in both this question and part 1.1.

Question 2

Explain how smart materials can improve the performance of sportswear. You should include specific examples of smart materials in your answer.

Many students included a definition of smart materials in their answer and although not required, this was taken into account if the information correctly supported student responses. Fastskin was credited where appropriate, many stating it helps make the wearer move in water; with very few showing knowledge and understanding of how denticles in knitted fabric emulate shark skin, allowing the wearer to be more streamlined, therefore moving faster in water. Many incorrect references were made to Gore-Tex®; which is classed as a laminated fabric and not a smart material. Others incorrectly gave materials such as Kevlar® and Lycra®. There was a poor knowledge of basic materials, with the highest number of responses only gaining credit from the low mark band.

Question 3

Give **two different** ways metallic threads can be added to fabrics.

Half of all responses gained full marks for this question. Most students clearly understood the demands of the question, with others repeating their answer in both answer spaces or not fully understanding how metallic threads are added at different stages of fabric production.

Question 4

Which (budget or luxury) garment is cheaper in the sale?

Most responses gained full marks. It was pleasing to see nearly all students attempted the question and those who used the space provided on the question paper for working out often gained some marks for the correct method, even if the final answer was incorrect.

Question 5

Describe a range of different garment manufacturing systems that meet the demand for fast changes in fashion.

Generally, students struggled with this question, with most responses awarded credit in the low mark band. Although there were some very detailed answers, the main issue was a lack of clear information about the separate systems and many outlined how garment production systems are 'efficient, quick or cheap' with little or no real evidence of understanding. Some references were made to CAD and mass production, which were not awarded credit. Many responses gave a wide range of appropriate systems but marks were often lost for describing the systems but not necessarily linking them to the ways they are able to meet the demand for fast fashion.

Question 6

Name **two** inorganic fibres

Over half of responses gained full marks. However, many were awarded zero marks, illustrating a lack of basic knowledge. Students are recommended to ensure a thorough knowledge of the classification of materials.

Question 7

Outline the role of the British Standards Institute (BSI).

Over half of all responses gained some marks for this question, showing a good level of knowledge. Responses that did not gain credit often stated that the BSI eg, set standards that *must* be followed, are set *in law* or are *regulations* that products or manufacturers *have to meet*. There was a lack of knowledge and understanding about the role of the BSI, which is outlined in the indicative content for this question.

Question 8

Explain how the properties of fabrics can be modified by applying a range of chemical finishes. In your answer, you should refer to specific chemical finishes.

Some good responses on the whole, with many demonstrating knowledge and understanding of a range of different chemical finishes and how properties of fabrics can be modified, often with appropriately named specific chemical finishes. Weaker responses gave examples such as a wax coating, lamination and Gore-Tex®, including some including physical finishes eg, brushing and stone washing. Although there were some good and detailed answers, the majority of all responses were awarded marks from the low mark band (1-4 marks).

Question 9

Analyse and evaluate how the Health and Safety at Work Act (1974) impacts on the **manufacturers** of fashion and textiles products.

A good analysis and evaluation of the impacts in relation to the context of the question. Students scored marks across all mark bands. To reach the middle and especially top mark band, there should have been evaluative or negative points. Students who simply gave a basic recount of health and safety precautions at work eg, tie hair back, label chemicals and provide risk assessments, would only be awarded marks from the low band.

Question 10.1

The relative frequency of faulty jeans was calculated, and the results are plotted on the graph. How many of the first 3000 jeans tested were faulty?

The majority of all students scored 1 or 2 marks on this maths question. Correct interpretation of the data on the graph should have allowed students to gain the first mark; the second mark was a simple multiplication of the number of jeans with the relative frequency identified for the first mark.

Question 10.2

Estimate the probability that one pair of jeans, selected at random, will be faulty.

This question proved more difficult than part 10.1, with approximately a quarter of all students scoring 1 or 2 marks. Some students were able to estimate the probability that one pair of jeans was faulty, with very few giving a valid reason for the result.

Question 11

Compare and contrast the environmental impact of wool, silk and hair fibres with synthetic fibres. In your answer, you should refer to:

- the sources of raw material
- processing
- care and maintenance
- disposal.

A strong response to the question, with students scoring marks across the mark range. There was some evidence of good and detailed comparisons, however the majority of responses gained credit at the top of the low mark band. The focus of the question was an environmental comparison between natural and synthetic fibres. Although examiners did see many insightful comments, a large number of responses focused on the sourcing of the individual fibres, with extensive and unnecessary descriptions of the harvesting process and social commentary about ethical issues, at the expense of environmental impacts.

On the whole, many environmental points were made, with varied impacts eg, use of non-renewable/sustainable sources, release of CO², eutrophication, leaching from landfills and an increasing carbon footprint. Some students showed a vague understanding of the impact of synthetics, often stating they are made from or with chemicals without any other detail. Students should know that synthetic fibres are produced from polymer chips made from petrochemicals obtained from fossil fuels such as coal and oil. Through melt spinning, the polymer chips are softened, extruded through a spinneret and solidified in air to create the filaments.

There was a lack of explanation and detail in some responses eg, synthetics are easy to care for, wool is dry cleaned, but without making a link to their positive or negative environmental impact.

Question 12

Explain the benefits of virtual modelling for use in client presentations.

A mostly confident approach to this question, students were able to give a number of appropriate benefits of virtual modelling reflecting the indicative content. As a 6 mark question, students should be encouraged to include a wide range of different points in order to reach the top mark band.

Question 13

Give **two** uses for bindings cut on the bias when making textile products.

Overall, students had a good knowledge and understanding of the uses of bindings cut on the bias. Some students were confused with *fabric* cut on the bias and the impact on drape of garments; in this case marks were not awarded.

Question 14

Give **three** advantages of sub-assembly.

Sub-assembly is a significant textile manufacturing process, and most students recognised the advantages it brings to the production of fashion and textile products. Marks were not awarded for

answers that simply stated ‘quick, efficient, accurate’ etc. without some more detailed explanation about the *advantages*.

Question 15

Calculate the perimeter of the table mat shape to the nearest cm.

Nearly half of all responses gained full marks, showing more confident use of maths skills. As per previous advice given for maths questions, it is important that students use the space provided on the question paper to show their working. Students who attempt an answer can be credited for using the correct method, even if the answer is incorrect.

Question 16

Outline the qualities required for a fashion collection to be worn in a warm climate.

In your answer you should refer to specific:

- fibre types
- fabric structures
- fabric properties.

A range of low level responses on the whole, with many not taking into account the three different requirements (in bullet points) in the question. Examiners were looking for all three points in student responses; very few students took note of this requirement and, as a result, the average marks were in the low mark band.

Most responses focused on cotton and linen as good examples of breathable fibres for a warm climate. Fabric structures suggested were mainly plain weaves, with many not realising that weft knitted fabrics are in fact both warm *and* breathable due to the looped structure. Polyester was often correctly cited as a suitable lightweight fibre, but also having ‘breathable’ qualities; polyester itself is not a breathable fibre and does not absorb moisture. This issue should be underlined to students as a priority; although polyester fibres *can be engineered* to wick moisture, eg Coolmax®.

Question 17

Describe **two** different methods of core-spinning yarns.

Overall, students struggled with this question, with a varying range of student responses; many responses were vague and lacking in detail or accuracy. Many made incorrect references to wet or dry spinning of filaments and fancy yarns as well as descriptions of creating plied yarns.

Question 18

Pattern templates for two different sizes of similar patchwork pieces are shown.

Calculate lengths x and y .

This question focused on scale factor. Students either knew how to approach the question, or struggled with the maths element and tried numerous ways of working out the answer. Approximately one third of all students gained full marks for this question.

Question 19.1

Calculate the **area** of the diamond-shaped patchwork piece shown in the figure.

A more confident set of responses, with most students gaining full marks. A fairly straightforward question requiring the calculation of the surface area of a simple shape. Where students may have lost marks was in working out the calculation of the rectangle around the outside of the shape, but often forgot to divide the sum in half to arrive at the correct answer.

Question 19.2

Calculate the area of the hexagon to the nearest cm^2 .

A more challenging maths question, requiring a number of steps to reach a final answer. In the first instance, the height of the inner triangles should have been calculated before moving on. Many students did not know how to calculate this sum, and this meant that the rest of the calculation became difficult. Many ways of working this out were attempted, most of which were incorrect. Credit was given however for method marks 3 and 4 where appropriate.

Question 20

Analyse and evaluate the economic and social impact of offshore production.
In your answer consider the issues for:

- the manufacturer
- the workers.

Overall, a good understanding of the impact of offshore production, with the average mark more than 50%. It is clear that students have used resources from previous series to help with knowledge and understanding of the complexities of the issues, with many quality responses across all mark bands.

Question 21

Explain why polar fleece is used for fashion and textiles products.
In your answer refer to the structure of the fabric.

Very few references were made to the structure of polar fleece in many responses. Most responses were basic explanations, mainly stating that polar fleece was warm, soft & lightweight; such accounts were credited in the low mark band. It was clear that there was little understanding of this fabric type, with some students asserting that polar fleece is woven, bonded or non-woven. Many generic points unrelated to the fabric structure such as 'cheap', 'environmentally friendly', 'strong' and 'easy to dye' were also put forward. However, it was the last question on the paper, so it is possible that some students may have run out of exam time.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.