



General Certificate of Education

Design and Technology: Product Design (5551/6551)

Unit 1 (Textiles) PD1T

Mark Scheme

2006 examination – June series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Design and Technology: Product Design

Textiles (PD1T)

Quality of Written Communication

The following marks are allocated to the quality of the candidate's written communication. Make a separate assessment of the candidate's overall ability as demonstrated across the paper using the criteria given below.

<i>Performance Criteria</i>	Marks
The candidate will express complex ideas extremely clearly and fluently. Sentences and paragraphs will follow on from one another smoothly and logically. Arguments will be consistently relevant and well structured. There will be few, if any, errors of grammar, punctuation and spelling.	4
The candidate will express moderately complex ideas clearly and reasonably fluently, through well-linked sentences and paragraphs. Arguments will be generally relevant and well structured. There may be occasional errors of grammar, punctuation and spelling.	3
The candidate will express straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well connected. Arguments may sometimes stray from the point or be weakly presented. There may be some errors of grammar, punctuation and spelling, but not such as to suggest a weakness in these areas.	2
The candidate will express simple ideas clearly, but may be imprecise and awkward in dealing with complex or subtle concepts. Arguments may be of doubtful relevance or obscurely presented. Errors in grammar, punctuation and spelling may be noticeable and intrusive, suggesting weaknesses in these areas.	1

NB This mark scheme is intended as a guide to the type of answer expected but is not intended to be exhaustive or prescriptive. If candidates offer other answers which are equally valid **they must be given full credit**.

Many responses at this level are assessed according to the **quality** of the work rather than the number of points included. The following level descriptors are intended to be a guide when assessing the quality of a candidate's response.

(low mark range)
The candidate has a basic but possibly confused grasp of the issues. Few correct examples are given to illustrate points made. Description may be unclear.
(mid mark range)
The candidate has some knowledge but there will be less clarity of understanding. Some correct examples given to illustrate points made. Description better but unclear or confused in parts.
(high mark range)
The candidate has a thorough understanding of the issues and has provided relevant examples to support the knowledge shown. This candidate's answer shows clear evidence of understanding.

PD1T

- 1 (a) e.g. the use of various colours, different textures, use of tie dye, use of net, velvet, satin, beads, embroidery thread, ribbons, use of contrast lining, unfinished edges.

Marks are awarded as follows:

Little understanding, simplistic statements only, candidate typically concentrates on one aspect of the fabrics without considering other areas. Will describe bag with little, if any, attempt to analyse use of fabrics.

(1 – 2 marks)

Candidate shows understanding of the contribution made by more than one aspect but is unable to consider the impact of the fabric choices as a whole. Some parts of the response will be descriptive of the bag but there will be a sound attempt to analyse impact of fabrics.

(3 – 4 marks)

Candidate shows sophisticated understanding of the contribution made by several aspects of the fabrics to the bag as a whole and is able to give a clear explanation.

(5 – 6 marks)

(6 marks)

- (b) (i) e.g. same both sides, smooth surface which doesn't detract from dyeing, smooth surface easier for appliqué, stable fabric which holds its shape, weave gives strength to fabric, cotton is absorbent so can be dyed, cotton resists abrasion, cotton can be washed.

Marks are awarded as follows:

Little understanding, simplistic statements only, candidate typically concentrates on one aspect of the fabrics, probably fibre content, without considering other factors. Will describe fabric instead of analysing important qualities.

(1 – 2 marks)

Candidate shows understanding of the contribution made by both fibre and fabric with some explanation as to how they are likely to be important in relation to the bag. There may be some elements of confusion but most information is sound.

(3 – 5 marks)

Candidate shows sophisticated understanding of the contribution made by several qualities of both fibre and fabric and is able to give a clear explanation of their importance in relation to the bag.

Information will be accurate and relevant.

(6 – 8 marks)

(8 marks)

- (ii) Warp fixed in loom/runs length of fabric (1 mark),
Weft goes alternatively in and out of warp (1 mark),
Alternates on following row (1 mark), 2 rows are repeated (1 mark)
A diagram may be used.
Any 3 points, 1 mark each

(3 marks)

- (c) (i) e.g. zip, ties, Velcro, button/buttonhole, rouleau loop/button, poppers.
Not hooks and eyes.
2 fastenings
1 mark each (2 marks)
- (ii) Points should relate to fastenings selected, e.g.
Zip is secure, opens and closes quickly, may be more expensive, may become jammed, may cost more to apply to bag.
Ties are decorative, will be cheaper, can easily be applied, are not very secure, may come undone easily.
Velcro is easy to fasten, easy to apply, may quickly become clogged with fluff, is noisy when opening, may make bag bulky.
Magnetic stud is easy to fasten, inconspicuous, easy to apply, not very secure, may come undone easily.
- Marks awarded as follows:**
3 points for each fastening to include magnetic stud.
1 mark each, there must be at least one positive point and at least one negative point for each. (9 marks)
- (iii) e.g. Thread (colour, fibre content, thickness).
Interfacing (colour, type, weight).
Beads (colour, size, type)
Ribbons (colour, type, width)
- Any 2 components, 1 mark each **plus** 2 descriptive points about each 2 components, up to 3 marks each. (6 marks)
- (d) Lining adds strength, covers construction details, gives a high quality finish, may allow for inner pocket, adds decorative feature, could make construction quicker and possibly cheaper as avoids need to attach handles separately, finishes handles neatly.
- Marks awarded as follows:**
Little understanding, simplistic statements only, candidate typically refers to aesthetic reasons without considering other factors. Will possibly describe lining instead of analysing reasons for its inclusion in this design. (1 – 2 marks)
- Candidate shows understanding of the reasons for using a lining with some explanation as to its importance in relation to the bag. There may be some elements of confusion. (3 – 4 marks)
- Candidate shows sophisticated understanding of the need for a lining in the bag shown and is able to give a number of clear reasons of its importance. Information will be accurate and relevant. (5 – 6 marks) (6 marks)

Total 40 marks

- 2 (a) e.g. rainwear, sportswear worn where there is snow or water – skiing, sailing, diving suits, umbrellas, tents, shower curtains, tablecloths, boots/shoes.
Not swimwear, wellingtons
2 products, 1 mark each (2 marks)
- (b) (i) Place specimen of fabric in holder, pour measured amount of water in funnel, when spray stops turn specimen holder upside down to remove excess water, observe pattern of spray on fabric sample.
Marks awarded as follows:
Explanation lacks clarity and would probably not give reliable results. Will tend to describe equipment rather than use of it. (1 – 2 marks)
Clear description of experiment which will give reliable results. (3 – 5 marks)
- (ii) Need to compare different fabrics (1 mark), and look at how wet fabric has become where spray has hit (1 mark), the wetter the fabric (1 mark), the less water repellent (1 mark).
Any 4 points, 1 mark each (4 marks)
- (c) (i) Most be modern fabric. e.g. Gortex/laminate types, new generation neoprenes, aramids, fabrics with carbon fibres, phase-change fabrics. Candidate is expected to give a brief description of the fabric selected. This may include reference to fibre type, way in which fabric is constructed including any special coating.
Marks awarded as follows:
Little knowledge shown, description is generalized, information will be superficial with little consideration given to need to refer to extreme conditions. (1 – 2 marks)
Sound knowledge shown, candidate will give clear information about a modern fabric for extreme conditions. (3 – 5 marks) (5 marks)

- (ii) Candidate is expected to describe the properties of the fabric described in (i). A specific use for the fabric should be given and response should be judged in the light of this use and the fabric selected. This may include reference to “breathable” qualities, sensors which adjust temperature, fabrics with superior strength.

Marks are awarded as follows:

Basic information with evidence of only simplistic understanding of fabric properties; there will be evidence of confusion. May be some lack of clarity about specific use.

(1 – 2 marks)

Some understanding of how the fabric behaves under extreme conditions with specific use clearly indicated. There will be some elements of confusion or fabric may not be most up-to-date. This candidate is aware but there are gaps.

(3 – 5 marks)

Sophisticated knowledge and understanding of the nature of extreme conditions with a specific example clearly given. Sound knowledge of the ability of the fabric to protect the wearer and contribute to comfort. Up-to-date knowledge of modern fibre/fabric developments.

(6 – 7 marks)

(7 marks)

- (iii) Modern fabrics are lightweight, more flexible/able to move with body, finishes last longer, do not need to be re-applied, some are “intelligent” and can adjust conditions. Candidate may make specific reference to older fabric or finish, e.g. wax finishes or simply list qualities in modern fabrics. Differences in technology, e.g. advent of microfibres.

5 points, 1 mark each

(5 marks)

Total 28 marks

- 3 (a) Provides stretch and support which always returns to original shape. Rubber fibres previously used which did not have same stretch and recovery properties. Allow for lightweight streamlined clothing, e.g. cycling wear, which does not hamper performance. Allow for close fit and support, e.g. swimwear. Also included in some modern smart fabrics. Elastanes are washable, strong and unaffected by sun, salt water, sun tan oils and perspiration.
- Marks are awarded as follows:
Basic information with evidence of only simplistic understanding of fibre properties; there will be evidence of confusion. (1 – 2 marks)
- Good understanding of the properties of elastane fibres but references to sportswear will be limited and little information about how these fibres have revolutionized fabrics. (3 – 5 marks)
- Sophisticated knowledge and understanding of the properties of elastane fibres with references to a range of sportswear garments. Some information about how fabrics have changed. (6 – 7 marks) (7 marks)
- (b) (i) Elastane fibre is extremely stretchy (**1 mark**), and would be impossible to wear on its own (**1 mark**). May refer to tightness but not ‘uncomfortable’. It is also expensive (1 mark), combining it with other fibres ensures a useable fabric (1 mark), it is stabilised to enable it to be made into a fabric (1 mark). **The first two marks must be included** plus one other. **3 points**, 1 mark each (3 marks)
- (ii) e.g. **Sheathing** (1 mark), where elastane core (1 mark), is wrapped with one (1 mark), or two strands (1 mark), of non-elastic (1 mark), filament yarn (1 mark), if 2 strands used they are wrapped in opposite directions (1 mark).
- e.g. **Core spinning** (1 mark), a non-elastic fibre (1 mark), e.g. cotton (1 mark), wool (1 mark), nylon (1 mark), is spun (1 mark), around stretched elastane (1 mark), this gives the feel and appearance of the yarn used to cover the elastane (1 mark).
- e.g. **Interlacing** (1 mark), where a non-elastic (1 mark), multi filament yarn (1 mark), is fed through an air jet (1 mark), with stretched elastane (1 mark). The air causes the yarns to intermingle (1 mark), partially covering the elastane (1 mark).
- Any of the above methods. **5 points**, 1 mark each (5 marks)

- (iii) e.g. nylon cotton, wool
percentage in blend e.g. 2%, 5%, 10%
Realistic use, e.g. socks, underwear, trousers.
They **must be different** blends (eg 90% cotton/10% Lycra & 98% cotton/2%
Lyrca are not different blends)
Is it a realistic blend of fibres? **(1 mark)**
Are the percentages realistic? **(1 mark)**
Is the use appropriate? **(1 mark)**
Three blends, up to 3 marks each (9 marks)

- (c) Wash according to main fibre in blend (1 mark),
Do not use water which is too hot (1 mark), no bleach (1 mark), cool iron (1
mark), cool tumble dry (1 mark).
Any 4 points, 1 mark each **or fewer points with reasons.** (4 marks)
Total 28 marks

- 4 (a) (i) This is about **fabric production**, not qualities or uses of felt.
e.g. wool fibres have scales (1 mark),
which are capable of interlocking (1 mark),
in the presence of heat (1 mark), moisture (1 mark), and friction (1 mark).
This quality is used in the production of felt (1 mark), a dense fabric
(1 mark), with no grain (1 mark).
Any 6 points, 1 mark each (6 marks)
- (ii) e.g. non-wovens such as Vilene (1 mark), do not have a grain (1 mark), so
can be cut economically (1 mark), produced in various weights (1 mark), do
not stretch (1 mark), so add stability to product (1 mark), do not fray (1
mark), can be produced as sew-in or iron-on (1 mark), are inexpensive so
keep manufacture costs low (1 mark).
Any 5 points, 1 mark each (5 marks)
- (iii) e.g. non-woven production is cheap (1 mark), as there is no need to convert
fibres to yarns (1 mark), fabrics can be produced which have qualities for
specific applications (1 mark), e.g. flame retardant (1 mark), with fibres
which act as filters (1 mark). The cost of cleaning traditional fabrics (1
mark), is often greater than using disposables (1 mark), e.g. surgeons’
gowns (1 mark), nappies (1 mark), dishcloths (1 mark), reference to
hygiene issues (1 mark).
Many non-wovens used for disposables are bio-degradable (1 mark), so
may be better for the environment than cleaning (1 mark).
Maximum of two marks **for examples of use**.
Any 7 points, 1 mark each (7 marks)
- (b) e.g. fibre content (1 mark), some are more flammable than others (1 mark),
e.g. cotton (1 mark), some are flame-resistant, e.g. aramids (1 mark), wool
(1 mark), flammable blends such as polyester/cotton (1 mark), fabric
construction (1 mark), some hold more air (1 mark), e.g. knitteds (1 mark),
which supports combustion (1 mark), long pile fabrics can burn by
producing flash flames (1 mark), the use of finishes can make fabric
flammable, e.g. brushing (1 mark), or resist burning e.g. Proban (1 mark).
The style of the product e.g. long flowing styles can aid flammability (1
mark), sheer fabrics are more flammable (1 mark), flammable trimmings
such as ribbon (1 mark), use of low flammable threads on products (1
mark).
Any 10 points, 1 mark each (10 marks)
(28 marks)

Question 1:	40 marks
Question 2:	28 marks
Question 3:	28 marks
Question 4:	28 marks
Quality of written communication	4 marks
Paper total: Question 1 plus 2 others	100 marks