AQA

General Certificate of Education

Design and Technology: Product Design 5551/6551

PD1T Materials and Components

Mark Scheme

2007 examination - January 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.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

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.

Performance Criteria

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

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) (i) Fabric surface (1 mark), is brushed up/raised (1 mark),
to form a directional pile/trap air/add softness (1 mark).
3 points, 1 mark each   (3 marks)

(ii) Reference should be made to fibre content **and** fabric structure,
e.g. **Wool** is warm, soft, water repellent, hardwearing, luxurious,
resistant to soiling, resists creasing, low electrostatic charge.
Raised nap adds to warmth, softness, helps repel water, drapes
well, makes fabric aesthetically pleasing, good dimensional stability.

Marks awarded as follows:

Little understanding, simplistic statements only, candidate typically
concentrates on limited fibre qualities without reference to structure
of the fabric or intended use. There will be confused and
inaccurate information.   (1–2 marks)

Candidate shows understanding of the contribution made by
at least one aspect of the fabric structure but most points will relate
to fibre content. There will be a sound attempt to analyse
appropriateness of fabric for a coat. There may be minor confusion
but most points will be accurate.   (3–5 marks)

Candidate shows sophisticated understanding of the contribution
made by several aspects of the fabric structure and fibre content in
relation to a coat. Information will be accurate.   (6–7 marks)   (7 marks)

(iii) Wool is expensive (1 mark), subject to moth attack (1 mark), must be
dry cleaned (1 mark), takes a long time to dry (1 mark), very
absorbent so becomes heavy when wet (1 mark).
Raised nap may cause fabric to pill (1 mark),
light colour will dirty quickly (1 mark).
Any **4 points**, 1 mark each   (4 marks)

(b) (i) Candidate may respond through an annotated diagram and/or
written description. To access 4 marks through a diagram, there
must be accurate reference to the warp and weft, and the pattern of
interlacing showing long floats. Less accurate information may be
awarded 1/2 marks provided that there is some evidence of
knowledge of basic structure.

Satin weave (1 mark),
With weft yarns passing over 4 or more warp yarns (1 mark),
In staggered information (1 mark), showing a variation on twill weave
(1 mark). Long floats (1 mark), give a shiny face (1 mark), and duller
back (1 mark).   (4 marks)

(ii) e.g. **Polyester** is strong, hardwearing, filament yarn helps make fabric shiny, lightweight, reduces costs, resists creasing.
Satin structure is slippery, aesthetically pleasing, smooth on skin, can be dry cleaned, has good drape.
Not 'washable' since this is inappropriate for this coat,
not 'absorbent' because polyester is not,
not abrasion resistant because stain is not.

Marks awarded as follows:

Candidate shows little understanding of the contribution made by the fabric structure and will concentrate on properties of polyester fibre. There will be many inaccurate and confused points.   (1-2 marks)

Sound understanding of the contribution made by at least one aspect of the fabric structure and there will be a range of points related to the fibre content. The candidate will have analysed the appropriateness of fabric for the coat shown and information will be accurate.   (3-5 marks)   (5 marks)

(iii) Lining makes the coat easier to wear and helps prevent creasing. It may add an insulating layer, help the coat drape better, and make it more comfortable next to the skin, and help prevent damage to the outer fabric from perspiration, deodorants and cosmetics. It adds quality to the coat, covers construction processes and may make it more durable.

Marks awarded as follows:

Candidate shows limited understanding of the use of linings but this will not be related to the coat shown. There will be a limited number of points made.
(1-2 marks)

Limited knowledge of the use of linings will be related to the coat shown. There may be some irrelevant and/or confused points but most
will be reasonably well considered.   (3-4 marks)

Candidate shows detailed knowledge and understanding of the use of linings and will relate this knowledge to the
coat shown. Points will be accurate.   (5-6 marks)   (6 marks)

(c) (i) e.g. collar, lapels and front, neck area, armhole area, pocket flaps, hem, behind pockets, pockets shoulder area, end of sleeves/cuffs.
2 areas, 1 mark each (2 marks)

(ii) Explanation of why interfacing is needed in that area, e.g. to give shape/structure/density, add weight, provide crispness, support buttons/buttonholes so they do not pull away.
Candidates should explain the function of interfacing and why it is needed,
e.g. 'the collar is interfaced to give it shape and structure so it doesn't flop round the neck',
'the pockets are interfaced to provide strength and shape because they are in constant use'.
2 areas to be interfaced, 3 marks each (6 marks)

(d) e.g. large buttons easy to fasten, are decorative, fashionable, reference to colour, works well with heavier fabric.
Large size requires larger buttonholes which may add to manufacturing costs, may tear more easily, 2 holes do not provide as secure a hold as 4 holes.
Any 3 points, 1 mark each (3 marks)
(40 marks)

2 (a) (i)   Plaid or tartan   (1 mark)

   (ii) e.g. weaving, printing**,** knitting.
         Any 2 methods,1 mark each   (2 marks)

 (b) (i)   e.g. silk, acetate, polyester, cotton <u>fine</u> wool.
           Any appropriate fibre.   (1 mark)

   (ii) Reasons for suitability, e.g. reference to drape, lustre, absorbency,
         ability to be cleaned, luxurious for evening wear, warm/cool.
         5 points, 1 mark each.
         An expansion of a reason may count as a point.   (5 marks)

 (c) (i)   e.g. wool, acrylic, polyester, cotton.
           Any appropriate fibre.   (1 mark)

   (ii) Reasons for suitability, e.g. reference to drape, strength,
         hardwearing,
         absorbency, ability to be cleaned.
         5 points, 1 mark each.
         An expansion of a reason may count as a point.   (5 marks)

 (d)   e.g. Cutting on cross grain, mismatch of checks, combining with
          other fabrics (examples given), few seams to maximise impact.
          Reference to typical fashion applications of this large plaid repeat.

          Marks awarded as follows

          Uninspiring designs which do not fully utilise effect of check pattern.
          Ideas will be limited and may be for similar garments with only
          minor differences shown. There may be patchy written description
          only or poor quality sketches which do not show detail clearly.
                                                                       (1-2 marks)

          Sound designs (up to 2) which show different uses of checks but do
          not exploit fabric pattern. There is some attempt at originality but
          designs will tend to be 'safe'. Sketches and notes are adequate but
          some details may not be clear. Some very clear written descriptions
          may not have accompanying sketches.   (3-4 marks)

          Original and different designs (2 or more) which exploit nature of
          check pattern. Notes and sketches are high quality and easy to
          understand.   (5-6 marks) (6 marks)

(e)   Problems for **designers** include, for example, large repeat size, bold colour, impact of checks.
Problems for **manufacturing** include, for example, cutting of large repeat pattern needs to be planned carefully to minimise waste, manufacture may be costly because of waste, may need to be cut with a nap layout, may need to ensure that a prominent stripe of line of check is centralised, joining of checks needs to be done with care to maximise impact, careful placement of pattern templates on straight grain for pattern accuracy. Stitching with differential feed to keep pattern match accurate.

Marks awarded as follows:

Little knowledge shown of care needed explanation will be in simplistic terms only.   (1-2 marks)

Candidate shows some understanding of care needed but will lack precise knowledge. Some of the explanation will be sketchy/incorrect.   (3-5 marks)

Sound and detailed knowledge shown, candidate will give accurate information with examples.   (6-7 marks)   (7 marks)

(28 marks)

3 (a) (i)   Staple fibres have short lengths (1 mark),
               filament fibres are continuous length (1 mark)   (2 marks)

       (ii)   e.g. cotton, linen, wool.
               Any 2 appropriate fibres, 1 mark each   (2 marks)

       (iii) e.g. nylon, polyester, silk, acrylic, viscose, acetate.
               Any 2 appropriate fibres, 1 mark each   (2 marks)

   (b)   e.g. **Cotton** fibres are carded/combed (1 mark),
               drawn into a soft rope/strand, brought together in same
               direction (1 mark),
               spun/twisted together (1 mark).
               Accept other appropriate examples.   (3 marks)

   (c)   e.g. **staple yarn** is fluffier so traps air and moisture better, gives a
               softer, fuller handle, is a duller yarn because light not reflected so
               easily, **filament yarn** smoother, does not trap air and moisture so
               easily, reflects light so appears shiny, tends to be stronger than
               staple yarns.
               Any 4 appropriate points of comparison, 1 mark each   (4 marks)

   (d) (i)   e.g. polyester/cotton or viscose, wool/nylon, Lycra blends.
               Any 3 appropriate examples of specific blend 1 mark each (3 marks)

       (ii)   Responses should be about specific fibre qualities related to the
               blends named in (i), not the general advantages of blending.
               e.g. polyester blends with cotton or viscose reduces creasing and
               drying time of cotton/viscose, improves absorbency of polyester,
               allows fabric to be heat set.
               Wool/nylon reduces cost, improves wear and washability by
               reducing shrinkage and drying time of wool, improves absorbency,
               adds softness and reduces static of nylon.
               Inclusion of Lycra adds elasticity, improves fit, reduces creasing.

               Marks awarded as follows:

               Simplistic statements which have some truth but lack specific informa
               about the contribution of the individual fibres.
               Some inaccuracies and lack of examples.   (1-2 marks)

               Detailed knowledge and understanding of the specific qualities of the
               individual fibres and their contribution to the overall performance of th
               blend. Some examples given to support points made.   (3-4 marks)
                                                                         (12 marks)
                                                                    (28 marks)

4 (a) (i) This question is about fabric construction, not qualities/uses.
Candidate may respond by means of a written explanation or a
labelled diagram which includes all the points.
Weft knit uses one continuous yarn (1 mark),
horizontal rows of loops (1 mark),
interlock with those in the row above and below (1 mark).
Warp knit uses several yarns simultaneously (1 mark),
yarns interlock from side to side (1 mark),
vertically along the length of the fabric (1 mark).
3 points about each method, 1 mark each.   (6 marks)

(ii) e.g. **Weft knit** has greater stretch widthways (1 mark),
but length shortens (1 mark), curls when cut (1 mark),
may have distinct face and reverse sides (1 mark),
but could be used to produce double jersey which is same both
sides (1 mark), can produce fabrics with variety of textures (1 mark),
ladders easily (1 mark), shape easily distorted (1 mark),
can produce tubular fabrics (1 mark), can produce rib knits (1 mark).

Warp knit more stable (1 mark), curls when cut (1 mark),
does not ladder (1 mark),
difference between face and reverse sides less distinct (1 mark),
able to produce intricate patterns such as raschel knits (1 mark)
does not produce tubular fabrics (1 mark),
fabrics stronger than those produced by weft knit (1 mark).
Any 6 points, 1 mark each.
Must be **at least two** points about **each fabric**   (6 marks)

(b) e.g. components appropriate for weight of fabric,
components do not distort stretch qualities, thread with some 'give' to
allow for stretch of fabric, compatible with care needed for fabric,
aesthetic considerations, cost/ease of application, fashion issues,
availability of component, type and use of product.

Marks awarded as follows:

Little understanding, simplistic statements only, candidate
typically concentrates on fashion issues with few examples given.
Will describe components and typical uses with little, if any, attempt
to analyse choices. Will not take nature of knitted fabric into
consideration.   (1-2 marks)

Candidate shows understanding of the issues to be considered.
Some parts of the response will be descriptive of the components but
there will be a sound attempt to analyse choices. Some appropriate
examples given and some reference to nature of knitted fabrics.
                                                    (3-4 marks)   (4 marks)

(c)   (i)   e.g. knitted, especially weft, construction traps air which insulates the body. Effect increased when wool or acrylic fibre used. These fibres are also soft and can add bulk.

(ii)   e.g. knitted fabrics allow movement because of looped construction. This makes them ideal for active sportswear, especially when made from polyester or polyamide fibres which make them resistant to abrasion and easy care, more 'breathable' than woven fabrics.

(iii)   e.g. knitted fabrics do not crease easily and recover quickly from creasing. They tend to be light in weight, especially when made from synthetic or cotton fibres, can be compressed so take up less space.

Marks awarded as follows for (i) – (iii):

Little understanding, simplistic statements only, candidate lacks understanding of the nature of knitted fabrics in relation to the applications given. Few accurate example   (1-2 marks)

Candidate shows good understanding of the nature of knitted fabrics in relation to the application given. There may be some minor areas of confusion but there will be an appropriate range of realistic examples to support issues raised.   (3-4 marks)   (12 marks)
(28 marks)

Question 1:	40 marks
Question 2:	28 marks
Question 3:	28 marks
Question 4:	28 marks
2 questions 28 marks each	56 marks
Quality of written communication	4 marks
Paper total:	100 marks