

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International Advanced Subsidiary and Advanced Level

MARK SCHEME for the October/November 2014 series**9631 DESIGN AND TEXTILES****9631/01** (Fibres, Fabrics and Design), maximum raw mark 75

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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SECTION A

Answer **both** questions.

1 Polyester and other synthetics fibres are widely used for different fabrics.

(a) Briefly state the source of polyester fibres.

Answer could include:

- Polyester is made from chemicals such as (for PET polyester): terephthalic acid and ethylene glycol (or alternative appropriate chemicals e.g. for PCDT polyester: terephthalic acid and 1 – 4 cyclohexane-dimethanol) dicarboxylic acid + dihydric alcohol.

OR

- Polyester manufactured by chemicals from petroleum products (1 mark only)
- Petroleum – 1 mark
- Man made from chemicals + acids – 1 mark
- Polynitrile not given – acrylic.

Maximum of 2 marks to be given only if the chemical names are stated.

[2]

(b) (i) Name two fabrics made from polyester which have different weaves.

Answer could include:

- Fabrics with plain weave such as: polyester chiffon, polyester organza, polyester crepe, polyester taffeta, etc.
- Fabrics with twill weave (or twill variations): polyester gabardine, polyester drill, polyester foulard, poly canvas etc.
- Fabrics with satin weave (or variations) polyester satin, polyester duchesses satin etc.
- Fabrics with dobby or jacquard weaves e.g. polyester tapestry, polyester jacquard etc.
- Poly velvet.

Brief description could include:

- Plain weave is produced by warp threads (set up on loom) and weft threads which interlace at right angles with a one/one formation
- Twill weave is produced by warp threads (set up on loom) and weft threads interlaced at right angles in a 2/1 or 2/2 or 3/1 formation of interlacing to produce a diagonal line effect on the surface
- Satin weave is produced by warp threads (set up on loom) and weft threads interlaced at right angles in a 4/1 or 7/1 formation of interlacing to produce a smooth shiny surface
- Dobby weave is produced by warp threads (set up on loom) and weft threads interlaced at right angles with a small figured pattern at regular intervals on the surface

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- Jacquard weave is produced by warp threads (set-up on loom) and weft threads interlaced at right angles individually so any can be raised and lowered to form large patterns on the surface; also computerised.

1 mark for 2 names + weaves with no description of construction.

1 mark for 2 weaves with description but no fabric name.

Not Tetron which is a polyester/rayon blend.

1 mark for each correct name with brief explanation.

[2]

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(ii) Compare five characteristics of the fabrics listed in (b)(i).

The answers below must relate accurately to the fabrics chosen in (b)(i).

Answer could include:

Characteristics:

- **Handle/drape:** such as fine or soft or stiff, depending on fibre fineness e.g. microfibers; softness, whether the right and wrong sides are the same or slightly different, whether the openness of the weave has any effect on the handle, polyester fabrics which are medium to heavy weight will drape more easily for uses such as curtains and long dresses/skirts; fabric construction or finish will affect the handling and draping characteristics
- **Weight:** polyester fabrics can be produced in many weights and this will be determined by the fineness of the yarns in production. The answer will depend on the fabric chosen
- **Creasing:** polyester does not crease easily and because of this inherent property/characteristic, none of the fabrics chosen will crease easily
- **Flammability:** if fabrics have an open weave, they will have more air spaces between yarns and the fabric will be more likely to flare and burn. However, this will depend on whether a flame-proof finish has been added
- **Moisture absorption:** all polyester fabrics have low moisture absorbency but this will also depend on the structure of the fabric e.g. brushed fabric, more moisture may be trapped and if the fibre has been modified e.g. for sportswear, it may take up more moisture
- **Strength/resistance to abrasion:** all polyester fabrics have good resistance to abrasion although this will depend on the weight and thickness of the fabric. Fabrics made from continuous filament yarns may be stronger than yarns made with staple fibres
- **Heat sensitivity:** all polyester fabrics are sensitive to heat and should be pressed on a low iron setting (150 C) or one dot iron symbol. Pleats in polyester fabrics can be heat set
- **Lustre/appearance:** dull, shiny, rough, smooth
- **Pattern:** could have woven pattern in colour or self-coloured.

Note: polyester cotton is not a fabric. Fibres not accepted.

Any five characteristics can be included. 1 mark for each characteristic accurately described.

[5]

High band:

The answer will contain five well compared characteristics of the chosen fabrics with detailed examples.

[4–5]

Middle band:

The answer will include some compared characteristics of the fabrics chosen with some examples. There may be errors and omissions.

[2–3]

Low band:

The answer may include limited, if any, comparison of the characteristics of the fabrics chosen and may be presented as a list. Few examples, if any and some omissions. [0–1]

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- (c) Assess the value of microscope and burning tests on synthetic fibres and fabrics. Give specific examples.

Answer could include:

- **Microscope/photomicrograph tests** will confirm that the fibre/fabric is made from a specific type e.g. natural such as cotton, or a synthetic. Some synthetics are very similar so further tests will be needed to confirm their origin/type e.g. polyester and nylon may look similar.
- **Microscope test** will confirm whether warp yarns and weft yarns are the same or different as this may affect the behaviour of the fabric. Microscope tests may show if the fabric is made from a blend of fibres e.g. cotton and polyester blend. There are recognisable cross-section (CS) and longitudinal section (LS) shapes for each fibre e.g. cotton (if used in a blend) has a LS like a twisted ribbon with a bean-shaped cross-section. Standard polyester has a rod-like cross section and smooth LS. (Any correct fibre cross-section and longitudinal section can be accepted here)
- Microscope tests are very useful but if more than one fibre is used in a fabric, other tests such as chemical tests are very useful
- Give credit for labelled sketches.

Burning tests:

- Burning tests are straightforward to carry out and if the fabric is not mixed or blended, it is possible to identify most cellulosic fibres and animal fibres due to the distinctive result. For example, vegetable fibres tend to burn easily with a yellow flame and leave a light grey ash; animal fibres have a distinctive smell (hair/feathers) and self-extinguish
- It is more difficult to identify fibres if there is a blend or mixture and further tests will be needed in these cases
- Synthetic fibres which are thermoplastic melt and drip when a flame is near; those fibres which have special finishes may behave in different ways, so further tests may be needed.

Give credit if specific appropriate examples are given and give credit for labelled sketches if relevant.

1 mark for each well-discussed point.

Points from both microscope tests and burning tests must be discussed for full marks.

[6]

High band:

The answer will contain well informed assessment of the value of doing microscope tests and burning tests on fibres/fabrics, and specific detailed examples will be included. Reference will be made to both types of tests.

[5–6]

Middle band:

The answer will include some assessment of the value of doing microscope tests and burning tests on fibres/fabrics although examples may be omitted or lack detail. Some reference will be made to both types of tests.

[2–4]

Low band:

The answer may include limited, if any, assessment of the value of doing microscope and burning tests on fibres/fabrics, and specific examples may be omitted.

[0–1]

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(d) Discuss how polyester and other synthetic fibres can be used in non-woven fabric constructions to produce a range of fabrics for different end uses.

Answer could include:

- Non-woven fabrics are often heat set in various ways due to the characteristics of the fibres used to produce them. Thermo bonded e.g. polyester, nylon and other synthetics are used as they can be manufactured and made directly into a fabric in a continuous process
- This is cost effective, efficient and fast
- The batt or web is usually produced first before it is bonded/fused together to form the fabric
- Polyester and other synthetics can be modified to produce thick or thin fibres for different types of batts/webs
- The batt or web can be assembled in various ways to produce different layers
- A method of producing the web/batt is used which is similar to paper making (wet laid)
- Various fibre thicknesses can be produced according to the end use requirements e.g. Vilene is a non-woven fabric which is used for garment interfacing so can be produced in fine, medium or thick types
- Felting e.g. acrylic
- Bonded fibres can be heat-set and fused in different ways to produce flexible or firm fabrics
- Where continuous filament fibres are used, there are few fibres on the surface of the fabric which produces a very smooth and lint-free finish. This can be non-allergic according to the fibres content used
- Insulation/wadding can be produced which is a series of layers which are fused together lightly only to avoid compressing the fibres
- Adhesive bonding can be used to fuse the fibres together. Dots of adhesive are applied and this produces a fabric which is firm in some places and flexible in others
- End uses: interlinings, various medical protection products, interfacing, nappies, personal hygiene, insulation, geo-textiles
- Any other correct and relevant point.

1 mark for each well-discussed point.

[10]

High band:

The answer will contain well informed discussion of how polyester and other synthetic fibres can be used in non-woven fabric constructions to produce a range of fabrics for different end uses. Detailed examples of fabric structures will be included and will relate to end uses.

[8–10]

Middle band:

The answer will include some discussion of how polyester and other synthetic fibres can be used in non-woven fabric constructions to produce a range of fabrics for different end uses. Some examples of fabric structures will be included although there maybe omissions and errors. Some reference will be made to end uses.

[4–7]

Low band:

The answer may include limited, if any, discussion of how polyester and other synthetic fibres can be used in non-woven fabric constructions although there will be inaccuracies and omissions. Some points may be presented as a list with no discussion. There will be few if any examples of fabric structures.

[0–3]

[Total: 25]

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2 Knitted fabrics have become very popular for clothing.

(a) Name two knitted fabrics which have different constructions.

Answer could include:

- **Weft knitted** fabrics: one example e.g. wool single jersey, acrylic rib, cotton double jersey, cotton stockinette, cotton/polyester interlock, cotton/polyester knitted velour, (accept cotton knitted fleece fabric), cotton knitted lace etc.
- **Warp knitted** fabrics: one example e.g. polyester tricot, polyester raschel, cotton/polyester locknit, polyester (knitted) satin, etc.
- Any other suitable knitted fabrics.

1 mark for each correct fabric from each group: for full marks the fibre content as well as knitted fabric must be given for each.

1 mark for 2 names if one from each group.

1 mark for two names with type of knit if one from each group.

[2]

(b) Using labelled sketches, compare the construction of both fabrics chosen in (a).

Answer could include:

- Weft knitted structure: need to show the loop structure accurately with labelled sketches: course (horizontal loops) (1 mark);
- Wale (vertical loops) (1 mark)
- Knitting is done by the weft thread passing in the weft direction with one yarn
- Loops can get distorted if the fabric is pulled horizontally or vertically
- Right side can be shown (smooth knit stitches in vertical direction are seen)
- Wrong side can be shown (purl side can be shown – horizontal threads more visible) one additional point: 1 mark
- Give credit for correctly labelled sketches
- Warp knitted structure: need to show the loop structure accurately with labelled sketches: course (horizontal loops) (1 mark);
- Wale (vertical loops each of which links with one adjacent to it) (1 mark)
- Usually one yarn per wale or needle knitting is done with thread feeding from top to bottom one additional point: 1 mark
- Give credit for correctly labelled sketches.

[6]

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- (c) Discuss the performance characteristics of the two knitted fabrics with reference to their structure, appearance and after-care.

Answer could include:

Weft knits:

- Fabric is elastic in one direction or both directions, and right and wrong sides usually look different unless it is single or double rib
- Some fabrics have the same stitches on both sides so are reversible
- Lustre will depend on what type of yarn has been used e.g. smooth shiny synthetic yarns will produce a shiny fabric surface
- Colour fastness may relate more to the wear of fabrics after several washes
- Creasing – knitted fabrics tend to crease less and creases drop out more easily than with woven fabrics; this also depends on the fibre type used as synthetic fibres do not crease as much as cellulosic fibres such as cotton or viscose
- Easy care properties may include special finishes which have been applied to the fabric and may alter the appearance.

Warp knits:

- Different structures as fabric is much firmer and less stretchy
- fabric can be much thinner especially if a synthetic fibre is used which has been produced as a continuous filament yarn
- smoother surface; if fabric is thinner there will be less opportunity for air to be trapped so it may not be as warm as a weft knitted fabric
- Other points: wicking; stretch; warmth.

Structure:

- Knitting method used e.g. warp/weft and elasticity, thickness, absorption, insulation/warmth etc.
- Discussion of warp/weft structure based on the choice of fabrics
- Edges of the fabric may curl if single knit and may be cut or finished like a selvedge
- Rib fabrics tend to be heavier; ribbed fabrics may be denser and may trap more air so giving more potential for being warmer
- Fleecy fabrics may have an extra set of yarns which are brushed; brushed fabrics may insulate the wearer more by keeping in the heat.

Aftercare:

- laundering (washing – wash code/temperature/amount of agitation)
- Rinsing: use of laundry detergents e.g. washing liquids/fabric softeners etc.
- Drying: symbols used: ways of drying e.g. drip dry/dry flat
- Use of bleaching if appropriate: symbols used
- Ironing: symbols used
- Storage: symbols used; correct storage to avoid insect damage/mildew etc.

1 mark for each well discussed point.

[8]

High band:

The answer will contain well informed discussion of a number of performance characteristics of two knitted fabrics with reference to appearance, structure and aftercare. A number of detailed examples will be included.

[6–8]

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Middle band:

The answer will include some discussion of some performance characteristics of the two knitted fabrics with reference to appearance, structure and aftercare. Some examples of fabric structures will be included although there may be some errors. [3–5]

Low band:

The answer may include limited, if any, discussion of the performance characteristics of the two knitted fabrics with reference to appearance, structure and aftercare. Points may be presented as a list with no discussion. Few if any examples of fabric structures will be included. [0–2]

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(d) Assess how different types of yarn can be used to produce a variety of different effects on knitted fabrics for clothing.

Answer could include:

- Types of yarn: staple, continuous filament
- Bulked and textured e.g. gear-crimping, knit-de-knit, edge-crimping etc.
- Fancy e.g. chenille, knop, boucle, cable
- Metallic threads, etc.
- Yarns can be used to produce coloured effects e.g. stripes
- Different combination of coloured yarns can be used
- Textured yarns can give different effects in fabrics e.g. chenille yarn
- Bulked yarns are able to give flexibility so might be used in combination with plain yarns to produce a 'stretch' fabric
- Blended yarns e.g. cotton/polyester
- Lycra and elastane to make a fabric which clings, fits well or retains its shape
- Examples of fabrics with the yarn's effect to be given e.g. knitted lace; tuck stitch; jersey, Fleece, etc.
- Combinations of different weights and thicknesses to give texture
- Give credit for relevant labelled sketches.

1 mark for each well-discussed point.

[9]

High band:

The answer will contain well informed assessment of how several different types of yarn can be used to produce a variety of knitted fabrics. Detailed examples will be included. [7–9]

Middle band:

The answer will include some assessment of how different types of yarn can be used to produce a variety of knitted fabrics. Some examples of fabric structures will be included although there may be errors or omissions. [3–6]

Low band:

The answer may include limited, if any, assessment of how different types of yarn can be used to produce few examples of knitted fabrics. Some points may be presented as a list with no assessment. Few, if any examples will be included. [0–2]

Total: [25]

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Section B

Answer **one** Question

3 Design is important in contemporary fashion.

(a) State three influences on contemporary fashion.

Answer could include:

- Influences such as ideas from different cultures for coloured patterns on fabric; trends from 'street' fashion; celebrities; economic climate; social and political factors; new textiles and production methods; past fashion designers e.g. Dior; revivals from past art movements e.g. 'pop art'; ideas using the latest technology e.g. LED's in fashion to give flashing lights
- Any other relevant ideas
- Accept labelled sketches if relevant.

1 mark for each relevant detailed point.

[3]

(b) Sketch and label three dresses which show how contemporary fashion trends can be used to good effect.

Answer could include:

- Use of silhouette provided; both front and back views shown if relevant
- Well-labelled showing good use of ideas
- Relevant points included e.g. colour, repeated design, one-off design
- Detail of the pattern and how it is to be produced e.g. block printed or screen printed or stitched design e.g. appliqué
- Include cut/pattern shapes
- Style features e.g. collars, use of seam lines, hem length
- Detailed position of decorative detail on the dresses e.g. along hem, along neckline, down centre front, etc.
- Use of colour(s) on design or garment.

Up to 2 marks for each well labelled and accurately sketched design.

[6]

(c) Justify your choice of design ideas in (b).

Answer could include:

- Design – could reflect an art movement or idea from an artefact in a museum from a different culture e.g. Greek; repeated pattern used as small design along the hemline
- Colour choice depends on colour trends e.g. pastels colours or primary colours
- Method of applying colour e.g. screen printing could be used due to intricacy of design and number of colours used
- Justification of style; pattern cutting etc. if mentioned in (b)

1 mark for each well-discussed and detailed point related to (b).

[6]

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(d) Discuss the use of fashion revivals in ladies' fashion, giving illustrated examples from retrospective ('retro') fashion designers.

Answer could include:

- Hemlines from different periods of time e.g. miniskirts from the 1960s, uneven hemlines from 1910
- Types of sleeves e.g. padded shoulders from the 1970s
- Different silhouette shapes e.g. A line, Y line from Dior (1940s and 1950s)
- Use of decoration techniques e.g. beading from the 1920s – Chanel designs
- Trousers for women in the 1940s and 1970s (Yves St Laurent)
- Accessories e.g. tote bags 1960s revived in 2010
- Accessories e.g. large hats from 1910 revived in 2000 for weddings/special occasions
- Styles of wedding dresses often taken from past ideas of different cultures e.g. kimono style tunic for leisure wear
- Street fashion; punk, Vivienne Westwood
- Any other relevant examples from fashion designers studies
- Examples from contemporary designer, using 'retro' ideas; specific examples and dates needed; well-known designers in specific countries can be checked on the internet
- Give credit for labelled sketches.

1 mark for detailed discussion of each point. [10]

High band:

The answer will contain well informed discussion of the use of fashion revivals in ladies fashion, including detailed illustrated examples of style features and designers. [7–10]

Middle band:

The answer will include some discussion of the use of fashion revivals in ladies fashion, with some illustrated examples which may have errors or omissions. [3–6]

Low band:

The answer may include limited, if any, discussion of the use of fashion revivals in ladies fashion, and there may be few if any examples. Some points may be presented as a list with no discussion and there will be omissions and errors. [0–2]

Total: [25]

4 Clothing production uses a wide range of production methods.

(a) Explain what is meant by 'one-off' production in garment manufacture.

Answer could include:

- One item is produced for a customer to a specific size/brief
- One skilled worker will produce the item
- Item will be an original/unique item
- An answer could include an example e.g. wedding dress, theatrical costume, sample, prototype.

1 mark for each well-explained point. [2]

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(b) Compare the methods of spreading and cutting processes available to the garment manufacturer for:

(i) one-off production;

[3]

Answer could include:

- One-off production: card patterns; shears for cutting
- Card templates – drawn by hand and laser cut
- Spreading: preparing fabric before cutting out; single item cut. Pattern pinned on, spread on table.
- Cutting: usually done by hand for one-off production.

(ii) batch production/mass production.

Answers could include:

- Spreading: roll of fabric will be spread automatically or manually onto a large table; many layers of fabric will be placed one on another; up to 50 layers depending on thickness of fabric and/or how many items are being produced.
- It may be computerised.
- Cutting: can be done by hand using an electric knife or band knife or automatically with a computer-controlled cutter or laser-cutter.

1 mark for each point.

[3]

(c) Discuss the advantages of choosing the 'one-off' method of production for clothing.

Answer could include:

- Item made for a specific customer
- Clients who want an original piece which no-one else has; unique.
- Made to measure
- Item made will fit perfectly due to several fittings
- Often preferred method for celebrities/royalty
- Customer can choose fabric/style
- Cost will be high due to being time-consuming so suitable for individual
- Can apply decoration by hand. Often ornate. Skilled workers used
- Direct contact with customer
- Any other appropriate point.

1 mark for each well-discussed point.

[7]

High band:

The answer will contain well informed discussion of the advantages of 'one-off' production to be a suitable manufacturing method for clothing. There will be a number of detailed examples included.

[5–7]

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Middle band:

The answer will include some discussion of the advantages of 'one-off' production for clothing. There may be some examples although these may have errors and omissions. [2–4]

Low band:

The answer may include limited, if any discussion of the advantages of 'one-off' production for clothing. There will be few, if any examples and they will have errors and omissions. [0–1]

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(d) Assess the variety of hems which are available to the manufacturer for different garments.

Answer could include:

- Types of hems: narrow hem for wide skirts/dresses – raw edge may be over-locked and then folded once with a narrow hem such as 6mm and straight stitched along the edge
- Interfaced hem: Decorative hems e.g. lace edged or decorative stitched and trimmed close to the edge; bound hems. Overlocked (serged) hem which may be left as it is for decorative effect or turned up
- Top-stitched hem
- Faced hem
- Hems in jackets which are lined will not need a hem because the raw edge will be enclosed
- Rolled hem for fine fabrics
- Single hem for heavy fabrics such as for coats – may be hand-stitched or blind hemmed
- Double hem for medium weight opaque fabrics
- Reference to style factors and fabrics when choosing an appropriate hem
- Give credit for labelled sketches
- May include justification for use of hem or advantages and disadvantages.

1 mark for each well discussed point

[10]

High band:

The answer will contain well informed assessment of the variety of hems available to a manufacturer for different garments. There will be a number of detailed examples with justification of the choice of hems.

[8–10]

Middle band:

The answer will include some assessment of the variety of hems available to the manufacturer for different garments. Some examples will be included although they may be brief and may have some errors.

[4–7]

Low band:

The answer may include limited, if any, assessment of the hems available to the manufacturer for different garments. Few if any examples will be included and there will be errors and omissions.

[0–3]

[Total: 25]