

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
GCE Advanced Subsidiary Level and GCE Advanced Level

**MARK SCHEME for the October/November 2011 question paper
for the guidance of teachers**

9631 DESIGN AND TEXTILES

9631/03

Paper 3, maximum raw mark 100

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 Designing suitable clothing for children is important.

- (a) Explain four factors which need to be considered when choosing fabrics for children's clothing.

Answer could include:

Washability – children play and clothes get dirty;
 Comfort of fabric against the skin – e.g. cotton is smooth, soft, etc.;
 Non-allergenic – sensitive skin;
 Safety – no loose fibres, non toxic dyes;
 Absorbent – comfort and in case of spilled liquids;
 Cost;
 Colour;
 Age of child;
 Climate in which to be worn;
 Current fashion.

1 mark for each well-explained point.

[4]

- (b) Describe three fabric finishes which would improve the performance characteristics of fabrics used for children's wear.

Answer could include:

Fabric needs to be named e.g. cotton gingham; cotton denim;
 The following fabric finishes would be suitable for cotton fabrics:
 Stain resistance – children may spill liquids on their clothes;
 Brushing – added warmth, especially for winter wear;
 Flame resistance for nightwear;
 Shrink resistance – clothes are washed frequently;

Up to two marks for each fabric finish.

[6]

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(c) Sketch an outfit for a young child and explain how the following have been considered:

(i) **colour**

Answer could include:

Children like bright colours e.g. red, blue (primary colours), etc.;

Colours may contrast with other garments the children may have in their wardrobe;

Children may have favourite colours;

Certain colours may be in fashion;

Any other relevant point.

1 mark for each well-discussed point.

[3]

(ii) **fabric(s)**

Answer could include:

Washable fabrics/easy to launder e.g. cottons;

Bright designs/patterns on surface;

Suitable for style chosen;

Hard-wearing and durable – to be long-lasting;

Smooth against the skin – sensitivity;

Any other appropriate point.

1 mark for each well-discussed point.

[4]

(iii) **safety**

Answer could include:

Non-toxic dyes;

No use of bleach in washing;

Safety label if required;

No sharp or loose objects which could be swallowed;

No loose fibres which could cause choking;

Any other suitable point.

1 mark for each well-discussed point.

[3]

(iv) **construction techniques**

Answer could include:

Flat comfortable seams e.g. double stitched/overlocked seam edges;

Fastenings which can easily be undone by children;

Colourful motifs;

Pockets for children to keep small objects/toys;

Well-stitched hems/edges;

Patches or reinforced areas e.g. knees/elbows;

Any other relevant point.

1 mark for each well-discussed point.

[5]

[Total: 25]

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2 Creative techniques are frequently used to embellish textile items.

- (a) Sketch a design for a wall panel/hanging, and show two ways of applying or painting colour onto fabric in an interesting way. Label clearly.**

Answer could include:

Any suitable shape/size;
 Pockets could be included for storage, with decoration;
 3D puff paint could be used for extra texture;
 Colour in shapes e.g. flowers, which could be quilted afterwards;
 3D flowers, made using painting/quilting technique which could be attached separately afterwards;
 Paint could be used with a stencil design then embroidered afterwards;
 Any other suitable creative idea using fabric paint. [4]

- (b) Choose a suitable fabric for your design in (a) and explain, using labelled sketches, how to:**

- (i) apply one of the colour techniques in (a)**

Answer could include:

Named fabric: e.g. cotton calico, cotton/polyester gabardine; plain weave jute; etc.;
 Fabric should be firm enough for a wall panel; if thin fabric is used, a backing or stiffened interfacing should be used to give body;
 Technique chosen in **(i)** should be described: e.g. stencilling using fabric paint:
 Draw design onto stencil paper/card;
 Cut out shape with sharp craft knife;
 Mark fabric to show where design should be placed – use chalk or tacking or any other suitable fabric marking method;
 Prepare fabric paint e.g. put on a plate/palette;
 Prepare other equipment required e.g. brush/sponge etc.;
 Start to apply the colour through the stencil; make sure colour is even;
 Allow one colour to dry before applying another colour;
 Continue until the whole design is completed;
 Add embellishment according to design.
 1 mark for each point. [6]

- (ii) use surface decoration to further embellish the wall panel/hanging.**

Answer could include:

Technique chosen in **(i)** should be described:
 E.g. hand embroidery:
 Add chain stitch around the edge of the stencilled design;
 Thread suitable embroidery (crewel) needle;
 Addition of beads etc.;
 Attach the thread to fabric using a knot or double back-stitch;
 Position needle and thread correctly (include sketch to show thread under the needle);
 Take extra care when stitching around corners;
 Fasten off using a double back-stitch;
 Press finished work carefully on wrong side of fabric, using a cloth if necessary to make sure the fabric paint is not affected by heat.
 1 mark for each point. [4]

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- (c) Produce an estimated cost for textile materials, components and notions needed for the wall panel/hanging.

Answer could include:

Measurements will need to be included:

Fabric width could be 90 cm/115 cm/150 cm;

E.g. size of wall hanging could be 40 cm × 50 cm.

Front and back of fabric will be needed;

Seam allowances need to be added to the finished measurements;

Include a lay plan to show how the pattern templates will be arranged on the fabric in the most economical way;

Other materials needed for the wall hanging e.g. thread (machine and embroidery); beads/ other embellishments; type/colours of fabric paint;

Any special equipment which the school may not have.

1 mark for each point.

[6]

- (d) Assess the risks and safety issues involved in the use of dyeing and printing equipment.

Answer could include:

Protective equipment to be worn/used when preparing/using dyes and printing equipment: for example, face mask; gloves; apron/overall; boots if large amounts of dyes/printing materials are being used;

Good ventilation needed in the work area;

Training needed for all using the dyes/printing materials, especially if any of them are hazardous;

Use of non-toxic dyes/printing materials where possible;

Appropriate health and safety signs in the work areas;

No smoking;

Any other appropriate points.

1 mark for each point.

[5]

[Total: 25]

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Section B

Answer two questions.

3 Yarns are used on their own or as part of woven and knitted fabrics.

- (a) Explain the difference between staple fibre yarns and filament fibre yarns, giving examples of fibres used in each case.

Answer could include:

staple fibre yarns: short fibres either from natural source e.g. wool, cotton, or man-made/synthetic/manufactured fibres which have been produced in filament form and cut into lengths.

filament fibres: manufactured fibres from natural sources and chemicals or wholly chemical sources. The fibres are extruded from the spinneret and solidify according to the fibres manufactured (e.g. wet spinning – viscose; dry spinning – acetate; melt spinning – nylon and polyester).

1 mark for each point.

[4]

- (b) Compare the following performance characteristics of staple fibre yarns with filament yarns.
- (i) absorbency
 - (ii) warmth
 - (iii) lustre

Answer could include:

- (i) **absorbency:**

Staple fibres are short in length so there is more opportunity for moisture to stay in the fibres because there are more spaces between the gaps of the overlapping fibres; examples of fibres could be given: e.g. cotton fibres are very short (2–5 cm) so there will be more opportunity for moisture to be retained and cotton is very absorbent; wool has additional crimp in the fibres which allows even more moisture to accumulate.

Filament yarns can be smooth or they can be artificially crimped/textured to give more opportunity for moisture to be trapped; crimped filament yarns are therefore more likely to be more absorbent than smooth filament yarns. E.g., polyester and nylon are not very absorbent and are often crimped in order to improve absorbency rates.

- (ii) **warmth:**

Warmth is similar to absorbency in that if there are air spaces between fibres, this air can be warmed by the body heat which is trapped between the individual fibres and can act as an insulator to keep the body warm.

Staple fibres are therefore more likely to keep the body warmer than smooth filament fibres.

Filament fibres, which are crimped, will allow more volume between individual fibres thus giving more opportunity to keep the body warm.

- (iii) **lustre:**

Staple yarns tend to be dull and if there are many short fibres which overlap each other (when a yarn is spun) the yarns and fabric made from the yarn will be dull.

Filament fibres can be produced so they are shiny, but this will depend on the shape of spinneret hole used. If the spinneret is perfectly round, the fibres will be very shiny; if de-lustering agent is added to the spinning solution, the fibres are more likely to be dull. This is because the reflective light will be dispersed by the de-lustering agent. Polyester and nylon are likely to be very shiny.

If filament yarns are cut into staple lengths they will be much duller when made into yarns which contain staple fibres.

1 mark for each well-explained point (maximum of 2 marks for any one section).

[6]

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(c) Assess the range of textured synthetic filament yarns available for fabric production.

Answer could include:

gear crimping – the synthetic yarns are pushed through gears which are heated; these mould the yarns into a different shape and the final yarn is stretchy and textured permanently.

knit-de-knit – the yarn is knitted, heat set and then un-knitted. This allows for the bends and loops in the yarn to stay permanently. It also allows for more texture and stretch.

stuffer-box – another method where yarn is pushed into a heated chamber and is removed more slowly than it went in. The crimps in the yarn are irregular although permanent. This also gives flexibility and stretch.

air jet processing – loops are formed in the fibres as a result of the filament yarns being fed over an air jet and this happens at a faster pace than the yarn is pulled off. This is not heat set. The yarns do not have much stretch.

draw texturing – fibres which come directly from the spinneret have a false-twist added and this means that the normal drawing/stretching process for synthetics does not have to be done. This process is a fast way of producing textured bulk yarns.

Accept cross-section shapes (spinneret) of synthetic fibres, if relevant.

Any other appropriate method; give credit for diagrams.

1 mark for each point.

[6]

(d) Discuss ways in which woven fabrics can be made more interesting with the use of speciality or decorative yarns.

Answer could include:

slub yarns which have uneven bobbles along the length of the yarn; these can be self colours or new colours can be introduced; any natural or manufactured fibres can be used e.g. cotton with viscose or wool with acrylic;

chenille yarns – yarns have a base and twisted yarns with a third yarn which is cut into very short pieces to produce a type of velvet yarn; usually produced from a shiny viscose yarn or other manufactured fibre such as acrylic;

loop/bouclé yarn, which has regular or irregular loops along the length of the yarn, often made from acrylic;

ratine yarn – threads are twisted around a core yarn and extra long yarns are added, which twist themselves around the core yarn to make extra texture;

snarl yarn – lots of regular open loops are formed along the yarn;

spiral/corkscrew yarn – different thicknesses of yarns are twisted and form a regular texture in the twist;

metallic;

use of different colours in yarns;

any other yarns could be described.

1 mark for each well-discussed point.

High band: the answer will include knowledge and understanding, which looks at the variety of speciality yarns and how they can be used to make woven fabrics more interesting. There will be a wide range of examples of types of decorative yarns. [7–9]

Middle band: the answer will show some knowledge and understanding of a small range of decorative yarns and some points of discussion will be included. There may be some points relating to woven fabrics. There will be a few examples of types of yarns. [3–6]

Low band: the answer will be limited and a few points may be listed. Few if any examples of types of decorative yarns or woven fabrics will be included. [0–2]

[Total: 25]

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4 The selection of appropriate materials for making textile items needs to be considered carefully.

(a) (i) Sketch one garment which has been decorated using either appliqué or quilting. Label the style features on the garment.

Answer could include:

Creative textile techniques available include: quilting; dyeing/tie and dye/tritik; printing/block printing/stencilling; hand embroidery; machine embroidery (automatic patterns already programmed in the sewing machine); free machine stitching; silk painting; batik; etc.

Garment chosen could be skirt; top; dress; nightwear; trousers; jacket; etc.

Style features which need to be shown can include: seam lines, pockets, hemlines, fastenings; where the creative technique is to be positioned; colour; fabric used; etc.

Front and back views.

1 mark for each well-labelled feature.

[5]

(ii) State five reasons for the choice of fabrics for the garment in (a)(i).

Answer could include:

Reasons such as: appropriate weight and suitable for the creative technique;

Fabric suitable for the dye techniques of chosen fabric e.g. cotton fabric with appropriate dye for cotton;

Embroidery techniques – fabrics may need stiffening or backing, so the fabric needs to be suitable for the backing;

Fabric relevant to the occasion e.g. evening dress may have shiny fabric;

Fabric may relate to activity e.g. stretchy fabric for sport may need to have a different creative technique compared with a woven fabric for an office worker's skirt;

Fashionable/appropriate for the target market e.g. teenagers may prefer denim whereas older people may prefer a smooth more classic fabric;

Any other appropriate point.

1 mark for each well-explained point.

[5]

(iii) Write a detailed design specification for the garment in (a)(i).

Answer could include:

Details of fabric: fibre type, construction type, washability, etc.;

Colour and whether range of colours or one colour;

Range of sizes for item e.g. 8–16;

Fastenings to be used;

Stitch type and length to be used;

Seam type and seam finishes to be used;

How much tolerance allowed on seam widths;

Decoration and how it will be worked (e.g. machine/hand);

Pressing details;

Additional materials to be used e.g. interfacing, buttons, hem binding;

Thread to be used: colour, fibre content, etc.;

Any other appropriate point.

1 mark for each well-explained point.

[10]

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- (b) Discuss the benefits to a manufacturer of having detailed written design specifications for textile items.

Answer could include:

Company reputation will be good if garments are always well made;
 Customers will return to buy more items if they are happy with their purchase;
 There will be fewer rejected garments if the specification is followed;
 Specific training can be given to workers;
 Quality control/checking will be easier if there is a detailed design specification;
 Which machines to be used;
 Decrease in errors.
 Any other appropriate point.
 1 mark for each well-explained point.

[5]

[Total: 25]

5 Shaping is often used in garment construction.

- (a) Explain three reasons for using 'shaping' in garment construction.

Answer could include:

Shaping helps the garment to fit the body better;
 Disposal of fullness;
 Disguise figure faults;
 Fashion trends;
 Style features give interest to garments e.g. decoration;
 Type of shaping used depends on fashion trends – some ways of shaping are more fashionable than others at different times;
 Wide variety of types of shaping can be used which gives great variety for designers.
 Any other relevant points.
 1 mark for each well-explained point.

[3]

- (b) (i) Sketch five ways of shaping dresses. Label clearly.

Answer could include:

Darts: single, double-ended, etc.;
 Tucks: pin tucks, cross-tucking;
 Pleats: knife, box, inverted;
 Gathers;
 Smocking: hand (using great variety of embroidery stitches) or machine-based;
 Elasticated fabric;
 Seaming e.g. Princess line;
 Panels based on dart lines e.g. Princess line;
 Any other suitable method of shaping.
 1 mark for each well-explained point.

[5]

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- (ii) Choose two of the sketches in (b) and explain the stages in working the shaping techniques. Include labelled sketches.

Answer could include:

As there is such a wide choice of processes, one example will be given below. All methods need to show: preparation (e.g. accurate measuring, using a template for equal spacing); accurate stitching, giving stitch type/length; accurate fastening off e.g. reversing/back stitch if by hand, etc.

Working a pleat: measure the width required and mark with tacking/fabric marker pen/ other suitable method; fold the pleat;

Stitch along stitching line, making sure ends of thread are secure;

Remove tacking;

Press carefully;

Pleats need to be pressed along pleat line.

Give credit for labelled sketches.

Any other appropriate point.

1 mark for each well-explained point.

[10]

- (c) Discuss some of the environmental issues related to the textile industry, with particular reference to pollution.

Answer could include:

Pollution of rivers with dyes and waste water associated with dyeing process;

Chemicals such as bleach may get into the water supply;

Pollution from chimneys – could use filters;

Recycle water and re-use for other dye processes;

Toxic dyes used instead of less harmful ones;

Wasted energy: lost through building (poor insulation);

Energy could be re-cycled;

Re-use/recycle unwanted garments;

Less travelling – the factories/production units/businesses could be closer to the source of fibre/fabric production to save travel costs;

Use solar power/wind power generators to save using coal/oil products which are non-renewable.

Any other appropriate point.

1 mark for each well-discussed point.

[7]

[Total: 25]