UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the October/November 2010 question paper for the guidance of teachers

9631 DESIGN AND TEXTILES

9631/03 Paper 3, maximum raw mark 100

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Section A

Answer *both* questions.

1 Many finishes are used for fabrics and garments.

(a) Outline *four* reasons why fabric finishes are needed on natural fabrics. [4]

Answer could include:

- to add basic finishes such as bleaching (to make sure the fabric is white before dyeing), scouring (used as a cleaning process on wool), beetling (to add lustre to linen fabrics), tentering (to straighten the warp and weft threads/selvedges), etc.;
- to improve appearance – e.g. glazing to give a more lustrous finish; singeing to remove uneven threads on surface;
- to improve the performance characteristics e.g. anti-static (e.g. on polyester/polyamide which are affected by static), anti-bacterial (e.g. cotton fibres), flame-proofing (cotton, linen polyester fabrics); stain repellency (e.g. cotton fabrics); mercerising (e.g. cotton fabrics to add lustre, strength, etc);
- moth proofing;
- easier washing e.g. machine washable wool;
- to add decorative finishes – e.g. embossing (crinkled surface), moire (used to produce water type marks on fabrics such as silk and synthetics;
- improve texture/handle/feel e.g. brushing.

1 mark for four different points, well explained

(b) Assess the different types of fabric finishes which would be suitable for use on synthetic fibres/fabrics. [5]

Answer could include:

- synthetic fibres include: polyester, polyamide, acrylic, modacrylic, elastomerics, PVC, etc; accept blends of synthetics if well explained;
- finishes applied due to thermoplasticity of fibres e.g. heat setting; permanent pleats; embossed surface to add texture etc;
- yarns can be textured (thermoplastic or mechanical means) to add elasticity to fibres - used for items such as hosiery, knitted fabrics etc;
- finishes added to reduce static e.g. anti-static finish;
- finishes which can be added while the fibres are still molten, before the spinnerette stage e.g. de-lustering of polyester to make it more of a matt finish rather than a lustrous one;
- special finishes e.g. flame retardance, may be added to spinning solution or after fabric has been produced; water repellency; laminating;
- details of the process could be included but discussion needs to include an assessment of the finish, to include the benefits in use;
- any other suitable point.

1 mark for each well-assessed point;

High band: 4–5 marks
Middle band: 2–3
Low band: 0–1

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(c) Briefly outline the methods used to produce *four* named mechanical finishes, giving examples of suitable fibres/fabrics. [4]

Answer could include:

- raising/brushing – used on fabrics such as cotton types, to increase thickness and add warmth to fabrics; fibres are plucked from the surface on one side of the fabric, using wire brushes;
- singeing – used to burn off fibre ends from the surface to make it more even/smoother; removes roughness and may reduce pilling;
- shearing used for velvet fabrics e.g. cotton velvet, where a blade cuts the pile to make it even;
- calendering and embossing – heavy rollers used to compress the surface of the fabric, making it more lustrous and smoother; increases the stain resistance properties; used for fabrics like cotton types;
- beetling – used on linen fabrics – wooden hammers are used to beat the surface, thereby making a smoother firmer fabric and closes up the weave;
- any other suitable mechanical finish.

1 mark for each well explained point, including examples
1 mark only if just a list of points

(d) Assess the relevant factors to consider when choosing fabrics and finishes on clothing for people with physical disabilities (for example, people who have difficulty in seeing or walking or who may be in a wheelchair). [12]

Answer could include:
The following points will need to be considered when assessing clothing for people with physical difficulties.

- comfort in both fibres and fabrics: natural fibres (e.g. cotton) are comfortable to wear, due to moisture absorbency; however, may have other properties which may be disadvantages e.g. may crease badly, stretch properties/fabrics;
- types of fibres used e.g. natural, man-made, synthetic, texture for people who are partially sighted: can feel clothes;
- blends and mixtures of fibres/fabrics may be more suitable than one fibre fabrics only; e.g. 50% cotton and 50% polyester may be more suitable than 100% cotton or 100% polyester;
- visibility: bright colours/light reflective areas on clothing to make them more visible especially at night;
- types of clothing: e.g. nightwear (one or two piece), day wear: for men or women, such as trousers, skirts, tops, jackets;
- special features on clothing e.g. fastenings for easier removal of clothes (velcro or press studs);
- performance characteristics e.g. easy to clean/wash/iron/ stain removal/etc;
- types of use the fabrics/clothing will have e.g. sedentary lifestyle may need fabrics/clothing which are crease resistant and comfortable at the same time;
- special finishes e.g. Teflon type to reduce the creasing on fabrics which may crease badly e.g. cotton;
- other special finishes e.g. fire retardance, water repellancy;

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- cost of clothing with special finishes – may be too expensive for disabled if on restricted incomes;
- durability e.g. wear and tear
- any other relevant points, well discussed.

1 mark for each well discussed point

High band: 9–12 marks
Middle band: 4–8
Low band: 0–3

[Total: 25]

2 Traditional creative techniques are often found on textile items.

(a) Explain the benefits of studying textile techniques from different cultures, old and new. [3]

Answer could include:
- get many ideas and knowledge from the past e.g. colours, designs, which could be re-invented and used in a contemporary way by fashion designers and textile designers on fashion items;
- good examples of different textile techniques often collected and displayed in museums for others to study;
- integration of culture into our own culture/exchange of ideas;
- learn new stitches/crafts;
- learn new cut/construction techniques of clothing/ other items;
- learn how other cultures use different materials from their own
- environment to decorate and embellish items;
- several ideas can be combined to produce new designs.

1 mark for each well explained point

(b) (i) Sketch and label a textile design, from a named culture. [3]

Answer could include:
- any suitable culture e.g. Indian, Chinese, British; French; North American Indian;
- for example, Indian culture: 'cone' pattern or /paisley type/ often has an outline stitch and is filled in with an elaborate lace-type pattern;
- colour could be red/blue/gold/black/ - the colours often used in Indian textiles;
- Chinese culture often uses birds and flowers which are painted onto fabric, or woven into fabric;
- detailed sketch showing accuracy and well labelled.

1 mark for each well labelled accurate point

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(ii) Explain how the design could be developed for use on a named textile item. Illustrate your answer. [7]

Answer needs to relate to the sketch in **(ii)**.
Answer could include:

- any suitable items e.g. cushion, skirt, bag, etc;
- needs to be an idea developed from the original, and not just a copy;
- could include: enlarge/reduce the basic shape; vary the scale and have a variety of shapes (e.g. large/small together); shape could be turned 45 or 90 or 180 degrees; colour could be adapted; design could be based on the negative shape which remains once the main shape has been drawn;
- could include a manufacturing process e.g. embroidery;
- detailed sketch showing accuracy and well labelled.

1 mark for each well labelled accurate point

High band: 6–7 marks
Middle band: 3–5
Low band: 0–2

(c) Assess the range of traditional decorative hand techniques from different cultures which are used on textile items.
Include specific examples in your answer. [12]

Answer could include:
Variety of different cultures to be discussed:

- any relevant country studied – could include examples from the types of textiles studied in museums/own collection/those available in second hand shops/antique sales/ markets/etc;
- stitches used on textile items e.g. stem/straight/running stitch/etc;
- threads used: e.g. fibre type (silk/cotton/etc); type of texture e.g. smooth/shiny/matt finish/etc;
- colour used e.g. red/blue/white/etc;
- type of dye used e.g. natural/plant/synthetic/etc;
- type of technique e.g. embroidery/crochet/macrame/knitting/lace/tufting/etc;
- embellishing with other material e.g. shells; beads; ribbons;
- type of design used e.g. plants/animals/geometric/etc;
- where the design is used on the item e.g. border design/spot design/focal point/etc;
- type of textile item e.g. clothing/bed covers/animal covers/accessories for the home or other use, etc;
- whether the design/technique is combined with any other technique e.g. lace added to a hem edge which is embroidered, etc.

Answer could include sketch showing accuracy and well labelled.
1 mark for each well assessed point
1 mark if only a list is given
Give credit if countries/cultures are named

High band: 9–12marks
Middle band: 4–8
Low band: 0–3

[Total: 25]

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Section B

Answer *two* questions.

3 Environmental factors are an important consideration in the design of textile products.

(a) Outline *four* factors which cause physical wear in textiles. [4]

Answer could include:

- light e.g. UV could cause textiles to deteriorate and cause disintegration and holes after a period of time; shagging; felting; pilling; abrasion;
- dye may be affected by light/use of certain types of washing powder/etc;
- abrasion may cause the fabric to wear away e.g. certain parts of the textiles may be more susceptible than other parts e.g. elbows/knees areas are more likely to cause wear and holes;
- laundering processes such as ironing may flatten the surface of the textile especially if the fabric has a special finish e.g. pile/brushed surface/embossed surface/etc;
- certain types of fabrics are more likely to pull out of shape due to the construction e.g. knitted fabrics more likely to have shorter life;
- textiles used repeatedly;
- mildew if kept in damp conditions.

1 mark for each well labelled accurate point

(b) Explain how Eco-labelling on garments benefits the consumer. [4]

Answer could include:

- consumers can make ethical choices if they can read the labels which have details explained; information for consumers; organic; sustainable sources; not adding to pollution;
- awareness/education of ethical issues and consumers can choose whether to buy the items or not;
- items may cost more than non-eco labelled items, but the consumer can have the choice;
- items may use less dyes/less chemicals so may be an attractive choice for consumers;
- number of air miles used; in the long-term helping the planet by reducing pollution.

1 mark for each well discussed point

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(c) Assess the range of environmentally friendly fibres and fabrics available for textile use. [8]

Answer could include:

- cellulosic fibres e.g. organic cotton, which is now widely available and is produced with minimum environmental impact; pesticides, insecticides and herbicides are not used and the fabric is often left undyed (e.g. unbleached) or if dyed, suitable dyes are used which do not harm the environment; organic cotton is not genetically modified; organic cotton costs more to produce; coloured cotton fabrics can also be grown (e.g. green/brown), minimising the need to use dyes; organic cotton provides farmers with a better income; natural pesticides are used (e.g. chilli); helps the environment by allowing a variety of insects species to thrive;

and other fibres which are from renewable resources e.g.:

- hemp – quick growing and does not need irrigation and few pests attack the plant; plant has long fibres, making it suitable for spinning; fabrics made from hemp are soft, strong and can be woven or knitted;
- wool – renewable source – eco-friendly – as long as the animals are treated well and appropriate use of bleaching/dyeing;
- 'silk' from soya – the byproduct from tofu can be used to make a type of 'silk' fibre; this can be made into yarn, then woven and knitted;
- polyester fibre can be made from re-cycled plastic bottles; this is made into fleece-type fabric;
- bamboo has been used to make fabric;
- lyocell – this is a variation on viscose and is a solvent spun cellulose fibre which has cotton-like properties and has the name of Tencel (made by Courtaulds); the solvent can be reproduced with almost no problems associated with waste, so does little harm to the environment; has a circular cross section and is similar to synthetic fibres (under the microscope); Tencel often blended with other fibres such as cotton and polyester; moisture regain is 11.5%; fabric is knitted and woven and is widely used in clothing and home furnishings;
- hand woven, hand knitted etc (less energy used).
- any other relevant point.

1 mark for each well discussed point

High band: 6–8 marks
Middle band: 3–5
Low band: 0–2

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(d) Discuss the way in which consumers can help to reduce the environmental impact of textiles in today's society. Give specific examples. [9]

Answer could include:

- recycle clothes: give clothes to clothes banks/charity shops;
- buy less clothes and make existing ones last longer;
- buy less high fashion and more classic designs which do not date so quickly; change the colour of clothes by dyeing, so they can be worn for longer;
- wash clothes less often so that less water/detergent/energy is used;
- buy clothes that do not crease much so that less ironing is needed therefore less energy used;
- use fabrics from a variety of different clothes to make more varied items e.g. bag or cushion;
- do more craft activities to use up textiles e.g. patchwork/applique;
- buy fabrics which are white/unbleached so that less water/dyes used;
- wash items in cooler water by using different washing detergents;
- re-style;
- swishing (switching clothes with friends);
- buy biodegradable fabrics;
- buy unbleached clothes.

Not 'protests' against pollution etc

High band: 7-9 marks
Middle band: 3-6
Low band: 0-2

[Total: 25]

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4 You have been asked to design a range of skirts for the teenage market.

(a) Briefly outline *three* types of research you would need to carry out before designing. [3]

Answer could include:
- existing product research; client research; customer profile; trend forecasts;
- what is available in the shops/mail order/internet/markets/etc;
- market research (field research): to find out what consumers would like to have/are prepared to buy e.g. types of skirts (evening/day wear); costs (how much they will pay for skirts); make one item and ask consumers if they like it;
- survey/questionnaire – to find out from groups of people – what sort of skirts they would like to buy;
- any other relevant point.

1 mark for each well explained point

(b) Explain *four* factors which would need to be considered when selecting fabrics for the skirts. [4]

Answer could include:
- what is fashionable/available;
- culture e.g. some Muslims do not believe in the wearing of products made from animal skins;
- the occasion or season the skirts are to be worn e.g. evening wear/school wear;
- performance characteristics e.g. washability, drape, strength/hardwearing/length of life qualities; costs of fabrics; type of fibre content e.g. only natural/synthetics/ environmentally friendly fabrics/Fair Trade fabrics/etc;
- weight of fabric;
- any other relevant points.

1 mark for each well discussed point

(c) Explain how a manufacturer would calculate accurately the textile materials required to make a batch of skirts. [4]

Answer could include:
- using a computer program to work out layout of a large number of items;
- make a prototype skirt to check sizes;
- the manufacturer would need to know:
- width of fabric to be used;
- how many pattern pieces are used for each item; interfacing; pockets; components;
- how many colours of fabrics/different fabrics are being used;
- how many sizes are to be produced;
- how to reduce the waste and be economical with the fabric available;
- how many skirts in the batch;
- any other relevant points.

1 mark for each well discussed point

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(d) (i) Sketch and label *two* skirts in the range, showing important design details. [6]

Answer could include;
front view; back view; to be shown for each skirt; the important style features e.g. position of pockets/seams/fastenings; types of decoration/ any top stitching.

sketches should be accurately drawn and well labelled

1 mark for each relevant well labelled sketch, up to 6 marks

(ii) Write a detailed product specification to manufacture *one* of the skirts. [8]

Answer could include:
details of:

- fabric (e.g. width, fibre content, colour etc);
- seams to be used (e.g. stitch size, width from edge, etc);
- type of seam;
- fastenings to be used (e.g. buttons, zip, etc);
- surface decoration, if any, e.g. embroidery, top stitching;
- colour range for the skirts;
- size range for the skirt;
- labelling e.g. content, care labels, special labels, etc;
- waistband finish e.g. facing/interfacing/etc;
- components needed e.g. thread/buttons/zips/hooks/etc;
- position of labels;
- content of labels e.g. care instructions;
- tolerances (e.g. seam allowances);
- any other appropriate point.

Only 1 mark if just a list of points which are not explained
1 mark for each well explained point, up to 8 marks

High band: 6–8 marks
Middle band: 3–5
Low band: 0–2

[Total: 25]

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5 (a) Assess the factors which need to be considered when designing specialist garments for outdoor wear. Include examples of specific garments. [12]

Answer could include:

- what type of garment is being produced e.g. trousers/jackets/raincoats/etc;
- specialist fastenings e.g. safety features/ease of use in extreme conditions such as freezing/excessive heat;
- type of fabric i.e. suitable for item;
- special fabric finishes e.g. waterproofing/UV protection;
- special fabrics e.g. Goretex – breathable and water proof;
- colours of fabrics e.g. neon for brightness/visibility;
- special construction techniques e.g. taped seams to prevent water penetration;
- cost of the final items – depends on the fabrics/components used;
- season/weather conditions – some fabrics may be too thin to use unless padding added for warmth;
- decorative features e.g. logos, use of different colours;
- whether a range of coordinated items is being designed e.g. jackets and trousers to be worn together;
- special components needed – do they need to be ordered specially;
- any other relevant point.

1 mark for each well discussed point

High band: 9–12 marks
Middle band: 4–8
Low band: 0–3

(b) Discuss how a batch of jackets would be manufactured. [13]

Answer could include:
(Batch production is the production of a fixed quantity of products);
manufacturer would need to consider the following all related to the answer given in **(a)**:

- how long does the manufacturer have to make the batch of items;
- how many need to be produced in the batch; how do the numbers in the batch affect other production runs;

depends on what type of jacket is being produced e.g. casual/smart/lined or not/etc:

- cutting out the items – what colours fabric pieces are being cut out; can different pieces from the batch be fitted close together to save wasting fabric;
- can different sizes of the garments be cut out at the same time;
- what machinery is available to make the items; how many staff are available to use the machines;

depends on specialist fastenings e.g. safety features:

- are the staff able to carry out the attaching of the fastenings or will they need training;

depends on special fabrics e.g. Goretex – breathable and water proof:

- do special construction techniques need to be used e.g. do special machine needles have to be put in the machines or do the seams need to be taped in case holes are produced during stitching, which may interfere with the performance of the fabric;

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depends on cost of the final items – depends on the fabrics/components used:

- special components needed – do they need to be ordered specially, which may affect the time it takes to produce the items/cost implications;

depends on season/weather conditions – some fabrics may be too thin to use unless padding added for warmth:

- will the padded fabric be produced by the manufacturer or will this have to be bought elsewhere;

depends on decorative features e.g. logos, use of different colours:

- will the decoration/logo be produced by the manufacturer or will a different manufacturer produce the designs;

depends on whether a range of co-ordinated items is being designed e.g. jackets and trousers to be worn together:

- should the items be cut out at the same time to ensure that the colour matches exactly on both items;

any other appropriate point; answer needs to relate to answer in **(a)**.

1 mark for each well discussed point

High band: 9–13 marks
Middle band: 4–8
Low band: 0–13

[Total: 25]

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