
DESIGN AND TEXTILES**9631/01**

Paper 1 Fibres, Fabrics and Design

October/November 2018

MARK SCHEME

Maximum Mark: 75

Published

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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

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This document consists of **14** printed pages.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer	Marks
Section A		
1(a)(i)	<p>definition of the following:</p> <p>answer could include: <u>weft knitting</u> is when a series of interlocking/interlaced loops (1) is produced in sequence Not interlocking yarns one continuous thread is used to produce weft knitting (1) 1 mark for each correct point (up to 2 marks)</p>	2
1(a)(ii)	<p>definition of the following fabric structure:</p> <p>answer could include: <u>warp knitting:</u> loops work in a zig zag/diagonal way linking between two adjacent loops (wales), loops interlock vertically along the length of the fabric (1) Not yarns each needle has its own yarn and the needles are all moved together (1) 1 mark for each correct point (up to 2 marks)</p>	2
1(b)	<p>Production methods used for weft knitting:</p> <p>answer could include: loops are formed in sequence across the width of fabric (1) courses (horizontal direction) and wales (vertical direction) (1) weft knitting can be produced on knitting needles or flat-bed/circular knitting machine (1) needles used latch, bearded and compound (1) the loops are flexible and can be stretched in both warp and weft directions if garter stitch; stretches less in warp direction (1) high elasticity (1) does ladder (1) Can lose its shape easily (1) weft knitted structure shows a definite right side and wrong side (1) (plain) single jersey structure, two sides of fabric have different appearance (1) many other variations of loop formation (purl/plain/rib etc.) plain jersey structure/interlock where the front and back of the fabric are different in appearance (1) many variations of rib, 1×1, 2×2, 3×1, 2×1 etc. (1) no duplication of points given in 1(a)(i) 1 mark for each well explained point</p>	4

Question	Answer			Marks
1(c)	Comparison of the performance characteristics:	Weft knitting	Warp knitting	8
	Stretch characteristics	Very stretchy in weft direction	Firm, some stretching in warp direction	
		Unravels easily (ladders/frays)	Does not unravel, or ladder/fray	
		Stretches out of shape easily	Recovers and keeps its shape	
	Yarn suitability	Any type of fibre can be used for the yarn strength – can be soft or tightly twisted as any yarn can be used;	Synthetic types more often used e.g. polyester, nylon. Yarn needs to be strong to withstand tension in the manufacturing process. Thinner yarns more suitable.	
		Texture of yarn: any type of smooth, hairy or textured are suitable	Smooth yarns more suitable as it is faster to produce the fabric (less breaks/snags) Not coarse/rough	
<p>1 mark for each correct point, well compared for full marks. If only one fabric mentioned and not compared, no marks. If only one fabric is explained but there is no comparison, max 2 marks. Must have comparison for full marks.</p>				

Question	Answer	Marks
1(d)	<p>Discussion of why warp knitted fabrics rather than woven fabrics might be used for uniforms/workwear. Specific examples of warp knitted fabrics to be included.</p> <p>Answer could include: <u>discussion could include:</u> <u>structure:</u> firm, less movement (woven)/slightly more flexibility (warp knits)/warp knitted more flexible than woven; <u>strength:</u> woven (very strong if a firm weave such as twill weave, fabric example: cotton denim/twill/gabardine; /warp knitted, firm but prone to snagging due to threads on the surface, this will depend on how thick yarns are/how dense the warp knitting structure is; <u>what the fabric is used for:</u> type of occupation/corporate image; if not a hard-wear situation e.g. tabbard, a softer/less tight warp knit would be suitable; if hard wear is required e.g. overalls frequently washed, woven polyester/cotton may be more suitable. <u>Thickness:</u> yarns can vary in thickness whether for woven or warp knitted structures; synthetic based yarns (e.g. polyester/nylon) can be produced to be very fine but strong e.g. mono-filaments; natural fibres are usually made from short staple fibres (except filament silk) so there is a limit to how fine the yarns can be and some fibres are stronger than others – related to fabrics being discussed (e.g. cotton/linen are strong, especially when wet, wool fibres are weaker) <u>types of fibres used:</u> natural fibres: cotton, linen, silk (not usually used for workwear), wool; man-mades from natural sources e.g. viscose, bamboo, etc. not very hardwearing and tend to crease so unlikely to be used for workwear; synthetics can be modified to make them very hardwearing and suitable for workwear, so most likely to be used for workwear; (any other suitable fibres); fabrics from natural or regenerated fibres are less likely to be used for warp knitting as natural fibres are made from short staple fibres, except silk which is not suitable for workwear; natural fibres might be blended with synthetics to make them suitable for warp knitting; <u>reasons to use warp knitting:</u> some stretch, lengthways so may make a more flexible/comfortable garment; firm, but may snag depending on thickness of yarns and density of knit structure; keeps its shape; easy wash and care depending on fibre used; tricot, locknit, raschel, fleece; easy to cut and sew because doesn't unravel or fray; can make a less bulky garment which is still strong; synthetics usually easier to care for; Warmth Fast production methods; cheap to produce; cut and sew method. <u>reasons not to use warp knitted fabrics:</u> expensive to produce, may not be as strong as woven (must relate to fabric example given); could snag and may cause accident; only stretches lengthways unless Lycra blended with fibre. <u>what is in fashion:</u> suitability of fashion trend/workwear/corporate image; formality of style. Synthetics easy to care for. <u>winter/summer season:</u> lightweight/heavier weight fabrics needed; 1 mark for each well explained point.</p>	9

Question	Answer	Marks
2(a)(i)	<p>The identification of three regenerated cellulose fibres.</p> <p>answer could include: viscose, modal, Lyocell, acetate, triacetate, rayon; any other suitable fabric 1 mark for each fibre name (up to three)</p>	3
2(a)(ii)	<p>A description of the source of <u>each</u> of the fibres identified in (a)(i).</p> <p>answer could include: <u>viscose (rayon)/modal/Lyocell</u>: wood pulp/cotton linters and sodium hydroxide (accept caustic soda); Lyocell contains other additional chemicals using a modified viscose process. Modal – beech trees and cellulose Not wood chips <u>Cupro</u>: copper oxide and other copper compounds dissolve in aqueous ammonium hydroxide, which dissolves cellulose (wood pulp/cotton linters). <u>acetate/triacetate</u>: wood pulp/cotton linters are dissolved in acetic anhydride and acetic acid 1 mark for each correct source. Credit correct answers for wrong fibre from previous question.</p>	3
2(a)(iii)	<p>The identification of one fabric made from each of the above fibres.</p> <p>answer could include: viscose slub; viscose linen-look; viscose pout; etc. viscose/modal jersey; Lyocell /viscose blended twill; viscose/cupro jersey; Crabyon® is a blend of chitosan (5–20%) and viscose; acetate surah; acetate satin; acetate twill; triacetate lining (plain/satin weave); accept blends with regenerated fibres as long as the construction method is also given. any other relevant fabric, must relate to one of the examples given in (a)(i). 1 mark for each correct name. Fibre and name of fabric/construction method must be given for each example (i.e. woven/knitted). Credit correct answers for wrong fibre from previous question.</p>	3

Question	Answer	Marks
2(b)	<p>Compare four performance characteristics of polyester fibres with regenerated cellulose fibres.</p> <p>answer could include: <u>four performance characteristics could include:</u> strength; absorbency/dyeing properties; mildew resistance; drape/hang; handle/softness; durability; thermoplasticity; elasticity; flammability; washability/laundrying/easycare (e.g. polyester); etc.</p> <p>Not biodegradable properties regenerated cellulose fibres: very absorbent (viscose/modal/cupro) viscose/modal crease easily; different spinning methods used so can be cotton like in handle; acetate/triacetate are thermoplastic, viscose/modal not thermoplastic. <u>Crabyon®</u> is absorbent and easy to dye; soft handle; antibacterial properties of chitin so very good for socks, underwear etc; very strong; biodegradable; non allergic;</p> <p><u>comparison of polyester fibres:</u> polyester: standard polyester is non absorbent (can be made hollow, as in sports wear); thermoplastic so softens with heat – care needed when laundrying/ironing; not easy to dye with all dyes (unless added to spinning solution);</p> <p>If the advantages of only one fibre are given, max 3 marks. 1 mark for each performance characteristic described used and up to 2 marks for each well explained point. There must be 3 comparison points which are well discussed for full marks, leading to a conclusion.</p>	8

Question	Answer	Marks
2(c)	<p>Discussion of the possible end uses of woven polyester fabrics.</p> <p>Answer could include: end uses such as : fashion clothing e.g. Tops/dresses/skirts; fashion accessories e.g. Socks/hats/scarves/etc.; strength; hardwearing; drape; washability; handle/feel; cost; ethical reasons/choice; etc. <u>woven fabrics</u>: crisp fabrics suitable for uniforms for work, smart wear; soft flowing fabrics for evening wear etc. woven fabrics – wide range of fabrics made from many different fibres, different weights/weaves/colours/etc., synthetics can also be produced in a wide range to copy natural fibre fabrics. Specific types of ladies trousers to be listed e.g. workwear; nightwear; children's clothes; sports clothes; evening /party wear; household uses such as cushion covers/bedding; 1 mark for each well discussed point. There must be comparison points which are well discussed for full marks, leading to a conclusion. any other relevant well discussed point. 1 mark for each reasoned explanation, must relate to the end use. If just listed properties and no end uses – No marks If just listed end uses with no reasons – 1 mark</p>	8

Question	Answer	Marks
Section B		
3(a)	<p>An explanation of three influences which may lead to changes in fashion styles.</p> <p>answer could include: suitable fabrics available; who the fashion style is for e.g. whether a specific target group e.g. teenagers, music followers, etc.; Literature, Art, History, whether cultural styles are being used/where the designer gets ideas from; which season is being designed for e.g. summer/winter; technological changes e.g. ways to print designs onto fabric might mean a simple design is better to see a large print/new fabrics; New fibres and fabrics Easy care/New care technology celebrities – what they wear may start a trend; www/social media the economy/social changes e.g. if there is recession, people may be more interested in re-cycling/upcycling clothes; Political reasons Changing status of women in society current trends; street wear – designers may copy ideas from the street e.g. graffiti used on T shorts; care of fabric e.g. washing machines have meant easy-care fabrics may be more popular; environmental awareness; any other relevant point. Up to 2 marks for each well discussed influence.</p>	6
3(b)	<p>Explanation of what is meant by the term 'fashion revival'. Specific examples to be given.</p> <p>Answer could include: an aspect of fashion which is re-used/re-worked and used in current fashion. This may be an item of fashion e.g. gloves/a particular style e.g. 1960's shift dresses/the use of a particular fabric e.g. Crimplene/a specific part of an item e.g. sleeve style revived; /corsets/slashed styles; 1 mark for a brief description, 2 or more marks for a detailed explanation and relevant designers, with two or more examples to be given.</p>	4

Question	Answer	Marks
3(c)	<p>An explanation of how the shape of ladies' skirts has evolved over time, with examples from the designers studied. Sketches may be included in the answer.</p> <p>answer could include: If there is a sketch, any suitable idea, could be labelled to show the style feature/shape being discussed; designers studied: could be well-known designers such as Chanel, Dior, YSL, McQueen, D&G, Gucci, Quant, etc. or designers who are more well-known in specific countries; time-line may vary but examples should be from two or more historical eras eg Art Deco, Pop-Art, 1960's, 1980's etc. 1 mark for each relevant well discussed point. Relevant examples should be included which illustrate knowledge and understanding for full marks. Sketches that convey meaning to be credited. Can answer without sketches.</p>	6
3(d)	<p>A discussion of how the style of ladies' skirts has been influenced by new developments of fibres and fabrics over the years.</p> <p>answer could include: which suitable fabrics are available and when; introduction of synthetic fabrics in 20th century; recently more emphasis on eco-fashions, recycling, using fibres from sustainable sources; smart fibres/conductive thread/micro-encapsulation/etc. the sort of product being made i.e. skirts so suitable techniques and processes need to be worked; availability of components e.g. thread, lace, trimmings, availability of machinery/equipment/machine attachments e.g. Heat press; printing methods; non woven fabrics/etc. what skills the staff have e.g. early 20th century, hand sewing may have been popular for some processes which are now done by CAM machines/other computer control; better properties/comfort/better fit/Easy care more variety of colour/dyes; better performance/washability/easy care; sustainable fibres/fabrics; bigger range/variety/more blends; cheaper production/mass production more developed/widely available. any other relevant point; 1 mark for each well discussed point.</p>	9

Question	Answer	Marks
4(a)(i)	<p>Explain what is meant by the following terms used in large scale clothing manufacture:</p> <p>Spreading:</p> <p>answer could include: smoothing out of fabric before the pattern pieces/template is put on; may be a single layer of fabric/single ply (spread out flat); might be multiple layers (multiple ply), depending on how many items are made and whether it is batch production or mass production/thickness of the fabric; fabric spread on a table according to a plan, ready for cutting; layers of fabric unrolled from fabric roll which is wheeled up and down the table to make the layers; paper plan is placed over the fabric to guide non computerised cutting; 1 mark for each well explained point, up to 2 marks</p>	2
4(a)(ii)	<p>cutting:</p> <p>answer could include: large cutting table used where fabric has been spread out in layers; being cut by scissors/shears for small quantities/small pieces special cutters used e.g. band saw cutters/laser cutters; jigsaw-type cutter used with chain mail gloves for protection; depends on thickness of fabric; automatic computerised /laser cutter/die cutter (small pieces) used which follows a path for best efficiency to save on wastage of fabric; 1 mark for each well explained point, up to 2 marks.</p>	2
4(b)	<p>Explain <u>two</u> methods that manufacturers use to mark fabric ready for sewing</p> <p>answer could include: many types of markers available: <u>thread marking (by machine)</u>; tacking thread is stitched vertically through the layers of fabric, thread is then cut between the single layers; fluorescent thread can be used which will be visible under UV light; <u>hot notching (snipping) the fabric</u>: makes marks at edge of fabric; depth of cut/notch can be adjusted; <u>drill marker</u> – small hole is drilled through layers of fabric; hot drill can be used to drill the holes to make the holes more durable; <u>dye marker</u>: drilled holes also marked by colour and dot is visible on any fabric; can be a fluorescent marker visible under UV light; any other relevant point 1 mark for each well discussed point. Must have two different methods for manufacturing (not tailor tacking).</p>	4

Question	Answer	Marks																														
4(c)	<p>Compare the two methods below as ways in which designs/patterns are transferred to fabrics:</p> <ul style="list-style-type: none"> • Traditional hand methods • Using computer aided designs <p>answer could include: computer aided designs: CAM embroidery to stitch embroidered logos in different colours; digital printing – any design can be printed; transfer printing – new technologies for some fabrics e.g. more suitable for polyesters; jacquard designs produced digitally; surface pattern produced on fabrics before computers were used could include: printing, different types e.g. block, screen, etc.; embroidery; dyeing: batik, tie dye/etc.; techniques used in craft e.g. transfer paper, drawing on design; advantages/disadvantages of CAD with manual methods;</p> <table border="1" data-bbox="325 922 1310 1776"> <thead> <tr> <th></th> <th>advantages</th> <th>disadvantages</th> </tr> </thead> <tbody> <tr> <td><u>Traditional methods</u></td> <td></td> <td></td> </tr> <tr> <td>Cost</td> <td></td> <td>expensive</td> </tr> <tr> <td>Time</td> <td></td> <td>Time consuming</td> </tr> <tr> <td>Ease of use (how complicated)</td> <td>Can produce intricate designs</td> <td></td> </tr> <tr> <td>Number of colours</td> <td>unlimited</td> <td>Slower than CAD</td> </tr> <tr> <td>Suitability of method for end use</td> <td>End use to be stated</td> <td></td> </tr> <tr> <td>Size</td> <td>Limited to drawing table</td> <td></td> </tr> <tr> <td>Versatility</td> <td>Can be modified for all designs</td> <td></td> </tr> <tr> <td>Type of manufacture to be used</td> <td>Suitable for all types</td> <td></td> </tr> </tbody> </table>		advantages	disadvantages	<u>Traditional methods</u>			Cost		expensive	Time		Time consuming	Ease of use (how complicated)	Can produce intricate designs		Number of colours	unlimited	Slower than CAD	Suitability of method for end use	End use to be stated		Size	Limited to drawing table		Versatility	Can be modified for all designs		Type of manufacture to be used	Suitable for all types		8
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Question	Answer			Marks
4(c)		advantages	disadvantages	
	<u>CAD method</u>			
	Cost	Cheaper /easier in the long term	Expensive to set up	
	Time	Very fast	Staff need training before use	
	Ease of use (how complicated)	Very fast	Staff need training before use	
	Number of colours	unlimited		
	Suitability of method for end use	Can be modified for any method; software could be written to accommodate any new methods		
	Size	Not limited		
	Versatility	Can be modified for any method; software could be written to accommodate any new methods		
	Type of manufacture to be used	Can be modified for any method; software could be written to accommodate any new methods		
any other relevant point 1 mark for each well assessed point.				

Question	Answer	Marks
4(d)	<p>Discussion of the stages involved in garment pattern-making in industry with reference to production/manufacturing methods.</p> <p>answer could include: <u>manual method used for one-off production:</u> one pattern cut out at a time; specific measurements for an individual customer; no special equipment needed – tape measure/tailors chalk/dressmakers shears/tailors dummy/etc.; pattern can be made from parchment /card/paper so kept in case it is needed again; basic blocks may be used as a starting point for new styles; draping on a dummy;</p> <p><u>batch/mass computerisation of manual methods may be used depending on scale of manufacture/sophistication of operation and whether the patterns are made by design team or manufacturer.</u> making a template digitally which can be saved/stored/copied/modified/etc; cost effective; template will be based on body measurements/standard size charts; grading: different sizes; can be made from card (parchment), or can be a digital template (downloaded to the cutting machine); 1 mark for each well explained point. Must include information for at least two types of patterns used for manufacture for full marks.</p>	9