

GCE Design and Technology: Product Design (Textiles)

Mark scheme

TEXT1 Materials, Components and Application June 2016

Version: 1.0 Final

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' 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 from aga.org.uk

NB This mark scheme is intended as a guide to the type of answer expected but is not intended to be exhaustive or prescriptive. If students offer other answers which are equally valid they must be given full credit.

Please note, as a result of training at recent teacher meetings, some students may include a plan for their answer. If they do not cross it out, please look at their intentions to see if any additional marks might be found – this is not likely but it just might be that a student who failed to complete the answer has a valid point in the plan.

Many responses at this level are assessed according to the quality of the work rather than the number of points included so it is important to consider a response holistically as well as looking for accurate and relevant information. The following level descriptors are intended to be a guide when assessing the quality of a student's response.

High mark range

The student has a thorough understanding of the issues and provides clear evidence of understanding. The student will recall, select and communicate detailed knowledge with accurate factual explanations and frequent extended answers. There will be application of relevant knowledge and appropriate examples, with responses demonstrating clarity of understanding. Responses will demonstrate precision and accuracy in the ability to plan, review, analyse and evaluate evidence, making reasoned arguments and presenting substantial conclusions. Work will be accurate and use a range of specialist terminology

Mid mark range

The student has some knowledge but there will be some lack of understanding. The student will recall, select and communicate some sound knowledge and understanding which will often be presented as a factual list of responses with some explanation and extended answers. There will be some application of knowledge and appropriate examples given showing a grasp of most issues. Some aspects of the answer will lack clarity and there will be some inaccurate information.

Responses will show the ability to plan, review, analyse and evaluate evidence and will draw appropriate conclusions. There will be some use of specialist terminology.

Low mark range

The student has a basic and possibly confused grasp of the issues. The student will show some ability to recall, select and communicate some limited knowledge an understanding which will often be presented as a list of responses with no explanation. There may be some application of basic knowledge and possibly some examples but there will be misunderstanding.

Responses will demonstrate basic planning skills, superficial review of evidence and basic conclusions. Answers will include inaccuracies and use generic rather than specialist terminology.

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Section A

Qn	Part	Marking Guidance	Mark
1	(a)	What is meant by a staple fibre?	
		A short fibre / one cut to a standardised length. Not 'small', 'thin'.	1 mark
1	(b)	Give an example of a staple fibre.	
		Eg cotton, wool or other hair fibres, linen. Not viscose or other regenerated fibres, not synthetics.	1 mark
2		Twist is important when spinning fibres together to make a yarn. Explain why.	
		Eg, it holds the fibres together in the yarn – need to be specific about this, do not accept 'makes yarn longer'. It gives strength to the yarn, some effects depend on twist, eg high twist associated with crepe, low twist associated with brushed or bulky fabrics.	
		Any 2 appropriate reasons, 1 mark each. Not 'S' or 'Z' twist unless well explained.	2 marks
3	(a)	What is the selvedge on a woven fabric?	
		The sealed/finished or neatened or non-fraying edge/edge where weft turns over warp	1 mark
3	(b)	What is meant by the straight grain on a woven fabric?	
		The straight warp thread / yarn which is parallel to selvedge or runs down the length of the fabric.	1 mark

Qn	Part	Marking (Guidance	Marks
4		Complete the table below by putting next to the correct description. You must not use any item more Felt Chenille Wool Tencel Ramie Underlining Proban	· ·	
		A regenerated fibre	Tencel	
		A synthetic fibre	Acrylic	
		A fabric finish	Proban	
		A knitted fabric construction	Jersey	
		A non-woven fabric construction	Felt	
		A fancy yarn	Chenille	
		1 mark for each correctly placed ite NB If there is more than 1 item in a correct.		6 marks
5		Colour fastness is important for tex Explain what colour fastness mean		
		The ability of the fibre / fabric to ret when washed / exposed to sunlig will not fade / loose colour.		
		Any 2 appropriate points, 1 mark eans the strength of the dye.	ach.	2 marks

Qn	Part	Marking Guidance	Mark
6	(i)	Each item of equipment shown below is used when designing and making textile products in a craft workshop. Explain how each item is used. An overlocker	
		Used to protect edges from fraying/neatens edge, by covering them with thread, can stitch and trim in one operation, removes excess fabric, can be used for decorative effects,	
		can make rolled hems, for sewing stretch fabrics, flat seaming, eg neck bindings on jersey fabrics.	
		Any 2 appropriate points, 1 mark each	2 marks
6	(ii)	French curves	
		Used when making pattern templates, helps produce smooth, even and accurate curves, such as armhole/neck edges.	
		Any 2 appropriate points, 1 mark each	2 marks
6	(iii)	A rotary cutter	
		Gives clean/smooth/neat edges when cutting fabrics, Can cut multiple layers of fabric/cuts quickly, very useful for accurate cutting of patchwork pieces.	
		Any 2 appropriate points, 1 mark each	2 marks

Section B

Qn	Part	Marking Guidance	Mark
7	(a)	Fabric 1 is made from a plain weave. Describe the plain weave. You may use a diagram. This detail which clearly indicates the warp and weft and correct interlacing pattern is expected in a diagram for 3 marks.	
		Warp fixed in loom/runs length of fabric (1 mark),	
		Weft passes alternately in and out of warp and alternates on following rows (1mark),	
		Accept plan diagram.	3 marks
7	(b)(i)	Explain the difference in electrostatic charge between Fabric 1 and Fabric 2.	
		 Fabric 1 is made from synthetic/man-made fibres which do not contain moisture. Fabric 2 is made mostly of cotton which naturally contains moisture. Only dry fibres can develop static, thus Fabric 1 has a high rating whereas Fabric 2 has a low rating. 	
		Marks awarded as follows Accurate and clear explanation related to the moisture content of the 2 fibre groups.	3 marks
		Explanation is basically correct and refers to moisture content or static development in dry fibres but there will be a lack of detail in the explanation.	2 marks
		Limited understanding with some omissions in the explanation or some misunderstanding.	1 mark
		No response worthy of credit.	0 mark
7	(b)(ii)	How does electrostatic charge affect the comfort of a fabric?	
		A build up of static electricity in fabrics can cause discomfort by causing them to cling to the body / give a mild electric shock.	1 mark

Qn	Part	Marking Guidance	Mark
7	(c)	There are differences in the care needed for Fabric 1 and Fabric 3. Explain these differences.	
		Fabric 1 is made from polyester fibres. Because polyester does not shrink and is abrasion resistant it can be machine washed up to 40°C, and tumbled dry. It does not crease so may not require ironing but can be ironed on a low setting. It is not absorbent so will dry quickly. It is resistant to alkalis so no special detergents are required. It resists biological attack so does not need special care in storage.	
		Fabric 3 is made from wool fibres. Because of the scales on the fibre surface, wool will shrink if subjected to heat, moisture and friction so cannot be machine washed or tumbled dry unless given a shrink resistant finish. It will need to be hand washed and dried flat, or dry cleaned. It can be pressed with a medium heat iron but may scorch with a hot iron. Wool is damaged by strong alkalis so will need a mild detergent. Wool fabrics are attacked by moths so will need to be stored carefully.	
		Students may include a diagram of a care label in their explanation and these should be given credit as appropriate.	
		Marks awarded as follows: Upper mark range Student shows detailed understanding of the contribution made by several aspects of the polyester and wool fibres and will relate them with some degree of accuracy to specific care instructions, eg wash temperatures, low iron setting for polyester, reduced friction when washing wool.	5 marks
		Mid mark range Student shows understanding of some aspects of the care required for both fabrics, but there will be some lack of detail about one or both fabrics. There may be minor confusion but most points will be accurate.	3-4 marks
		Low mark range Limited understanding, simplistic statements only, student may concentrate on one fabric, there will be a lack of detail and there may be confused and inaccurate information.	1-2 marks
		No response worthy of credit.	0 mark

Qn	Part	Marking Guidance	Mark
7	(d)	Which of the three fabrics would you recommend for the trousers? Use your knowledge of each of the three fabrics and information from the table to give a reasoned evaluation of each fabric and explanation for your choice.	
		Student is expected to evaluate each of the 3 fabrics and make a reasoned choice of one for trousers to be worn regularly. There is no right or wrong choice.	
		The following points are probably the most obvious, but there may well be other appropriate comments which should be given credit if relevant.	
		Eg Fabric 1 will be very strong because of the polyester fibre and plain weave, but the pilling will quickly spoil its appearance with repeated wear. It will not be a very comfortable fabric to wear because the low absorbency will attract static, it has a stiff handle and is not warm to wear because of the smooth fibres. But it does not crease, is easy care – although greasy stains can be difficult to remove - and relatively cheap which makes it an ideal fabric for everyday trousers. Pleats and crease lines can be heat set in place as polyester is a thermoplastic fibre.	
		Fabric 2, made from cotton and elastane, will have good strength but will not stand up to wear and tear because of the cut pile weave, It will be comfortable to wear because of the high absorbency and its softness. The elastane content allows stretch and helps reduce creasing. It has a good drape and a textured surface which may make it more stylish than other fabrics. It is relatively easy to care for as it can be machine washed, tumbled dry and ironed on a high heat. The slightly higher cost may be worth it because the fabric is more stylish and comfortable than Fabric 1.	
		Fabric 3 will be relatively strong but not be hardwearing because the twill weave is not abrasion resistant. The crimp of the fibres helps trap air so the trousers will keep the wearer warm. The fabric will drape well and does not crease so will maintain a good appearance although any intended creases will quickly drop out. The high absorbency will give comfort and the fabric will not develop static although it will take a long time to dry if it becomes wet. Wool has natural water repellence so the fabric will tend to stay clean for longer, but it will need special care which can be expensive if the trousers are worn regularly. The fabric may cause irritation to the skin and the trousers will probably need to be lined which adds to the cost. The relative high cost may also be an issue although wool can be long lasting if cared for and the positives of the fabric may outweigh the cost.	

7	(d)	Marks awarded as follows	
	contd	Upper mark range Sound understanding of the strengths and shortcomings of the three fabrics with strong evaluation in relation to the intended use. A well reasoned choice will be made. Information will be accurate, relevant and clearly explained. There will be information selected	
		from the table together with additional points about the fabrics in relation to the intended use.	7-8 marks
		Mid mark range Relevant reasoning for choice with some clear reference to the qualities of each fabric, especially at the top end of the mark range. There will be sound attempts to evaluate the fabrics although there may be scant detail in some areas, and choices made on limited evidence at the lower end. The student may concentrate on the selected fabric at the expense of the others, especially at the lower end. There may be minor confusion but many points will be accurate.	4-6 marks
		Low mark range The choice made will be arbitrary with few references to the qualities of each fabric and little comparison between them. The reasoning for choice will be superficial with little knowledge shown and little true evaluation of the fabrics. Much of the information will be taken from the table with few additional points and little evaluation of the fabrics' suitability for the trousers. There will be inaccuracies and misunderstandings. No response worthy of credit.	1-3 marks 0 mark

Qn	Part	Marking Guidance	Mark
8	(a)	Briefly discuss the benefits of using patchwork.	
		Eg Can use up small scraps of fabric, creates original work, can recycle fabrics, can combine fabric prints/colours/is decorative/makes intricate designs, inexpensive/economical.	
		Any 2 appropriate points, 1 mark each	2 marks
8	(b)	Describe the care that is needed when choosing fabrics for the patchwork front of the cushion. Eg Fabrics need to be compatible in terms of care, weight, colour, pattern, fabric construction, re-used fabrics should not be damaged. Marks awarded as follows Upper mark range Sound analysis of the care needed with relevant and well explained points. Lower mark range Some relevant points but no explanation of why they are important. No response worthy of credit. A statement about general qualities such as strength, care, etc is awarded 1 mark.	3 – 4 marks 1 – 2 marks 0 mark
8	(c)	Give two functions of the piping used on the cushion shown in	
	(0)	Figure 1. Eg Adds decoration, gives definition to the different shapes, gives some structure/strength to the panel, adds texture. Any 2 appropriate points, 1 mark each	2 marks

Qn	Part	Marking Guidance	Mark
8	(d)	Give two different quality control checks needed when making the patchwork front of the cushion shown in Figure 1 . Explain what the checker will be looking for.	
		Eg shape of patches – needs to be accurate as there are many different shapes on the cushion; size of patches – if uneven they will not stitch together neatly; accurate seam allowance – patches may be uneven in size; piping needs to be stitched closely to the cord to avoid gaps, needs to be straight with no kinks; straight stitching – or patches and piping may be uneven shape, no gaps or holes in the stitching or seam might come undone, 'secure stitching' is not specific enough. alternating colour of piping – needs to be consistent throughout for correct aesthetics; colour of thread – blends in with fabric colours.	
		Identification of area to be considered (1 mark) Explanation of what will be looked for/consequences of inaccurate manufacture (1 mark) Answers need to be specific about the area and what the checker is looking for and the consequences for manufacture. 2 different areas of quality control, 2 marks each	4 marks
		2 different areas of quality control, 2 marks each.	4 marks
8	(e)	Quilting is also a popular technique used on the front of cushions. Describe how to quilt the design shown below. You may use diagrams in your answer. Student is expected to give basic instructions for quilting design show. This should include: Layer of wadding (1 mark) Sandwiched between top layer and lower layer of fabric (1 mark) Layers stitched together in design shown (1 mark) Accept quilted patchwork.	3 marks

Qn	Part	Marking Guidance	Mark
Qn 8	Part (f)	Use notes and/or diagrams to describe the steps needed to appliqué the design shown below on to the front of the cushion. In your answer you should explain why a thin viscose machine embroidery thread is used to stitch the appliqué to the fabric. Student is expected to give step-by-step instructions for the appliqué, including reference to the machine embroidery thread. The following steps are likely to be included: Cutting of the shapes, possibly using template for accuracy; Use of Bondaweb to stabilise fabric or tacking (not just a pin); Accurate placement of shapes on cushion and fusing of Bondaweb; Use of close zig-zag or other decorative stitch to hold shape in place; Use of thin viscose thread allows for close stitching and flows smoothly through the needle, it adds a decorative sheen. Marks awarded as follows Upper mark range Clear and detailed explanation of the method, information will be	Mark
		Mid mark range Clear and largely accurate description with some minor omissions. Reference to the thread may be superficial or omitted at the lower end of the mark range. Low mark range Limited explanation of how the method is made with a lack of detail and accuracy. There will be little, if any, reference to the thread used. Information may be confused. No response worthy of credit.	5 marks 3 – 4 marks 1 – 2 marks 0 mark

Section C

Qn	Part	Marking Guidance	Mark
9	(a)	A manufacturer requires a new range of women's dresses to be designed. Describe three different ways the designer can use inspiration from the garments shown in Figure 2 on the Insert Sheet.	
		Eg use of colour, shape of garments, layering of garments, mix of fabrics, decorative techniques, specific features.	
		Student should identify 3 different ways the inspiration could be used to develop new styles based on one or more specific garments with example or explanation to support answer.	
		Marks awarded as follows: Any 3 appropriate areas of inspiration ½ mark each, Example/explanation ½ mark each. Round totals down.	
		3 areas, 1 mark each.	3 marks
9	(b)(i)	Designary need to be able to communicate with their clients	
9	(b)(i)	Designers need to be able to communicate with their clients. Explain how each of the following might be used: Feedback from market research	
		There are different types of market research – general questionnaires about preferences, and interviews where the designer shows some ideas and asks for feedback about wht might be modified.	
		Feedback will give information about what styles, colours, fabrics are popular, how much consumers are willing to pay for products, seasonal trends, the likely popularity of design prototypes.	
		Marks awarded as follows: Upper mark range A clear explanation which shows understanding of market research and its purposes with some examples of its use.	2 marks
		Lower mark range Limited understanding of the nature and purpose of market research with some lack of clarity.	1 mark
		No response worth of credit	0 mark

Qn	Part	Marking Guidance	Mark
9	(b)(ii)	A presentation board	
		This is not about initial ideas. It refers to the final design for a product or collection as shown to the client. Answers need to make a clear differentiation between a presentation and moodboard/initial ideas board.	
		Used to present finalised new ideas to clients, will have information about styles, fabrics, colourways, and possibly other products in the range. Will be visual communication, including photographic form, to explain designer's thinking.	
		Marks awarded as follows: Upper mark range A clear explanation which shows understanding of a presentation board and its purposes. There may be examples to support the answer.	2 marks
		Lower mark range Limited understanding of the nature and purpose of a presentation board research with some lack of clarity. No response worth of credit	1 mark
		The responde worth or oreal	Oman
9	(b)(iii)	A toile Is a prototype/mock-up of the product and used in development, gives client an idea of final product, used to make adjustments to the pattern or construction or fabric/component choices, and check fit, especially for made to measure/one-off clothing.	
		Any 2 appropriate points, 1 mark each.	2 marks

Qn	Part	Marking Guidance	Mark
9	(c)	Explain how the development of new materials has had an impact	
		on modern garments.	
		Eg Synthetic fibres such as polyester, polyamide, acrylics and	
		elastanes have reduced costs when compared with traditional	
		fibres such as silk, linen, wool, cotton. Fabrics are easier to care	
		for and can be washed at home, dried quickly and often do not	
		require ironing.	
		Thermoplastic fibres allow fabrics to be heat set to achieve specific	
		effects such as a crinkled look, permanent creases and pleats.	
		Advances in colouration and printing allow for a wide range of colours and novelty effects, eg thermochromic dyes.	
		Smart materials give special effects such as microencapsulation.	
		Modern components are lighter in weight, eg plastic sequins,	
		metal effect threads.	
		Allow sports/performance fabrics to be lighter weight and	
		specific to individual sports/outdoor requirements, eg Coolmax, Gore-Tex, Kevlar provides lightweight body protection.	
		Sustainable fabrics – wider range of fair-trade, organic, eco-	
		friendly, recycled materials in use, eg Tencel and Modal®.	
		Marks awarded as follows:	
		Upper mark range Sound understanding of a number of relevant developments with	
		specific examples to explain the effects on modern fashions.	
		Information will be accurate and clearly related to garments	5-6 marks
		·	
		Mid mark range	
		The student will show good understanding of the impact of a limited number of developments. There will be a sound attempt to analyse	
		the effects including some specific examples of garments to	
		illustrate points made. There may be minor confusion but many	
		points will be accurate.	3-4 marks
		Low mark range	
		Little understanding, simplistic statements only, student typically concentrates on a limited number of areas with few, if any, specific	
		examples to illustrate points made. There may be confused and	
		inaccurate information.	1-2 marks
		No response worthy of credit.	
			0 mark

Qn	Part	Marking Guidance	Mark
9	(d)	Inspiration from the garments shown in Figure 2 is going to be used for a new design of the basic fashion top shown in Figure 3 on the Insert Sheet. Show your idea for a new design for the top. Include style details and a fastening. The student is expected to show/ an idea for a fashion top based	
		on the tunic shown on and using inspiration from the moodboard. A fastening must be included and there should be clear reference to style details. There should be reference to the inspiration used. A good design will make significant changes to the original design without making a completely different garment; this may include changes to the length, the sleeve length/style, the shape of the top. Consider the use of fabric, components/embellishment and techniques.	
		Marks awarded as follows: Upper mark range A clear and detailed design with some originality and creativity. There will be some significant changes to the original shape. Communication skills will clearly convey what is intended with details of style features and other information as appropriate.	5 - 6 marks
		Mid mark range Idea is adequate and information will be sufficient to indicate what is intended. There will be elements of originality and minor changes to the original although there may be some lack of clarity, especially at the lower end of the mark range. Communication skills will be sufficient to clearly convey what is intended with labelling to indicate style features and other information as appropriate.	3 – 4 marks
		Low mark range Weak idea which lacks clarity about what is intended. There will be a lack of originality and clear information about what is intended and some aspects may be inappropriate. The basic shape of the top will be unchanged. Communication will show some weakness.	1 – 2 marks
		No response worthy of credit.	0 mark

Qn	Part	Marking Guidance	Mark
9	(e)(i)	The fashion top will be part of a limited edition collection for a popular chain store. Explain the reasons why many retailers have developed limited edition collections. Eg encourages additional sales by extending ranges (1 mark), Broaden consumer base with better quality garments (1 mark) To capture a niche market / promote exclusivity/cater for special events such as the Olympics, Queen's birthday (1 mark) Allows retailer to trial new designs (1 mark) Can showcase new designers / achieve recognition as a designer brand (1 mark).	
		Any 3 appropriate points, 1 mark each. Not increase the price, make more profit, examples of products.	3 marks
9	(e)(ii)	Explain how the fashion garments sold in a limited edition collection will be different from the standard range. Eg Garments will be made from superior/better quality materials, styles will be more on trend, more accurate manufacture to ensure quality, limited quantities made to ensure greater exclusivity, better cut to give enhanced fit, more complex cut/shape in design, more decorative techniques/components. Any 3 appropriate points, 1 mark each. Not higher cost, only available for a short time.	3 marks

Qn	Part	Marking Guidance	Mark
9	(f)	The manufacturer will use a sub-assembly system when making the tops. Explain the reasons why sub-assembly systems are used in commercial manufacture.	
		Eg to make efficient use of specialised machinery or labour, allow for the manufacture of some sections elsewhere and reduce need for large workforce, to ensure high quality/sections checked before added to main garment, to make manufacture more efficient.	
		Marks awarded as follows: Upper mark range Detailed knowledge and understanding of the reasons for subassembly systems. Points will be clearly expressed and accurate.	3 - 4 marks
		Lower mark range Student provides some basic reasons but there will be a lack of specific detail. There may be some confused and/or inaccurate points.	1 – 2 marks
		No response worthy of credit.	0 mark

Qn	Part	Marking Guidance	Mark
9	(g)	Explain why quality control is important during the high volume manufacture of fashion tops.	
		This question is about Quality Control, not specific quality control checks.	
		Eg Ensures that tops are of merchantable/consistent quality, promotes consumer satisfaction, rejects are costly in terms of materials, time, energy and environmental considerations, regular checking allows potential problems to be spotted early on in the process and identification of machines and workers performing below standard, helps maintain agreed H&S standards in products, helps maintain manufacturer's reputation.	
		Marks awarded as follows: Upper mark range Sound knowledge of the need for QC with a range of points considered. Relevant examples may be used to illustrate some points.	3 - 4 marks
		Lower mark range Student provides some basic explanation possibly related to faulty products not selling, but there will be a lack of specific detail and relevant examples. There may be some confused and/or inaccurate points.	1 – 2 marks
		No response worthy of credit.	0 mark

Qn	Part	Marking Guidance	Mark
9	(h)	Explain how new technologies can be used to ensure that manufacturers and retailers are able to respond quickly to changing demand for fashion products.	
		Eg use of Quick Response and JIT systems, CIM systems will ensure rapid communication between retailers and manufacturers (EPPOS), goods will be produced as and when demand dictates, with reduced waste and cost. Use of CAD/CAM allows faster manufacturing. Fast track manufacture, based on small short-run manufacturing, allows fashion ranges to get into the shops in a six weekly cycle.	
		Marks awarded as follows: Upper mark range Student shows good knowledge and understanding of various systems and provides clear and accurate detail of how they work	5 marks
		Mid mark range Student shows understanding of the various systems and gives some detail. This may be restricted to a narrow area of focus but will generally be accurate.	3 – 4 marks
		Low mark range Student shows limited awareness of the various manufacturing systems and offers little information about how they operate. There will be confused and inaccurate information.	1 – 2 marks
		No response worthy of credit.	0 mark