



**Methodist Ladies' College
ATAR course examination, Semester 1, 2020**

**Question/Answer Booklet
SOLUTIONS**

**MATERIALS
DESIGN AND
TECHNOLOGY
ATAR Year 11
Sections One, Two and Three**

Student Name: _____

Teacher Name: _____

Time recommended for these sections

Reading/planning time before commencing work: Ten minutes

Working time for these sections: Two hours

Materials required/recommended for this paper

To be provided by the supervisor

This Question/Answer Booklet

To be provided by the candidate

Standard items: pens (blue/black preferred), pencils (including coloured), sharpener, correction fluid/tape, eraser, ruler, highlighters

Special items: non-programmable calculators approved for use in this examination

Important note to candidates

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised material. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

Structure of this paper

Section	Number of questions available	Number of questions to be answered	Suggested working time (minutes)	Marks available	Percentage of written examination	Your Mark
Section One Short answer	4	4	15	15	15	
Section Two Extended answer	2	2	30	25	25	
Section Three Textile specific content	5	5	75	80	60	
Total					100	

Instructions to candidates

1. The rules for the conduct of ATAR course examinations are detailed in the *Year 11 Information Handbook 2019*. Sitting this examination implies that you agree to abide by these rules.
2. Write your answers in this Question/Answer Booklet.
3. Answer the questions according to the following instructions.
Sections One and Two: Answer **all** questions.
Section Three: Answer all of the questions within your specialised field: Textiles.
4. You must be careful to confine your responses to the specific questions asked and to follow any instructions that are specific to a particular question.
5. Additional working space pages at the end of this Question/Answer booklet are for planning or continuing an answer. If you use these pages, indicate at the original answer, the page number it is planned/continued on and write the question number being planned/continued on the additional working space page.

Section One: Short Answer

15 marks

This section has **FOUR (4)** questions. Answer **all** questions. Write your answers in the spaces provided.

Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue with your answer.

- Planning: If you use the spare pages for planning, indicate this clearly at the top of the page.
- Continuing an answer: If you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of questions that you are continuing to answer at the top of the page.

Suggested working time: 15 minutes

Question 1.

6 marks

Anthropometric data is used when making and using patterns to construct garments. Name the three key body measurements used to determine pattern size. Outline the process used to take each measurement.

1. Name of body measurement **Bust**

How to take measurement: **Around the body, under the**

arms over the fullest part (point) of the bust - high over the shoulder blades - 2 fingers under tape for ease.

Name of body measurement **Waist**

How to take measurement: **Identify the smallest part of the waist by tying a ribbon or tape at the waist. Measure the smallest part of the waist - 2 fingers under tape for ease**

2. Name of body measurement **Hips**

How to take measurement: **over the fullest part of the bottom - 18 - 23 cms below the natural waistline - 2 fingers under tape for ease.**

Question 2.

Explain the term **ergonomics** in the context of designing and making clothing items? **3 marks**

Ergonomics is the process of **designing** or arranging workplaces, products and systems so that they fit the people who use them. In terms of fashion - ergonomics is the good fit of clothing articles with the size of the human body - achieving excellent fit of clothing.

Question 3.

OSH is essential knowledge for all employees working in **manufacturing industries**.

What does **OSH** stand for?

1 mark

Occupational Safety & Health

Question 4

(a) What is a target market?

5 marks
(1 mark)

A target market is a particular group of consumers at which a product or service is aimed. The group or demographic that the product is designed and made for.

- (b) Identify **two (2) factors** that need to be considered when developing a new product for a target market. (2 marks)

Factor 1:

Price of the product - Economic cost of the product - does the price suit the target audience / demographic

Factor 2:

The needs of the target audience - what do they want in the product - the function of the product and what they want it to do?

- (c) Identify and explain **one (1) advantage and one (1) disadvantage** of designing a product which appeals to a mass market. (2 marks)

Advantage: A mass market means that you can design for a large and wide audience with a range of needs - likely to have a successful product - sales should be good -profitable product development - more room for difference in product / market needs

Disadvantage:

Can be more difficult to design a product for specific identified needs of a client - wide range of needs means need more variety in a product size, shape, colour etc is often required

End of Section One

Section Two: Extended Answer

25 marks

This section has **TWO (2)** questions. Answer **all** questions. Write your answers in the spaces provided.

Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue and answer.

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- Continuing an answer: If you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of questions that you are continuing to answer at the top of the page.

Suggested working time: 30 minutes

Question 5.

18 marks

It is important to understand '**Design Fundamentals**' as they can ultimately affect the success of a final design or product.

These fundamentals include:

Aesthetics
Environment

Function
Safety

Economics

Social

- a) Select and **explain the meaning of THREE (3)** of the fundamentals. **Give an example of how each might affect the success of a product.**

See next page

Design fundamental 1: _____

Explain the meaning of this design fundamental. (1 mark)

Use a specific example to explain how this fundamental might affect the success of the product? (2 marks)

DESIGN FUNDAMENTALS – CLIENT’S NEEDS & WANTS - FACTORS AFFECTING DESIGN:

FUNCTIONAL REQUIREMENTS – how the product is made; what purpose it was made for; what materials it was made from? *Does it suit its end use?*
A successful product must function properly for optimum sales

AESTHETIC REQUIREMENTS – is it aesthetically pleasing or pleasing to the eye? *Does it look good?*
A successful product must have an appearance that appeals to the client / customer for optimum sales

SOCIAL REQUIREMENTS – Target audience - is it accepted by the community, does it suit its proposed demographic, is it needed/wanted by consumers. *Will people like it?*
A successful product must suit and appeal to the age group / demographic that it is aimed at for optimum sales

ENVIRONMENTAL REQUIREMENTS – Designers must consider the needs of humanity in relation to a cleaner and greener world: does it use natural resources, does it recycle, will it cause pollution, and does it pose health risks? *Is it Environmentally Friendly?*
Current interest in environmental impacts of products means that designers must consider the environmental impact of products they design - design for the environment and environmentally friendly / ethical products will optimise sales for a product.

ECONOMICS - Designers must consider all aspects of economics including: Cost of all materials, designing, manufacturing, transport, marketing

POLITICAL – identifying legal requirements of the product eg.Safety; **slogans and political promotions using products**

SUSTAINABILITY - Sustainability is an effort to provide the best outcomes for the built and natural environments in contemporary society and into the future.

Ethical considerations - Environmental footprint and waste, Decent working conditions for employees

SAFETY

- Safe manufacturing Techniques used,

- Designers and manufactures are obliged to ensure that they only market safe items.

ERGONOMICS - Consideration of the human factors in design.

- In textiles for example anthropometric measurements are taken to ensure that garments are made to achieve a perfect fit for the client.
- ANTHROPOMETRIC DATA -
 - Size
 - Measurements
 - Figure Type
 - Body Shape

Question 5 continued



The image above shows a design for a **tap turner** that has been developed.

b) Identify one (1) ergonomically sound feature of the product and explain how it benefits the user. (2 marks)

Feature:

Features could include:

the length of the handle; lever - provides good leverage to enable the tap to be turned more easily

the shape, size and fit of the container / section that fits over the tap: enables strong hold on the tap to enable the tap to be turned more easily - wil prevent slipping when turning the tap.

The size of the handle - to fit the average sized adult hand - to maximise leverage

c) List **two (2) other design fundamentals** that the designer considered when designing this **tap turner**. Explain how the designer used these fundamentals.

(4 marks)

Design Fundamental 1: _____

Explanation:

Safety	Strong, long lasting, safe material used, one that does not get hot when used on the hot tap.
Economics - \$ Cost	Cheap materials used - cheap to make but effective tool and strong , long lasting
Function	Must fit ta range of tap shapes to be an effective product
Appearance	Basic product - colour that is easy to identify in a kitchen / bathroom drawer

d) Suggest **one (1)** change that could be made to the product to make it more aesthetically pleasing and explain your answer. Support your answer with a sketch. (3 marks)

Handle change - coloured rubber rip of some kind

Sketch:

Question 6

7 marks

This question is about the design process.

a) In the first stage of the design process a designer collects inspiration for their designs. Describe the **sources** a designer can use to find inspiration for designing. (4 marks)

Sources of design Inspiration can include a wide range of possibilities :

- A period of fashion history - styles 7 silhouettes
- Current fashion trends
- A designer / design house
- A piece of art - artist
- Architecture - architect
- Book, poem, song
- Fabrics, notions, patterns,
- Embellishments
- Nature

See next page

b) Outline the information a “**Statement of Intent**” would present.

(3 marks)

A statement of intent or design proposal, identifying how a problem or situation may be solved. This may include some, or all, of these design considerations and limitations:

- product purpose
- client profile/target audience
- location or environment where product will be placed
- timeline or time constraints
- budget and cost constraints
- limited materials
- perceived skill levels.

End of Section Two

Section Three: Textiles Specific Context

80 marks

This section has **FIVE (5)** questions. Answer **all** questions. Write your answers in the spaces provided.

Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue and answer.

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Suggested working time: 75 minutes

Question 7

18 marks

This question is about product design and materials selection.

Look at the ladies' netball dress shown in the pictures below.



Question 7 continued

Read the materials data table below.

Suggest a **suitable fabric, fabric structure and fibre content** for the netball dress.

Justify the reason/s for your choice for netball dress.

(6 marks)

Information about materials – fabrics and fibres				
	<i>Fabric - Fibre type</i>	<i>Fabric Structure</i>	<i>Cost per metre</i>	<i>Care instructions</i>
A	Poly / Cotton Interlock 80% Cotton / 20% Polyester	Weft Knit	\$7	<ul style="list-style-type: none"> • Machine washable • Line or tumble dry • No ironing required • Colourfast • One way stretch
B	Cotton / Lycra Jersey 90% Cotton / 20% Lycra	Weft Knit	\$10	<ul style="list-style-type: none"> • Machine washable • Line or tumble dry • No ironing required • Colourfast • Two way stretch
C	Cotton Terry 100% Cotton	Loop pile weft knit	\$5	<ul style="list-style-type: none"> • Machine washable • Line or tumble dry • No ironing required
D	Nylon / Lycra Jersey Microfibre 80% Nylon / 20% Lycra	Weft knit	\$10	<ul style="list-style-type: none"> • Machine washable • Line or tumble dry • No ironing required • Colourfast • Two way stretch • Wicks moisture away from body

a)

	Marks
Fabric type correctly named	1
Fibre Content correctly named	1
Fabric Structure	1
Justification - any three points identified and explained	3
Total:	6

Fabric name: Nylon / Lycra Jersey Microfibre 1 mark
 Fibre Content: 80% Nylon / 20% Lycra. 1 mark
 Fabric Structure: WEFT KNIT. 1 mark

Justification:

- Wicks moisture away from body - maximum comfort - perspiration is absorbed and wicked away from the body - keeping the wearer dry and comfortable during exercise
- Machine washable - netball uniforms need to be regularly and easily machine washed
- Colourfast - easy & regular machine washing will not cause colour to run
- Line or tumble dry - can be dried on line or tumble dried - ideal for sports uniform
- No ironing required - easy care - no ironing required - ideal for sports uniform
- Two way stretch - maximum comfort for sport activity - not restricting movement for sport

b) List **TWO (2) advantages** of using a knit fabric structure rather than a woven fabric structure for a sports outfit like the netball dress. (2 marks)

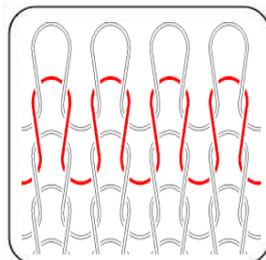
	Marks
2 advantage identified and explained	1 mark each
Total:	2

Advantage 1	Comfort - two way stretch gives maximum comfort to the wearer allowing for rigorous movement in all directions
Advantage 2	Fit - a closer and more comfortable fit can be achieved for all members of a netball team
Advantage 3	Quicker sewing methods can be employed. Interfacings and facings can be eliminated and chanel necklines and bands can be used to finish neck edges/
Advantage 3	The fabric is softer and more comfortable due to stretch and wicking properties

c) Circle the box to show the correct **weft knit structure** for this netball dress.

(1 mark)

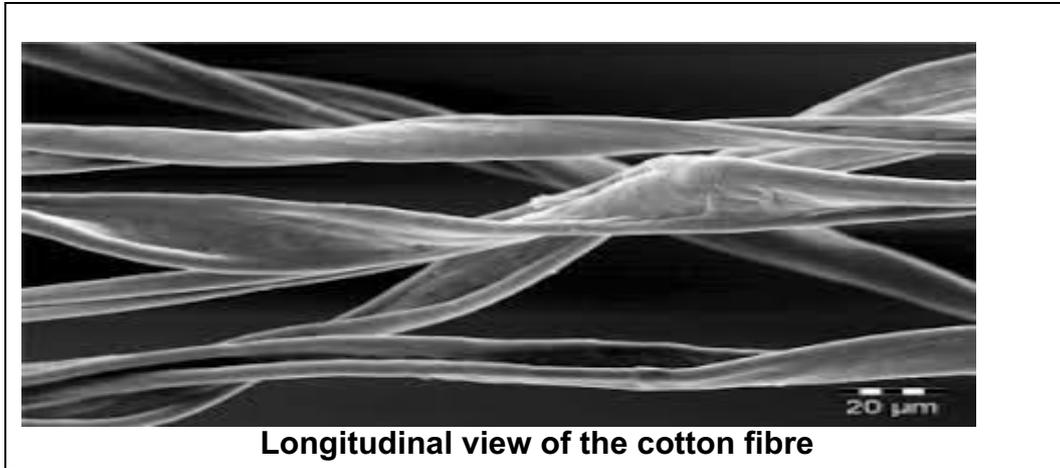
1 mark



Question 7 continued.

- d) In the space provided below draw and describe the **longitudinal microscopic** view of the **cotton fibre**:

(2 marks)



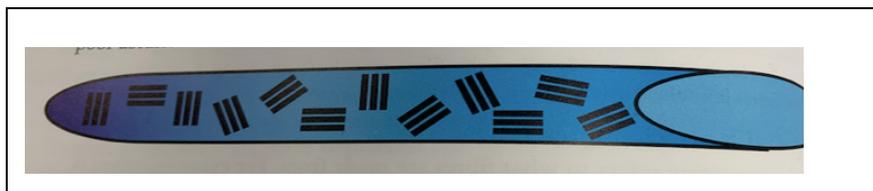
- e) The longitudinal view of the cotton fibre provides evidence of a **special characteristic of this fibre**. Name and explain this special characteristic. (3 marks)

Special characteristic: **Convolutions - twisted nature of the fibre** 1 mark

Explanation of how this **characteristic impacts on the properties** of the cotton fibre:

These twists are called **convolutions**: there are about 60 **convolutions** per centimetre. The **convolutions** give **cotton** an uneven **fibre** surface, which increases inter-**fibre** friction and enables **cotton** to be drawn and spun into fine yarns of adequate strength. 2 marks

- f) Cotton has a mostly crystalline internal molecular structure. Use text and diagrams to explain the crystalline internal molecular structure. (2 marks)

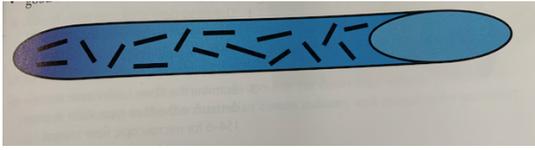


1 mark for correct image - drawing

1 mark for description - Polymers are packed closely together and in a parallel arrangement allowing many binding forces and resulting in a stronger fibre - leads to the following properties

- *High durability*
- *Strength*
- *Low absorbency*
- *Not easily dyed*
- *Less elasticity*
- *Poor abrasion resistance*

- g) Other fibres such as **wool and rayon** have a mostly amorphous internal molecular structure. List the **key properties of mostly amorphous fibres**. (2 marks)



Polymers are arranged in random arrangement and there are large distances between them resulting in a weaker fibre:

Lists **four** of the properties - ½ mark each

- few binding forces and a weak fibre.
- Poor strength
- Low durability
- Good absorbancy
- Can be easily dyed
- More elasticity
- Good abrasion resistance

Question 8

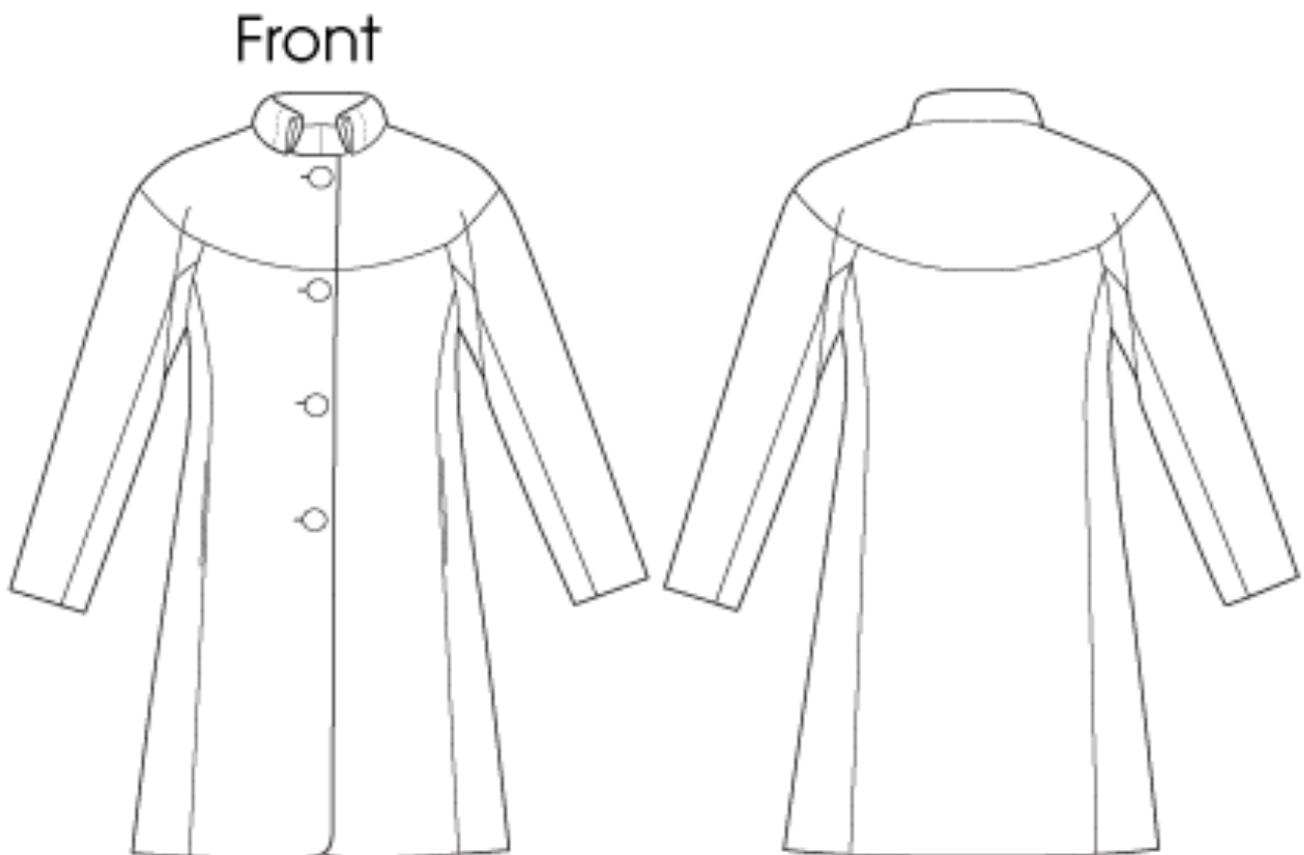
21 marks

This question is about working drawings, fabric colouring and decorative techniques
Look at the coat in the working drawings below.

- a) **Annotate** the working drawings for the coat, **describing as many features** as possible:
(4 marks)

Features identified: at least 4 different features identified and labelled - 1 mark each

Mandarin style / stand up collar
Centre front button stand - buttons & buttonhole closure
Curved / circular yoke - front and back
Long straight sleeves
Princess line seams - front & back
Lined coat
Knee length



See next page

Question 8 continued.

- b) A client has requested that you decorate this jacket using a **variety of decorative techniques**. In the space below, provide a **3D presentation drawing of the decorated version** of the jacket. (figure templates are on page 30) (3 marks)

Annotate your drawing to describe

- (i) **Materials** to use for the decorated version of the jacket (2 marks)
(ii) **Identify suitable decorative components** for the jacket (2 marks)
(iii) **Decorative techniques used** to add interest to the jacket (1 mark)

3D drawing - pencil sketch, rendered in colour, good proportion achieved using fashion template: 3 marks

Annotation - Identifies suitable materials to use: 2 marks

- Patterned or printed fabrics
- Heavier weight fabrics including - denim, upholstery, woolen fabrics
- Upholstery fabrics
- Lining fabrics

Annotation - Suitable decorative positions / components: 2 marks

- Decorated yoke - front & / or back
- Decorated centre back panel
- Decorated side front or side back panels
- Decorated front panels

Annotation - Suitable decorative techniques to use: 2 marks

- Patchwork on the panels
- Applique - 2D or 3D
- Screen printing, dyeing
- Machine / hand embroidery
- Working back into a decorated patterned fabric print - with machine or hand embroidery and / or beading

Question 8 continued

- c) Use notes and diagrams to explain one decorative technique that could be used to add colour, texture and interest to the jacket.

Marks will be awarded for the following:

- i. Name of the technique
- ii. Equipment & machine settings
- iii. Step by step method / instructions
- iv. Quality of notes and sketches

Technique name: **correct name for technique** **1mark**

Equipment/Machine Settings: **(2 marks)**

Equipment list - 1 mark

Correct Machine settings - 1 mark

Instructions: (2 marks)	Sketch and Annotate: (2 marks)
Correct & sequential instructions - easy to follow	Good quality sketch
2 marks	2 marks

- (d) Describe **TWO (2) benefits** of using digital printing to print on textiles. **(2 marks)**

1 mark for each benefit clearly explained

Benefit of digital printing	Faster and more efficient printing method	1 mark
Benefit of digital printing	More accurate printing method - more complex designs can be achieved	1 mark
Benefit of digital printing	More colours can be used more accurately representing a picture / painting / image	1 mark
Benefit of digital printing	Cheaper method due to no waste of ink	1 mark
Benefit of digital printing	More environmentally friendly due to no waste of ink - wash out not required	1 mark

Question 9

12 marks

Fashion designers use the elements and principles of design to create a garment with overall harmony and unity and to suit the figure type of their client.

Look at the fashion garment design by John Galliano for the Dior label in the image below.

Analyse the garment using the elements and principles of design.

Identify and discuss the use of TWO (2) elements of design and TWO (2) principles of design in your answer. **(6 marks)**

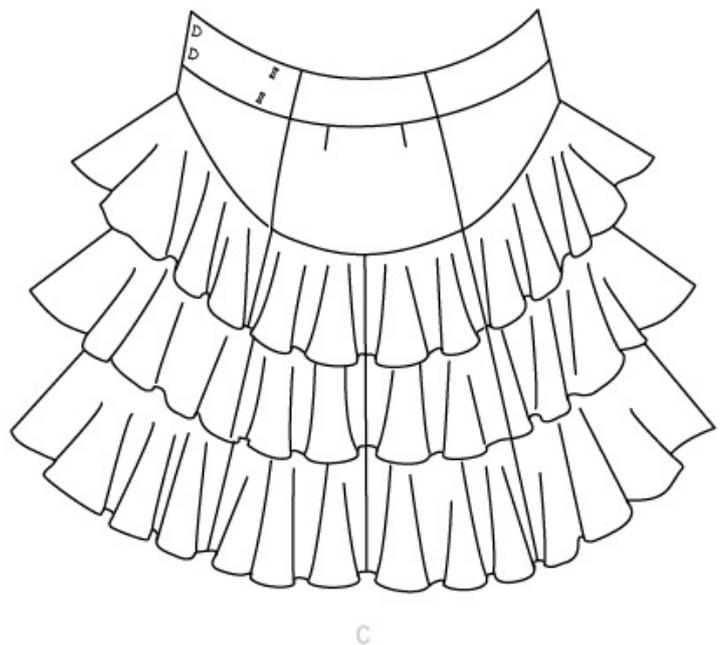
<p>Identifies and explains the use of 2 suitable elements of design - used in the garment .Elements include Colour, Value, Line, Shape , Size, Texture</p>	<p>3 marks for each element</p>
<p>Examples include: Colour - plain pastel pink, value of red, contrast with Autumn floral fabric Line - curved lines, repetition of curved lines, pleats, repetition of pleats Shape - curved, organic lines, hourglass shape Texture - shiny satins, folds in fabric, visual texture of patterned floral fabric</p>	
<p>Identifies and explains the use of 2 suitable principles of design - used in the garment. Principles include repetition, rhythm, contrast, harmony, balance, proportion, dominance, emphasis, focal point, unity</p>	<p>3 marks for each principle</p>
<p>Examples include: Repetition - of folded lines in the skirt Rhythm - repetition of folds and sizes of folds varies, repetition of pleat lines Dominance - focal point - waistline and belt Balance - symmetric balance bodice, assymetrical balance in skirt Contrast - plain pink and large floral, contrast in colour ways Proportion - Golden mean 3/8ths bodice , 5/8ths skirt</p>	



The following pattern envelope for Vogue wrap skirt 9349 refers directly to **all parts of**



WRAP SKIRT VIEW C



Question 10 continued

FABRICS: Unsuitable for obvious diagonals.

*With Nap. **Without Nap.

Taffeta, Shantung, Broadcloth, Silk Dupion

Note: Fabric requirement allows for nap, one-way design or shading. Extra fabric may be needed to match design or for shrinkage. **NOTIONS:** Four Hooks and Bars.

Fabric widths given in centimeters.										
SIZES	6	8	10	12	14	16	18	20	22	
VIEW A										
115 cm*/**	2.1	2.1	2.2	2.2	2.2	2.3	2.4	2.4	2.4	m
152 cm*/**	1.5	1.5	1.5	1.6	1.6	1.8	1.9	2.0	2.0	m
LINING A										
115 cm	1.6	1.6	1.8	1.8	1.9	1.9	2.0	2.1	2.1	m
VIEW B										
115 cm*/**	3.9	4.0	4.0	4.2	4.3	4.5	4.6	4.8	4.8	m
152 cm*/**	2.6	2.7	2.7	2.7	2.7	3.0	3.1	3.2	3.4	m
LINING B										
115 cm	3.7	3.7	3.7	3.9	3.9	4.0	4.0	4.2	4.3	m
VIEW C										
115 cm*/**	5.9	6.0	6.1	6.1	6.1	6.6	6.6	6.8	6.8	m
152 cm*/**	3.8	3.8	3.9	4.2	4.2	4.3	4.5	4.6	4.8	m
LINING C										
115 cm	5.5	5.5	5.5	5.5	5.9	6.0	6.0	6.3	6.3	m
FUSIBLE INTERFACING A, B, C										
46, 51 cm	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.3	m
FINISHED GARMENT MEASUREMENTS										
Back length from waist										
A	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6	
B	92.6	92.6	92.6	92.6	92.6	92.6	92.6	92.6	92.6	
C	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	

Question 10 continued

Using the information found in the table on the back of the pattern envelope on the previous page answer the following questions

- a) Name TWO (2) fabrics which would be suitable for the skirt view C (2 marks)

1 mark for each suitable fabric named : Taffeta, Shantung, Broadcloth, Silk Dupion

- b) How many hooks and bars are required for the skirt closure? (1 mark)

Four Hooks and Bars. 1 mark

- c) How much **fabric** would you need to purchase for **skirt view C**, if you chose **150cm wide fabric and your size was 12. Explain your answer.** (2 marks)

4.2 metres fabric - although 152 cms wide - same amount required

- d) The skirt recommends using a lining. What type of lining fabric is most suitable for this skirt?

Taffeta , bemsilk lining or the same fabric used as the outer skirt could also be used
1 mark

- e) What is the **width of lining fabric** and the **amount** that would be required for skirt view C? (2 marks)

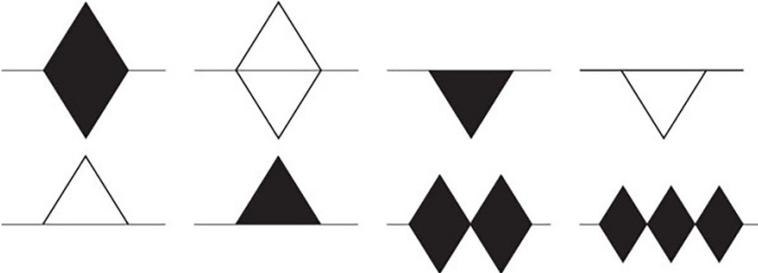
Lining 115cms wide - 5.5 metres 2 marks

Question 10 continued

- f) Pattern pieces are printed on large pieces of tissue paper and marked with appropriate information. Each pattern piece will have pattern markings that need to be followed and sometimes transferred to the fabric you are using.

In the table below, draw the symbol for each named pattern marking

1 mark for each correct symbol drawn
(3 marks)

Name of symbol	Draw the symbol
Grain line - Straight grain line	
Notches	
Shorten or lengthen lines	

- g) Are the frills on the skirt **cut on the bias or the straight grain** to achieve this style of circular frill? Circle the correct answer. (1 mark)

Bias Cut - 1 mark

- h) Interfacing is listed as an additional fabric requirement for all views of Vogue pattern V9349. What **type of interfacing** would you recommend for the skirt? (1 mark)

Fusible, white, light to medium weight Vilene 1 mark

Where and why would interfacing be used in construction of the skirt? (2 marks)

it is used in the waistband components to achieve good shape and stiffness for the waistband. Also provides strength and support for the hook and bar closures

Question 11

14 marks

Designers consider the **design fundamentals** and use **inspiration** from a variety of sources when researching and generating ideas for their collections and in designing individual garments within a collection or range.

- a) **Using a garment or project that you have designed and manufactured this year:** Identify the **two (2) sources of inspiration** that were used to influence the design and production processes used on the garment. Explain in detail how the sources of **inspiration** were used, exemplifying your answer where possible. (6 marks)

3 marks for each inspiration

Identifies and discusses the way in which the inspiration was used citing an example from their garment production

Examples might include: this list is not exhaustive
a period of fashion history
A designer or design house
A fabric eg. lace
An embellishment technique
An artist
Architect & Architecture

Inspiration Source 1:
Explanation of how it was used:

Example: Desigual Fashion House - Barcelona - Spain

The patchwork style - recycling of fabrics was used in the jacket / coat or cape that was made.

- b) For an **era in fashion history** that you have studied, select any **four design fundamentals** and explain how they have been expressed in the clothing of that era. (8 marks)

Example answer:

Identifies a design fundamental 1 mark - and gives one example of how it was expressed through clothing of that time. 1 mark

Period of Fashion History: 1950's

Design Fundamental 1: Aesthetic

Christian Dior's New Look - Hour glass cinched waistlines. Glamour gowns with billowing, large full circle or gathered, below the knee or ankle length skirts using metres of luxurious satin fabrics. Luxurious fabric including - laces, beaded fabrics, satin and brocade taffetas.

Design Fundamental 2: Function

Practical clothing for women developed and worn during this period included:

Swing 'poodle style' circle skirts worn with tight fitting T shirts or blouses and flat ballet pump style shoes for rock and roll dancing

Capri pants and T shirts for casual sports wear

See next page

Design Fundamental 3: Ergonomics

Two piece bathers and one piece bathers made from shirred fabrics and early stretch fabrics to give them some stretch

Bras and girdles changed so that they were more comfortable and practical to wear - using early stretch fabrics

Nylon stockings without seams developed

Design Fundamental 4: Social

More sports style clothing developed and worn by women for casual day wear - capri pants, slim fitted skirts, T shirts and blouses

Work clothes for women developed - skirts and twin sets, womens suits and pant suits developed