



Methodist Ladies' College
ATAR course examination, Semester 2, 2020

Question/Answer Booklet

MATERIALS
DESIGN AND
TECHNOLOGY
ATAR Year 12
Section Three **SOLUTIONS**

Student Name: _____

Teacher Name: _____

Time recommended for this section

Suggested working time for this section: ninety minutes

Materials required/recommended for this paper

To be provided by the supervisor

This Question/Answer Booklet

Please place a tick (✓)
in one of the following
boxes to indicate your
specialised context

Wood

Metal

Textiles

To be provided by the candidate

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

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

Number of additional
answer booklets used
(if applicable):

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 the examination

The Materials Design and Technology ATAR course examination consists of a written component and a practical (portfolio) component.

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	20 mins	21	15%	
Section Two Extended answer	3	3	40 mins	30	25%	
Section Three Candidates to choose one of the following contexts: Wood Metal Textiles	6	6	90 mins	85	60%	
Total					100	

Instructions to candidates

1. The rules for the conduct of ATAR course examinations are detailed in the *Year 12 Information Handbook 2020*. 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.

Section Three: Answer all of the questions within your specialised field: Wood, Metal or 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. Supplementary pages for the use of planning/continuing your answer to a question have been provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued i.e. give the page number.

Section Three: Extended answer

60% 75 Marks

Textiles Context

This section contains **SIX (6) questions**. Attempt **ALL** questions from this section.

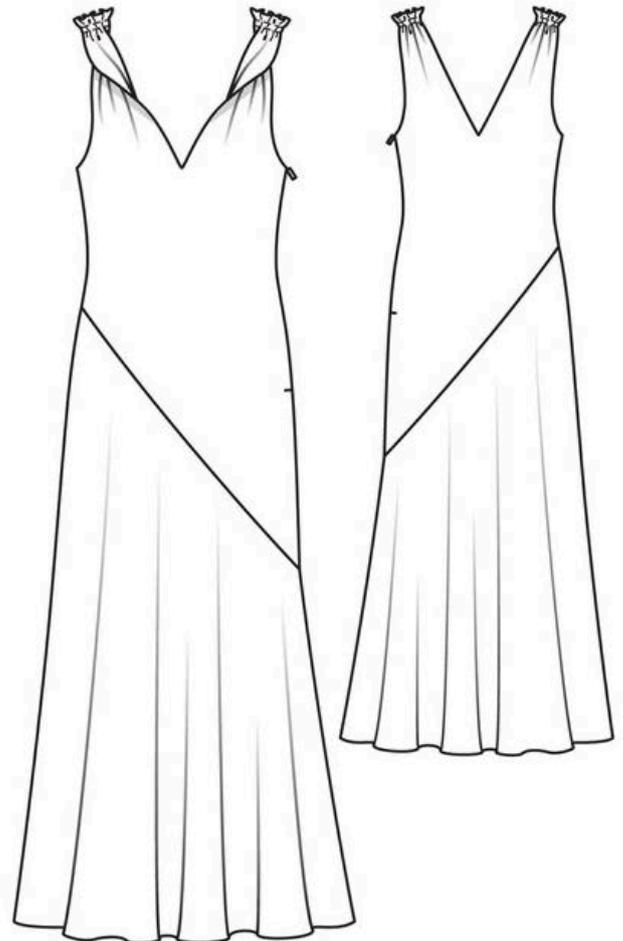
Suggested working time: 90 minutes

Question 8

12 marks

This question refers to the evening dress in **Burda pattern 12/2011#123** shown below.

a) Name the grainline that has been used in the design of this dress and explain why



this grainline has been used in this design.

(2 marks)

Name of grainline: **Bias grainline**

See next page

Question 8 continued

Explanation:

The bias grain (the true bias) provides excellent drape allowing the fabric to flow over the body curves and create soft folds as the garment extends from the hips to the floor gaining more fullness. The fabric stretches on the bias grain and the weight of the skirt pulls the garment down allowing the form of the body to be exposed.

b) (i) Name the fabric used to construct the evening dress shown in the image on the previous page.

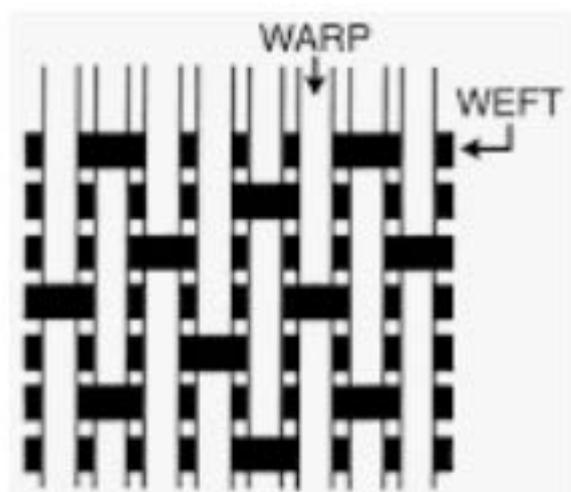
satin (1 mark)

(ii) Describe in detail using text and diagrams, the structure of the fabric used to construct this evening dress.

(2 marks)

Satin is a woven fabric in which the warp yarns float over 4 of the weft yarns exposing a long length of yarn to the light and create lustre. The yarns are filament yarns and are either silk or man made (rayon, acetate (regenerated), or polyester (synthetic)). The man made yarns are not delustrated.

Diagrams:



See next page

Question 8 continued

c) Using text and diagrams, describe in detail ONE (1) suitable hem technique that could be used to sew the hem of this evening dress.
(2 marks)

- Bias binding is used to create a bias hem for this skirt

- The skirt is levelled and cut with a 6mm turning for the hem.

- Bias binding is applied to the bottom edge. Unfold one edge of the bias and place the right side of the binding on the right side of the fabric so the unfolded edge aligns with the fabric edge and pin the edge, taking care to not stretch the fabric.

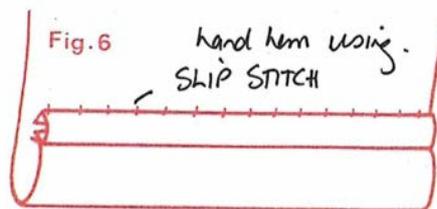
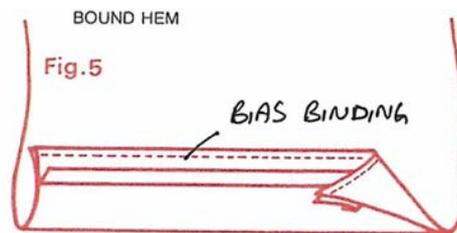
- Sew on the unfolded edge

- Steam press the binding and seam allowances away from the garment

- Turn the bias to the wrong side evenly so the seam favours the underside

- Steam press and pin

- Slip stitch the hem in the fold of the bias.

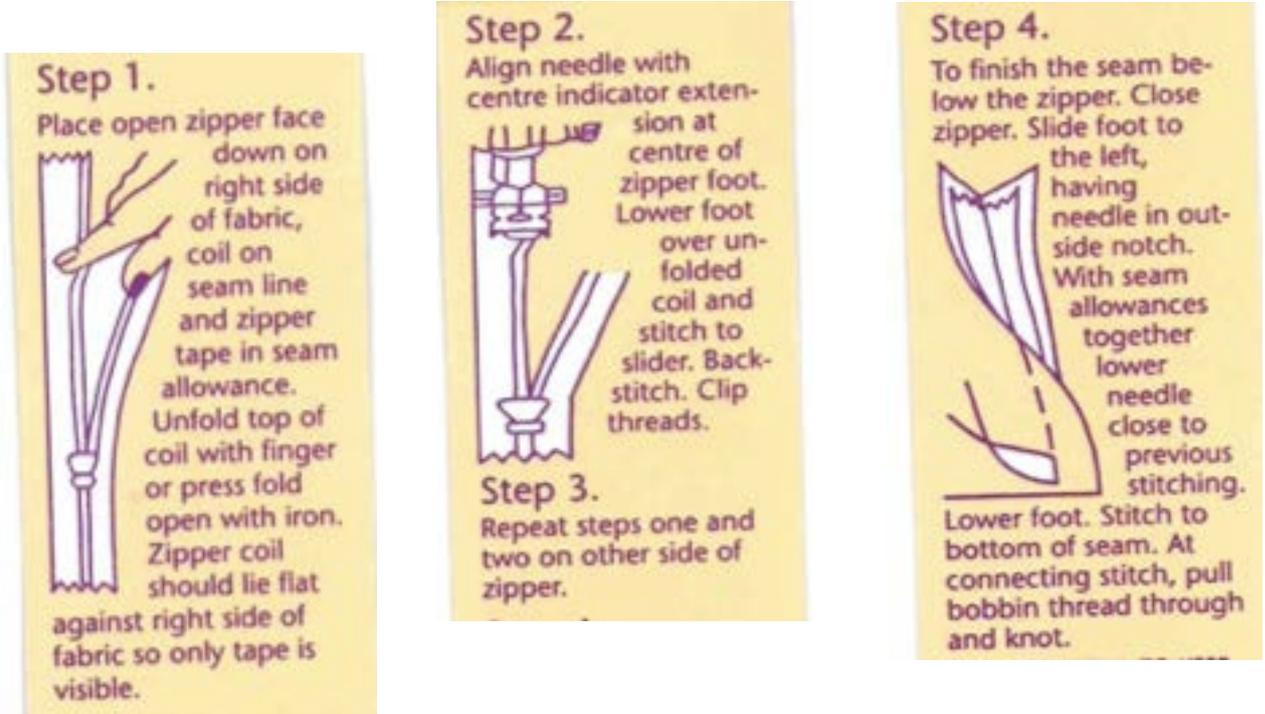


Diagrams:

d) Using text and diagrams, describe in detail ONE (1) suitable method used to sew the zipper on this evening dress. (3 marks)

An invisible zip application or a lapped zip

Invisible zip



Lapped zipper

<https://letslearntosew.com/wp-content/uploads/2019/07/Lapped-Zipper-Blog-Post.jpg>

e) The neckline of this evening dress requires stabilising to prevent stretching and gaping. Describe the best method/s of stabilising this neckline. (2 marks)

The application of a facing with understitching is the best method.

- The facing would be interfaced with a light weight interfacing.
- Best to be non-fusible light weight vlene as the glue might show on the right side if a fusible is used.
- Apply interfacing to facing by pinning in place and sewing it to the facing inside the seam allowances.
- Then apply facing to neckline right sides together.
- Sew, trim, clip into point, press seam allowances and facing away from garment and understitch facing close to seam on the facing side, until the facing turns to the right side at the shouders.

Question 9

12 marks

- a) In the context of the fashion and textiles industry, explain the term '**trend forecast**' (2 marks)
- **Trend forecasting** is a global career that focuses on informing designers about upcoming trends .
 - The concept applies to all levels of fashion including haute couture, ready to wear and mass market.
 - Fashions can be forecast for at least 2 years ahead, and for up to 6 seasons per year.
 - Fashion trend forecasters are responsible for attracting consumers and helping retail businesses and designers sell their brands.
 - Today, fashion industry workers rely on the Internet to retrieve information on new looks, hot colours, celebrity wardrobes, and designer collections.
- b) Suggest and explain **THREE (3) types of research** that you can undertake to identify '**trend forecasts**' in the fashion and textiles industry. (6 marks)

A trend forecaster predicts the colours, fabrics, textures, materials, prints, graphics, beauty/grooming, accessories, footwear and styles that will be presented on the fashion runways and in the stores for the upcoming seasons.

Research type 1:

Colour research: The pantone colour forecast is a trend forecast that informs the consumer about the colours that will be in fashion for a number of years ahead. Designers pay a premium for these forecasts depending how far into the future they want them. This serve ensures that designers meet the requirements of their target markets when purchasing fabrics and notions for their designs. It enables them to create designs in the right colours in advance so they can source overseas and local manufactures at a good price and have the merchandise on the shelf ready to sell when the time is right

Research type 2:

Style research: These are trend forecasts that provide the fashion looks, silhouettes and garment styles that will be in fashion for a number of years into the future. These are used by designers to create designs that are on trend for the future. This enables them to ensure the styles they design will be desired by their target market and to have them on the shelves ready to sell at the right time.

Research type 3:

Materials research: These are trend forecasts that provide predictions for the materials that will be required to create the fashion looks and garment styles that will be in fashion for a number of years into the future. These are likewise used by designers to create designs

using materials that are on trend for the future. This enables them to source the materials they require for their designs in advance to ensure the merchandise is on the shelves ready to sell at the right time.

c) Contemporary trend forecasts show that there is a **strong interest in sustainability**. Using specific examples, explain **TWO (2) ways in which recycled materials** can be used to produce fashion garments or accessory items. (4 marks)

- Designers who use PET: There are companies that collect recycled plastic water bottles. The bottles are sorted by colour (only clear ones can be used), stripped of their caps, sanitized, and then sent to a giant grinder, where they're pulverized into chips, melted, and spun into a fine yarn, which is stuffed and sewn into clothes. The product is called PET and it is used to produce polyester fleece for hoodies and polyester that is woven into raincoat fabric as well as other fabrics.
 - Recycle: Designers can create individual garments from recycled clothing. One or more recycled garments can be unpicked and combined to create individual pieces. For example denim jeans can be combined with other recycled fabrics to create jackets. They can be ripped into pieces and made into patchwork bags, cushions and clothing.
 - Designers can reshape existing clothing and create new pieces from these.
-

Question 10

33 marks

Refer to **BUTTERICK skirt pattern B6060 View A** below for all parts of Question 10
You have been asked to make a set of skirt samples for Summer 2021 by a local garment retailer in Perth. The retailer has asked for one sample in each size from 6 to 22, using View A from this Butterick pattern.



See next page

Question 10 continued

FABRICS: Designed for medium weight woven fabrics

*With Nap. **Without Nap. Suitable fabric types: Denim, Sateen, Poplin,

NOTIONS: A, B: 18cm zipper, seam binding, Hook & Eye. SIZE COMBINATIONS: (6-8-10-12-14), (14-16-18-20-22)

Fabric widths given in centimetres.										
SIZES	6	8	10	12	14	16	18	20	22	
View A										
115 cm*/**	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	m
152 cm*/**	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	m
View B										
115cm */**	1.5	1.5	1.5	1.9	1.9	1.9	1.9	1.9	2.0	m
150cm*/**	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	m
INTERFACING: 46, 51 cm - 0.8 m	0.3	0.3	0.3	0.4	0.5	0.6	0.6	0.6	0.6	
LINING AB: 115 cm - 0.6 m										
View C: 115,150*/**-0.7m										
LINING C: 115cm-1.30m										
View D: 115 cm*	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	m
150 cm*	0.8	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.3	m
LINING D - 115 cm – 1.5 m										

See next page

Question 10 continued

a) Using textiles specific terminology, describe the styling used in this skirt design.

Four different correct terms used:
Skirt yoke / fitted yoke / lined yoke
Lined skirt
Princess seams
Inverted pleats / pleated skirt
Panels / panelled yoke
A Line shape
Blind hem

(2 marks)

b) What is the name given to the shaping technique used to shape the skirt to fit the waistline? (1 mark)

princess seams / panels

c) Suggest the most appropriate type of joining and finishing technique to use when sewing the front and back seams of the skirt. Justify your answer.

(3 marks)

Name of joining technique:

- Open seams - most appropriate for the panelled yoke
- Closed seams / plain seams could also be used for the lower skirt

Name of finishing technique:

- overlocker finish

Justification of techniques:

- Panelled yoke - open seams / overlocker finish (or unfinished) to reduce bulk at the seams as this part of the garment is lined
- Lower skirt seams - closed / plain seams - quicker, more efficient, cheaper to construct

See next page

Question 10 continued

d) Use the materials data table below. Suggest a **suitable fabric and fibre content** for the sample skirts. This fabric and fibre content would also be used for the final collection of skirts. **Justify the reason/s for your choice** of fabric and fibre for the skirts.

Information about materials – fabrics and fibres			
	<i>Fabric / fibre type</i>	<i>Cost per metre / unit</i>	<i>Care instructions</i>
A	Gabardine 80% Cotton / 20% Polyester blend	\$16	<ul style="list-style-type: none"> • Machine washable • Line or tumble dry • Moderate steam iron • Do not bleach • Dry cleanable
B	Sateen 90% Cotton / 10% Lycra blend	\$18	<ul style="list-style-type: none"> • Machine washable • Warm water • Line dry - do not tumble dry • Moderate steam iron • Do not bleach • Dry cleanable
C	Lightweight Poplin 55% Cotton / 45% Polyester	\$14	<ul style="list-style-type: none"> • Machine washable • Moderate to hot steam iron • Wash in moderately warm to hot water • Line or tumble dry • Do not bleach • Do not wash with whites
D	Bemsilk lining 100% polyester	\$7	<ul style="list-style-type: none"> • Machine washable • Line or tumble dry • Do not bleach • Moderate iron • Drycleanable
E	Interfacing	\$10	<ul style="list-style-type: none"> • Machine washable • Wash in warm water • Drycleanable • Line or tumble dry on low • Medium iron
F	Zipper	\$2	
G	Thread	\$4.20	
H	Hook and eye	15 cents	

(5 marks)

Fabric name: **Sateen**

Fibre Content: **90% Cotton / 10% Lycra blend**

See next page

Question 10 continued

Justification:

- Easy care fabric
 - Machine washable
 - Warm water
 - Line dry - do not tumble dry
 - Moderate steam iron
 - Do not bleach
- Can be drycleaned
 - Drycleanable
- \$18 / metre is expensive in terms of the choice - however the fabric is thicker, stronger, more durable, has good drape, has a slight lustre, is crease resilient
- 10% Lycra blend adds a little stretch - will add better fit, more comfort for the wearer due to the stretch / elasticity - and makes it crease resilient

e) Use the data tables provided above to calculate the cost of the sample collection of skirts. (7 marks)

Size	6	8	10	12	14	16	18	20	22	Quantity Required	\$ cost per Unit	Total \$ Cost
Fabric	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	12.60	\$18	\$226.80
Lining	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	5.4	\$7	\$37.80
Interfacing	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	7.2	\$10	\$72
Thread	1	1	1	1	1	1	1	1	1	9	\$42	\$37.80
Zipper	1	1	1	1	1	1	1	1	1	9	\$2	\$18
Hook and eye	1	1	1	1	1	1	1	1	1	9	15cents	\$1.35
Total \$ Cost for Collection Samples												\$376.75

Total \$ Cost for Collection Samples: **\$376.75**

See next page

Question 10 continued

f) Where and why will the interfacing be used in the skirt? (2 marks)

On the lining around the waist edge on the skirt panels to stiffen / support the waistline

g) Suggest an ideal interfacing fabric for this purpose? (1 mark)

Fusible light to medium weight Vilene / Pellon

h) Describe the method used to finish the raw edge at the waistline of this skirt. (2 marks)

- A lining is used to finish the raw edge at the waist.
- Skirt lining is constructed in the same manner as the outer skirt - however zipper opening is left on the opposite side of the skirt.
- Lining is sewn to skirt with right sides together.
- Trim the seam allowance by half, understitch the seam allowance to the lining
- Press lining to the inside of the skirt.
- Machine or hand stitch around the zipper opening to finish the lining.
- Lower edge of the lining will neaten the raw edge created when the pleated lower skirt is attached to the upper fitted skirt yoke.

See next page

Question 10 continued

i) Use the drawing templates provided at the back of the exam paper and the space provided below to illustrate the front and back **2D working drawings** for the View A skirt. Include annotations to describe the features of the skirt.

(6 marks)

Question 10 continued

j) In the space below, **rapid concept sketch the front and back view for a suitable top to complement the View A skirt**. Annotate the sketches indicating key design features and explaining how the design of the top complements the skirt design.

(4 marks)

Skirt front & back view

Drawing:

3 marks

- Front & back views
- 2D drawing
- Technical drawing with ruler
- Pencil or black pen used
- Correct drawing for skirt design

Annotation:

3 marks

- Yoke panels
- Lined yoke
- Inverted pleats / pleated skirt
- Knee length
- Side seam invisible zipper
- Topstitch?

Front and back rapid concept sketches for top

Rapid Concept Sketch:

- Front / back view - 1 mark
- Pencil - 2D quick sketches - 1 mark
- Annotation - 1 mark
- Suitable style - 1 mark

See next page

Question 11
marks

8

Many Australian based manufacturers of products such as clothing, car parts and furniture are relocating some or all of their business overseas. This is due to a number of factors, including lower labour costs and an increasingly efficient and educated overseas workforce using advanced technologies. However, working conditions and the implementation of

MATERIALS DESIGN & TECHNOLOGY - TEXTILES

occupational health and safety standards still remains a real challenge for some overseas countries.

Using Australian occupational health and safety guidelines to improve working conditions in these countries, develop a **TWO (2) point risk management plan** for each of the hazards identified in the table below.

Hazard	Risk management plan
Inexperienced workers	<ul style="list-style-type: none"> • Educate workers- Employers to provide training and workshops for inexperienced workers. They should sit the following worksafe modules. • Complete Smart move certificate- General Module first and then the Industry Module. Worksafe Australia- risk management involves the following steps: Identify, assess and control hazards.
Dangerous substances	<p>MSDS materials safety data sheets that provide detailed information about dangerous substances must be present in the workplace for any dangerous substances. These give more details than labels and are provided for an employer by the manufacturers and suppliers of dangerous substances. It is important that hazardous substances in workplaces are used according to the manufacturer or supplier’s written instructions and agreed safe work practices.</p>
Fire hazards	<p>An alarm system needs to be present to warn of an emergency in the case of fire. Employers must ensure that fire extinguishers are present. They should train workers about their uses, how to use them and how to retreat in the case of a fire. The employer must provide training so workers know what to do and where to go in the case of a fire</p>

See next page

Question 12

10 marks

A teenager is going to buy the following hooded top to wear at a sports event.



- a) Name **ONE (1) synthetic fibre** that would be suitable for the hooded top. Give **TWO (2) reasons why the fibre is suitable**.

Synthetic fibre **polyester**

(3 marks)

Reason 1:

Polyester is crease resistant. This means the hoodie will maintain an excellent appearance without the need to iron it. For this reason polyester is used in a vast variety of garments

Reason 2:

Polyester is an insulator meaning it is a poor heat conductor that keeps the heat close to the body. This usually is aided and abetted by the brushed surface on the inside of the polyester fleece that create air pockets that also trap heat close to the body.

Reason 3:

Polyester is colourfast as it is dyed when it is in the plastic chip phase of production. This means it will be available in a wide range of colours that will not fade with wear.

- b) The hooded top is made using a **knitted fabric**. Evaluate the suitability of **THREE (3) key features of knitted fabrics**. Evaluative comments must include reference to the hooded top.

(3 marks)

Evaluation 1: Key feature; the knitted fabric is thick and keeps you warm

The hooded top is made using a double knit structure. This is a weft knit that is thick due to the method of construction employed to make it. It is like 2 single knit fabrics joined together by another looped yarn making it thick and therefore warmer

Evaluation 2: Key feature 2: The knitted fabric stretches across the fabric creating comfort. This fabric will have 20% stretch horizontally in the direction of the courses. It will have very little stretch vertically. (in the direction of the wales). This means the fabric will stretch with wear and return to its normal shape after stretching it (good memory). It will also be easier for the wearer to dress as the stretch is across the body thereby facilitating getting the garment on and off.

Evaluation 3: the looped construction of knitted fabric means that they present with a comfortable appearance (good drape) lending them to be very suitable for casual wear. This hoodie looks comfortable and it is the knit structure that facilitates this look

c) Describe **TWO (2) advantages** and **TWO (2) disadvantages** of buying the hooded top online. (4 marks)

Advantage 1, 2 :

- You can shop around and get the best price and thereby save money
- Huge range of goods, much larger than in the shops More variety
- Better colour range
- Better size availability
- The excitement of looking forward to the arrival of goods
- Less effort than shopping
- Safer with covid

Disadvantage 1, 2:

- Can't determine fit – often not true to size
- Can't determine quality
- Can't determine if a style suits you
- Can take a long time to come
- Bad returns policies- sometimes you have to accept a voucher instead of a payback
- Cost of returns

MATERIALS DESIGN & TECHNOLOGY - TEXTILES

Global trends and movements in consumption are affected by fashion, consumer choice and marketing. These factors affect the mass production of products at the local, national and international levels. In addition, information available via media forums and social networking is increasingly playing an important part in the choices that we as consumers make when considering which products to buy.

With reference to the following points, **discuss how consumer feedback and online review forums influence** the:

- **style of products available**
- **materials used to make the products**
- **mass production of products**

Explains / discusses impact of online feedback / review forums	2 marks
Styles of products available	2 marks
Materials used	2 marks
Mass production of products	2 marks
Example/s used	2 marks

- Online shopping using the Internet has really increased in the last 12 months due to COVID 19.
- This has resulted in increasing use of client feedback and online forums to review product and services.
- Consumer power is consolidating and improving with access to information and an ever-widening global source of goods and services. More information about product and more choice of products than ever before through the Internet / web.
- Consumers have become professional shoppers, and the very large choice of products and services has led to consumers developing ways of managing the ever-increasing choice by using client reviews and feedback, online forums, social media, price comparison websites etc to inform their decision making.
- Consumer feedback and online review forums have increased the 'power of the consumer to influence not only what they buy and also what others buy. Empowered consumers are sharing their views and becoming more involved in the development of products and services.
- Consumer loyalty to brand has an impact on the demand for products or service. This is impacted by consumer feedback & online forums also.
- Social networks and digital devices have made it possible for consumers to share their experiences and critic products, services and brands.
- Social networks and digital devices have made it possible for consumers to become creators - demanding more personalised of products and services. They are being given the opportunity by more innovative brands and companies to shape the products and services they consume.

- Innovative brands and companies listen to and utilise consumer feedback to improve their products in terms of product styles and materials used. In turn improved products are popularised through client feedback and forums. This will lead to a greater demand for products and a need for mass production for the period of popularity of the product.
- Innovative brands and companies encourage consumer feedback - customers are inspired to personalise a product or service or indeed to co create a new product which will better meet their needs. New, more innovative products and services are developed in response to consumer feedback. This might also involve developing new styles of products, or the use of new materials in products. Improved product styles and materials used might be popularised through client feedback and forums will lead to a greater demand for products and a need for mass production for the period of popularity of the product.
- The 'supply driven' world is rapidly becoming a 'demand driven' world where the consumer is in charge.

In terms of style of products available / materials used for products:

- consumers can influence product styles and materials used through positive or negative feedback online. This will affect sales in a positive or negative way. Poor feedback on the style of a product or service or the materials used in a product will result in a product style or materials used being modified in relation to the criticism of the product or the product being removed from the market, if it is unsafe for example.
- Negative feedback & reviews - for example in the case of an unsafe product like a child's bike or toy in the market receiving negative online reviews or feedback, this can quickly lead to consumer activism / action to have a product removed from the market.
- Positive feedback and reviews will increase the popularity of a product / service creating more demand. This could lead to mass production of a product to meet the demand. Example - development of a wide range of insulated drink bottles / drink cups / coffee cups that have replaced single use / throw away drink bottles and mugs and cups.
- Example from COVID 19 year - Examples of this have been seen this year when PPE products (eg masks, antiseptic hand wash and toilet paper) PPE for use by medical staff and use by the general public were found to be in short supply in Australia and across the globe. This prompted development of a range of new PPE resources and exploration of a range of styles styles, materials research and testing to meet the increased demand for these products. New companies developed and existing companies changed product development to meet demand - positive feedback online has resulted in mass production and increased sales.

In terms of mass production of products:

- Positive feedback and reviews will increase the popularity of a product / service creating more demand.
- Increased popularity and sales of a product can be affected by positive feedback and reviews online. This will lead to greater demand of the product and mass production of the popular product will result to meet the demand for the period of popularity. However, this will not be indefinite, as product demand changes rapidly, and products can quickly become obsolete and are superseded by a superior product.

