METHODIST LADIES' COLLEGE

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

Question/Answer Booklet

MATERIALS DESIGN AND TECHNOLOGY

ATAR Year 12
Sections One and Two

Student Name: _____

Teacher Name: _____

Time allowed for this paper
Reading time before commencing work: 10 minutes
Working time: 2 ½ hours

Time recommended for these sections
Suggested working time for these sections: sixty minutes

Materials required/recommended for this paper
To be provided by the supervisor
This Question/Answer Booklet

Number of additional answer booklets used (if applicable):	

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

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.

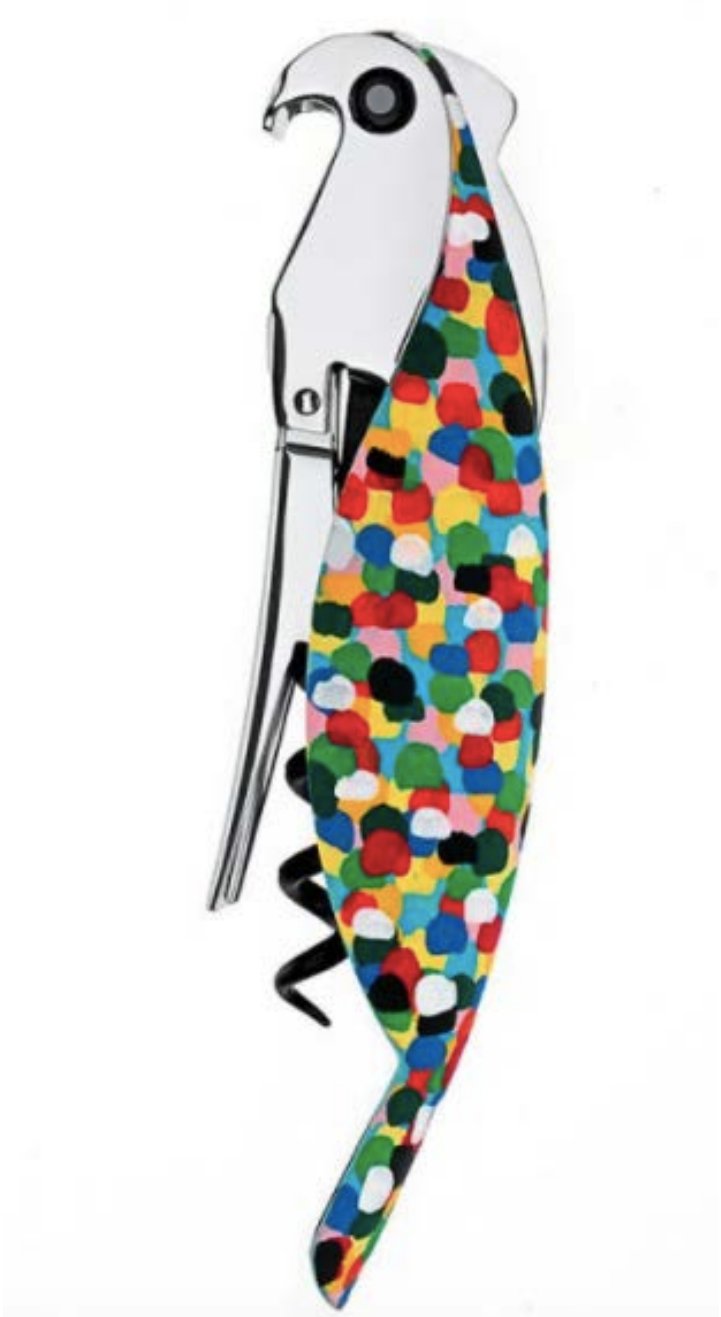
Section One: Short answer **15%** **21 Marks**

This section contains **Four (4) questions**. Attempt **ALL** questions from this section.
Write your answers in the space provided.
Supplementary pages for planning/continuing your answers to questions are available at the end of this Question Answer booklet. If you use these pages to continue an answer, indicate at your original answer where the answer is continued, i.e. give the page number.
Suggested working time: 20 minutes

Question 1 **2 marks**

Explain how the designer of the Alessi Sommelier Parrot corkscrew has considered the following design fundamentals, when designing this product.

- **Aesthetics**
- **Function**



Source: https://alessiaustralia.com.au/products/bar-and-wine/bottle-openers/parrot-corkscrew

Aesthetics: (1 mark)

See next page

Question 1 continued

Function: (1 mark)

Question 2 **6 marks**

All materials have unique properties that affect their performance and suitability for use in the manufacture of a product. These unique properties can be tested to ascertain the suitability of a material for an end use or purpose.

Using **materials that you are familiar with from your context area**, describe a method to **test TWO (2)** of the unique **properties** listed below.

Select **TWO (2)** of the properties listed below:

- Strength
- Dimensional stability
- Thermal properties
- Flammability
- Resilience
- Elasticity
- Drape
- Lustre
- Abrasion resistance
- Effect of alkalis

Property 1 is: _____

The material is:

_____ (1 mark)

Using text & diagrams describe the test: (2 marks)

See next page

Question 2 continued

Property 2 is: _____

The material is: _____ (1 mark)

Using text & diagrams describe the test: (2 marks)

_____

_____

_____

_____

See next page

Question 3 **8 marks**

Many products are designed with planned obsolescence in mind.

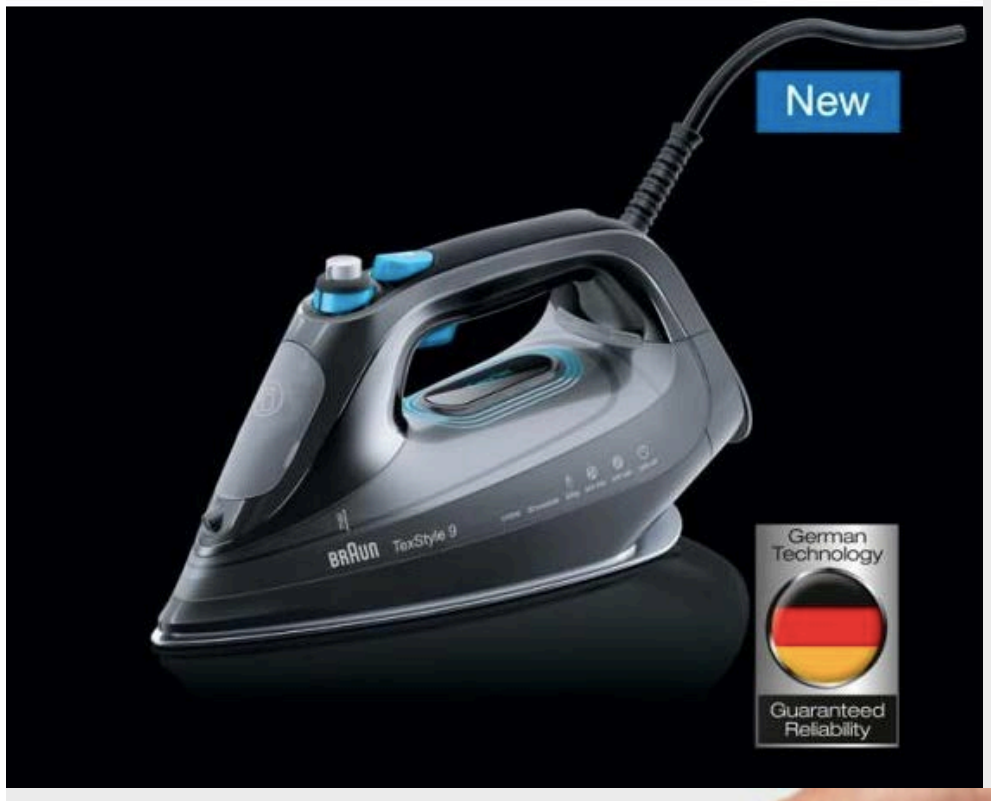
a) Give reasons why designers develop new products with planned obsolescence. (2 marks)

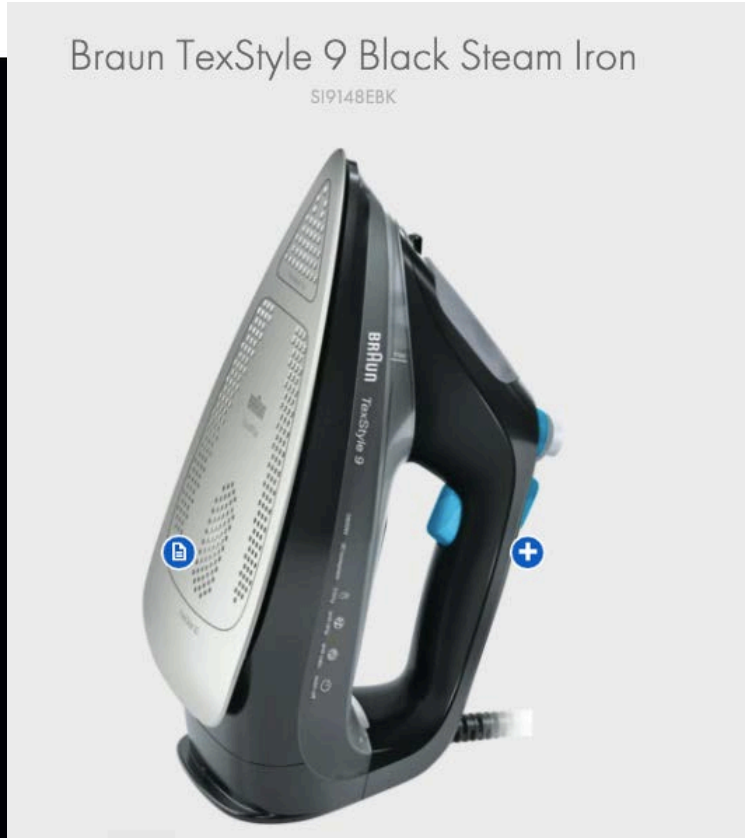
b) Explain the effects on society and the environment of designing products with planned obsolescence. (6 marks)

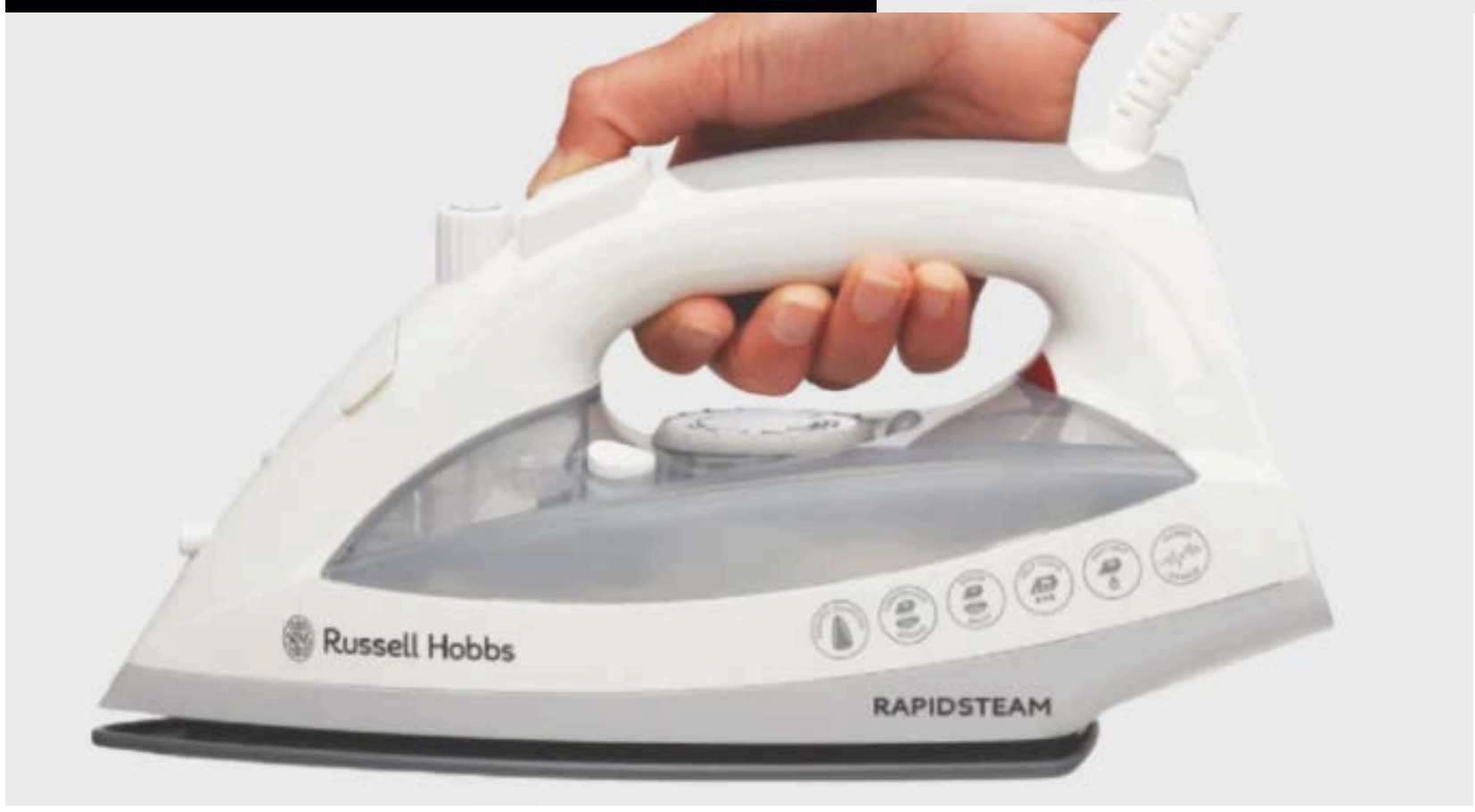
See next page

Question 4 **5 marks**

The market for irons is competitive and designers have to consider various factors in their design of these products in order to achieve a market advantage and sell their product.







a) Describe the relationship between **safety, ergonomics and function** with reference to the design of the irons, as shown in the images above. (3 marks)

See next page

Question 4 continued

b) Before producing a design specification for an iron, the designer would have researched various **design fundamentals.** Explain why the following factors affecting design would be researched when designing an iron.

(i) Environment: (1 mark)

See next page

Question 4 continued

(ii) Economics: (1 mark)

See next page

Section Two: Extended Answer **25%** **30 marks**

This section has **THREE (3) questions**. Answer **all** questions. Write your answers in the spaces provided.

Write your answers in the spaces provided.

Supplementary pages for planning/continuing your answers to questions are available at the end of this Question Answer booklet. If you use these pages to continue an answer, indicate at your original answer where the answer is continued, i.e. give the page number.

Suggested working time: 40 minutes

Question 5 **8 marks**

When planning the production of a practical project in a **school studio** or workshop it is important that the **plan allows resources to be used efficiently**.

a) Identify and discuss the factors that must be considered in connection with each of the following: (4 marks)

I. **use of time** (2 marks)

_____

_____

_____

_____

_____

_____

_____

II. **use of materials** **(**2 marks)

_____

_____

_____

_____

_____

_____

See next page

Question 5 continued

b) Compare the factors identified in part (a) with the equivalent **planning procedures** for a **production run in an industrial manufacturing situation**. Explain the **additional factors which would need to be considered in an industry manufacturing situation.** (4 marks)

i. **use of time** (2 marks)

ii. **use of materials** (2 marks)

See next page

Question 6 **5 marks**

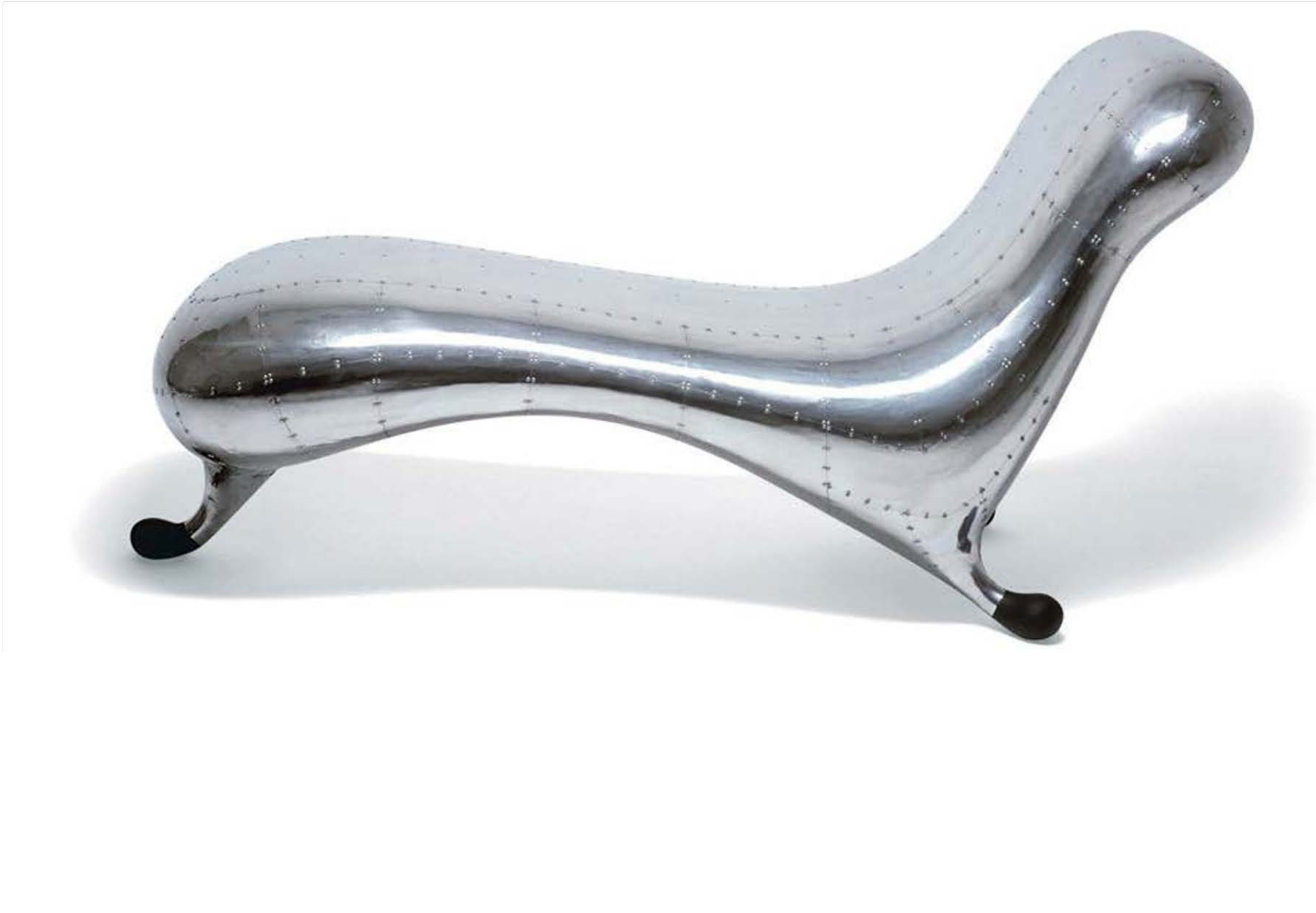
'The designer's ability to predict evolving and directional changes in demand by consumers will depend on their ability to draw on, interpret and analyse **information from a large and ever increasing range of sources.**'

In light of this statement, **what type of information** will the designer draw on to help identify and predict the **needs and wants of the consumer and the market**?

See next page

Question 7 **17marks**

Marc Newson's Lockheed Lounge was originally handmade as a one-off piece for his graduation exhibition at Sydney College of the Arts.



The Lockheed Lounge

The Lockheed Lounge was designed by Marc Newson in 1986. The chaise lounge has continuous curve shapes formed around a reinforced fibreglass shell. The lounge is clad in aluminium sheets that are beaten to shape and fitted by hand with blind rivets. The lounge has three legs with slightly curved feet, one at the front and two at the rear.

Source: Marc Newson (designer) http://www.marc-newson.com

See next page

Question 7 continued

a) Identify and explain **TWO (2) elements of design** that Marc Newson has used in the design of the Lockheed Lounge. (4 marks)

Element of Design: _____

Explanation:

Element of Design: _____

Explanation:

See next page

Question 7 continued

b) Identify and explain **TWO (2) principles of design** that Marc Newson has used in the design of the Lockheed Lounge. (4 marks)

Principle of Design: _____

Explanation:

Principle of Design: _____

Explanation:

See next page

Question 7 continued

c) The Lockheed Lounge was originally made as a one-off design. Due to its popularity it was then produced as a commercial design in a limited edition. Identify **ONE (1) stage of the 'Technology Process'** that Marc Newson may have worked through to make the product. Discuss in **detail the activities** that Marc Newson would have undertaken **in that stage of the Technology Process**. (3 marks)

See next page

Question 7 continued

d) Identify the manufacturing system that would be most suited for the commercial production of the Lockheed Lounge: **low volume production or mass production**. Give reasons for your answer. (2 marks)

e) New and emerging technologies are important tools for designers. If the Lockheed Lounge were to be designed and created today, identify and explain **a new and emerging technology** that Marc Newson would be able to use to assist in either the design or production of the piece. (4 marks)

See next page

Question 7 continued

End of section 2

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