



**SECTION A****Instructions for Section A**

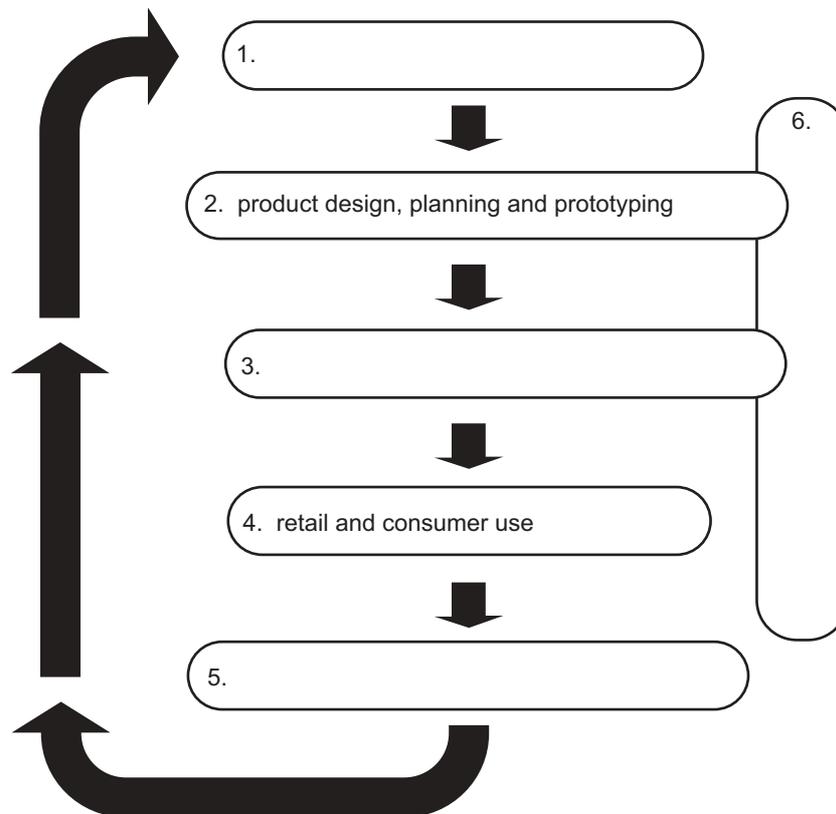
Answer **all** questions in the spaces provided.

**Question 1**

The following is a diagram of the product cycle. Some of the stages are missing.

Fill in the **four** missing stages from the list of options below. Only fill in **one** option in each space.

The product cycle

**List of options**

- product marketing
- total quality management
- planned obsolescence
- product concept
- production and distribution
- product evaluation and modification
- research

4 marks

**Question 2**

A designer sometimes chooses a material for its visual appeal while ignoring other properties or characteristics. This could cause problems in production and in the use of a product.

Select **two** materials from the list below.

**List of materials**

- redgum
- silk taffeta
- nylon tulle
- wool felt
- stainless steel
- copper
- terracotta
- MDF
- blackwood
- porcelain
- bone china
- mild steel
- acrylic (plastics)
- PVC
- crystal
- polystyrene
- concrete
- soda lime

Name the **two** materials you have selected and complete the table below.

| Selected material | Visual appearance | Property/characteristic that may cause a problem during production or use |
|-------------------|-------------------|---|
|                   |                   |   |
|                   |                   |   |

4 marks

**Question 3**

As a designer you may consider the **life cycle analysis (LCA)** of any product that you design. The purpose of the LCA is to assess the possible impact on the environment.

Select **one** of the following products from the list below.

- refrigerator
- flat-pack particle board shelves
- plastic milk bottle
- cotton lycra swimsuit
- stoneware cup and saucer
- soda lime (glass) drink bottle

**Product selected** \_\_\_\_\_

- a. In the table below describe the **negative environmental impacts** at the different stages of the product's life cycle.

| Column 1                        | Column 2                       |
|---------------------------------|--------------------------------|
| Stage of LCA                    | Negative environmental impacts |
| source of material              |                                |
| manufacture                     |                                |
| product packaging and transport |                                |
| product use                     |                                |
| product disposal                |                                |

5 marks

Using the product you have selected, answer the following questions.

- b. i.** Identify from column 2 in **part a.** the **greatest** negative impact your chosen product has on the environment.

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- ii.** What change could you make to reduce this negative impact on the environment?

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- iii.** How would the change that you have made reduce the negative impact on the environment?

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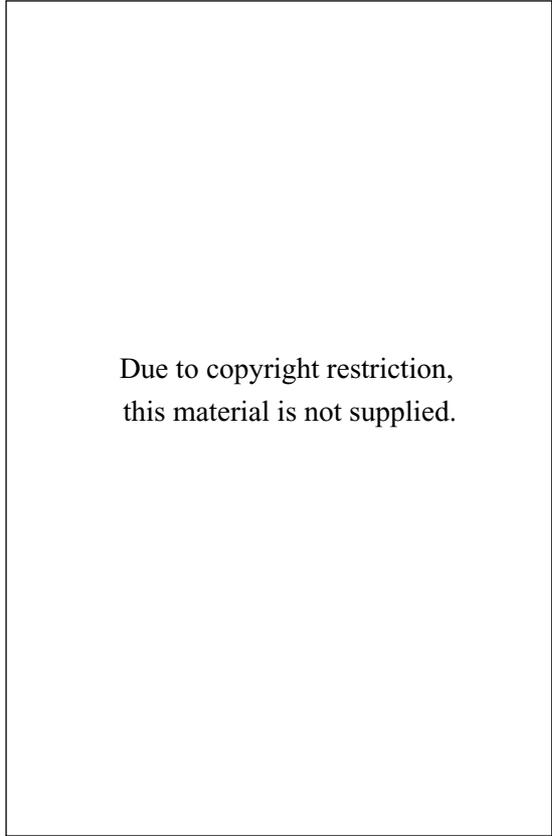
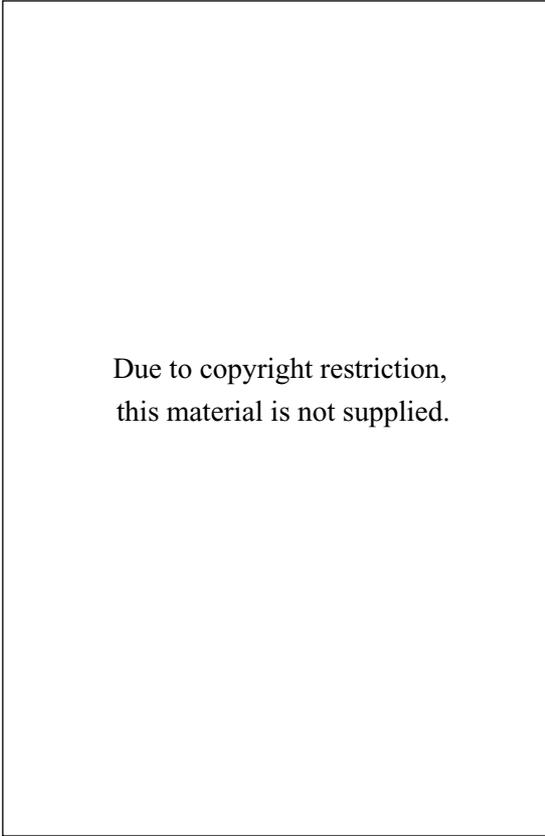
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1 + 2 + 3 = 6 marks

**Question 4**

The Segway is ‘the first self-balancing, electric-powered transportation machine. With dimensions no larger than the average adult body and the ability to emulate human balance, the Segway uses the same space as a pedestrian, and can go wherever a person can walk. The Segway will allow people to go farther, move more quickly, and increase the amount they can carry anywhere they currently walk’.

The Segway is shown in the images below.



- a. Identify **three** major client needs from the article above.

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3 marks

- b. How does ergonomics (human factors) influence the design of the Segway?

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2 marks

- c. What are **two** possible disadvantages of the Segway?

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2 marks

- d. Why would the manufacturer test the Segway during production and before its distribution?

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3 marks

A marketing company is thinking of approaching the Segway company to buy the Segway database of clients to use for marketing their own products.

- e. Explain an **ethical** reason the Segway company may give if they decline the offer.

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2 marks

Quality management is important to companies like the Segway company.

- f. List **two** strategies (not including testing the product) that the Segway company might use to ensure quality management.

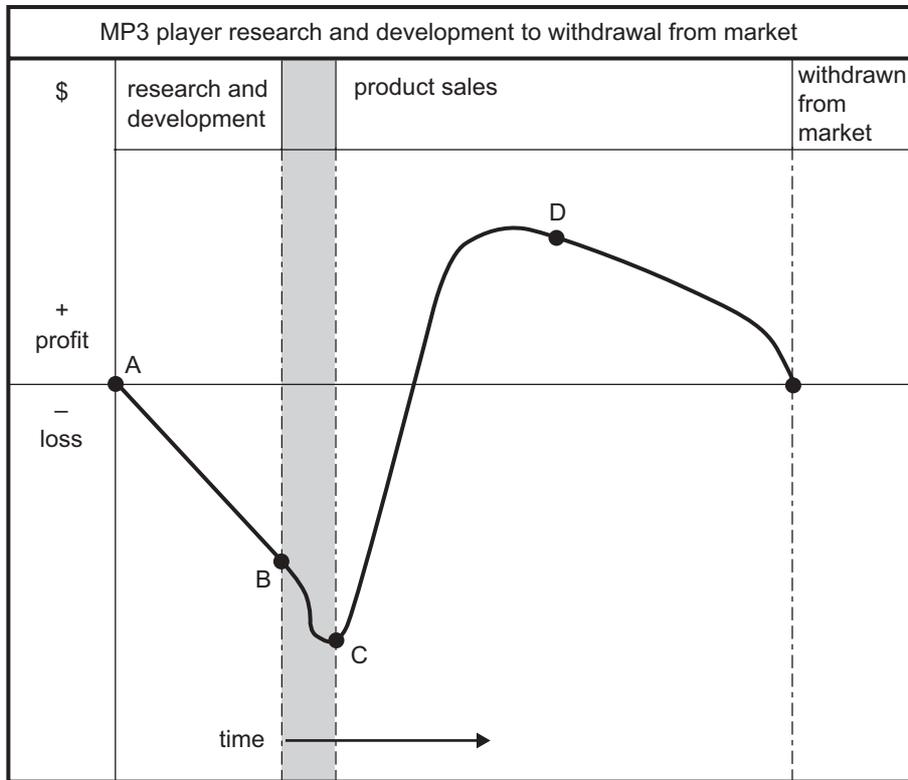
- \_\_\_\_\_
- \_\_\_\_\_

2 marks

**Question 5**

A company producing MP3 players has recently stopped producing their 2004 model.

The graph below indicates the product costs and sales over a period of time until the player is taken off the market.



Refer to the graph above to answer the following questions.

- a. i. What expenses does the company have in the research and development period between point A and point B?

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- ii. What happened in the period between the **end of research and development (point B)** and the **beginning of product sale (point C)**?

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3 + 3 = 6 marks

**b.** The company is concerned that the research and development time was too long.

**i.** Why are they concerned?

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**ii.** How could the company reduce research and development time?

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2 + 2 = 4 marks

At point D competitors released a similar product onto the market.

**c.** What could the company have done to stop sales from declining?

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3 marks

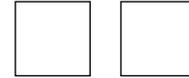
**SECTION B****Instructions for Section B**

Select one product from the 'Design Brief Insert' and answer the following questions.

Name the product you intend to design.

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Identify (A.–D.) the images you have selected for your inspiration.

**Question 6**

a. How long is the planned obsolescence of your selected product?

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1 mark

b. What is the age range of your target customers?

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1 mark

c. Apart from making a profit, what is the function of the Sharp Juice business?

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1 mark

d. After reading the design brief what do you consider to be the **three** most important specifications (considerations/constraints)?

i. \_\_\_\_\_

ii. \_\_\_\_\_

iii. \_\_\_\_\_

1 + 1 + 1 = 3 marks

e. Excluding cost and time, what **two** things **not** included in the design brief will need to be considered before developing design options?

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2 marks

f. Develop **two** evaluation questions you could use to determine the success of the product.

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2 marks

**Question 7****The design option**

Read the Design Brief Insert. Select the product you will design. Select no more than two images as inspiration. Draw your design in the space below.

- |  |         |
|--|---------|
| <b>i.</b> Use of selected images for inspiration           | 3 marks |
| <b>ii.</b> Annotation of design considerations/constraints | 3 marks |
| <b>iii.</b> Clarity and detail of drawing                  | 3 marks |
| <b>iv.</b> Function/suitability for use                    | 3 marks |
| <b>v.</b> Creativity/innovation                            | 3 marks |
| <b>vi.</b> Product safety                                  | 3 marks |

Total 18 marks

**SECTION B – continued**  
**TURN OVER**

**Question 8**

a. How have the images you selected influenced your design?

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3 marks

b. Name and justify the colour scheme you have chosen to use in your design.

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3 marks

c. What specific materials would you use to make your design?

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2 marks

d. What methods would you use to join the parts of your product?

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2 marks

e. What methods of finishing would you use on your product?

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3 marks

The daily care and maintenance of your product is important.

f. How would your product be cleaned and maintained?

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3 marks

**Please remove from the centre of this book during reading time.**

**D E S I G N   B R I E F   I N S E R T**

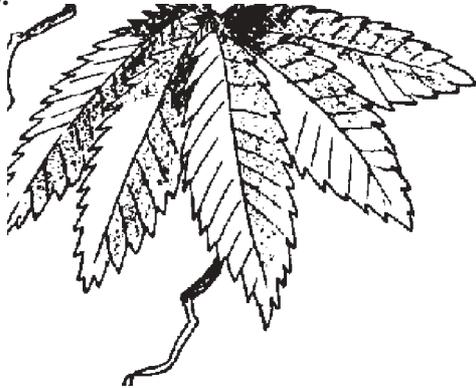
**TURN OVER**

# SHARP IMAGES

A.



B.



C.



D.



Your task is to design a product for Sharp Juice Café.

## DESIGN BRIEF – SHARP JUICE CAFÉ

Sharp Juice is a name for a chain of new cafés that will also sell music and clothing. You have been hired to design **one** of the following products for the café.

- uniform
- chair
- jug and drinking vessels
- table

Fifteen cafés will be opening in the next 6 months. The estimated time before the cafés will need updating again is about 3 years.

The target group for the cafés is 14–25 year olds who listen to JJJ radio and wear brand clothing such as Globe, Dangerfield and Mook.

Sharp Juice wish to create a corporate brand that people will recognise such as Starbucks, Levis, Borders, Ripcurl.

They have chosen four images. These images are shown on the left-hand side of this page and will be used as the inspiration for the Sharp Juice corporate image.

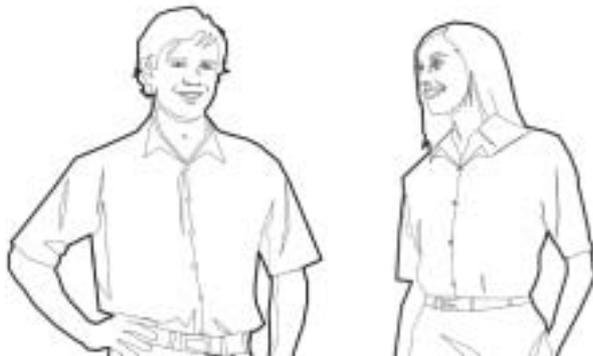
- The product you choose to design must be selected from one of the four products on the opposite page.
- The product needs to be designed following the instructions in the appropriate box.
- The design of the product is to be inspired by no more than two of the images listed from **A.–D.** on this page.
- Time is very important so standard materials and processes need to be used in the design.
- The designed product must be safe to use or wear.
- The product needs to be easily cleaned and maintained.

**Product – Uniform**

- select one (either male or female)
- uniform must be available in sizes S, M, L, XL
- uniform must consist of either
  - a. open neck shirt and pants.

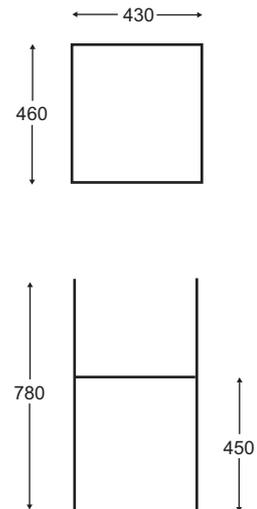
**OR**

- b. open neck shirt and skirt.



**Product – Chair**

- total chair height must be 780 mm
- chair seat height must be 450 mm
- chair seat width must be 430 mm and seat depth 460 mm



**Product – Jug and drinking vessels**

- jug must hold 1 litre of water/juice
- jug must be 250 mm high
- drinking vessels must hold 250 mL

**Product – Table**

- height must be 720 mm
- top of the table can be any shape but must be between 600–900 mm
- must incorporate this pedestal base

