



GENERAL COMMENTS

Most students answered all questions.

Areas of strength and weakness

Strengths:

- the design option section was well done with particular improvement in wood and metal and plastics responses
- the marketing section was answered well, although perhaps not as well as last year.

Weaknesses:

- responses to the environmental impact of the design option indicated that many students had little knowledge of possible impacts
- responses to the planned obsolescence of mobile phones showed that many students did not understand the phrase ‘planned obsolescence’
- product cycle was often confused with the marketing cycle, or life cycle analysis.

Section A

Materials

Question 1

ai–ii

| | | | | |
|--------------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | Average |
| % | 2 | 9 | 89 | 1.86 |

ai

Students were asked to name a product that could be made from the material they had selected.

For example:

Knitted cotton lycra – T shirt, sportswear, dresses

Radiata pine – kitchen table, chest of drawers

Polystyrene – disposable cups, fruit boxes, coolers, insulators for food, drink or medicines

Terracotta – pot for a plant, pipes, platter, tiles, earthenware products

Soda Lime – bottle, glass ware, plate glass table tops, cabinet doors or windows

Aluminium – bike frame, furniture, table ware, cookware

aii

Students were then asked to describe the named product’s intended use.

For example:

Knitted cotton Lycra – clothing to be worn while exercising or playing sport

Radiata pine – furniture to store clothing, linen or objects

Polystyrene – disposable cups to use at a drink dispensing machine

Terracotta – plant pot to hold soil and a plant

Soda lime – bottle to hold cool liquids

Aluminium – bicycle to support a person’s body while cycling

b

| | | | | | | |
|--------------|----------|----------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | 3 | 4 | Average |
| % | 19 | 5 | 24 | 13 | 39 | 2.48 |

Students were asked to name two properties of the material they selected and give reasons why each property was important.

For example:

Knitted cotton lycra

1. Absorbent

1. You get hot and sweaty when exercising; the cotton absorbs moisture creating a cooling effect

2. Strong

2. The product will have to be washed frequently so fabric needs to be strong to withstand constant washing

Radiata pine

1. Soft wood that is easy to work with

1. Easy to work which means that labour and machinery costs are minimised

2. Absorbent

2. Takes stains easily, is able to be stained to easily imitate colours of other woods

Polystyrene

1. Low temperature to soften
1. Minimal energy required for manufacture
2. Easy to form
2. Simple process and equipment needed

Terracotta

1. Porous
1. Allows moisture to travel through so plants do not become water logged
2. Fires at low temperature
2. Cost efficient to produce as less energy used

Soda lime

1. Transparent
1. Contents can be seen through bottle
2. Hard and impermeable
2. Excellent barrier material that will not taint contents

Aluminium

1. Strong but light weight
1. Good for structures where the strength-weight ratio is important
2. Non corrosive
2. Suitable for outdoor furniture as the weather will not affect it

ci-ii

| Marks | 0 | 1 | 2 | 3 | Average |
|-------|---|----|----|----|---------|
| % | 9 | 11 | 29 | 51 | 2.21 |

ci

If the material selected by the student was unavailable they were asked to name a substitute suitable to make their product.

cii

Students were then asked to explain the consequences of using the substitute material.

For example:

Knitted cotton lycra

- i. Substitute material
Polyester/cotton knit
- ii. Consequences

Adjustment to pattern, not as much stretch, cheaper, tends to pill when washed frequently.

Radiata pine

- i. Substitute material
Cypress pine

- ii. Consequences

Similar qualities to radiata pine but more expensive.

Polystyrene

- i. Substitute material
Polyethylene

- ii. Consequences

It forms in the same way but with thicker walls.

Terracotta

- i. Substitute material
Stoneware

- ii. Consequences

Fires at a higher temperature so would consume more energy; stronger than earthenware, choice of glaze colours limited.

Soda lime

- i. Substitute material
Lead crystal

- ii. Consequences

Heavier in weight, increased cost in materials, best suited to decorative glass work.

Aluminium

- i. Substitute material
Steel

- ii. Consequences

Steel is corrosive and needs to be coated with a non-corrosive finish, heavier.

d

| Marks | 0 | 1 | 2 | Average |
|-------|----|----|----|---------|
| % | 15 | 32 | 53 | 1.37 |

Students were asked to name two other factors besides material properties and material availability that would affect or influence the designer.

For example:

Characteristics, cost, ecological/environmental impact; colours, fashion, trends, availability of specialised machinery to be used in manufacture, skill of workers, size range needed.

Question 2

Marketing

Students were asked to select and answer questions about a barbeque (BBQ) from a range of five options shown on page 4 of the examination paper.

ai

| | | | | |
|--------------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | Average |
| % | 7 | 27 | 66 | 1.59 |

People

Students were asked to nominate the potential target group of their BBQ choice and say why they were the target group.

aii

| | | | | | | |
|--------------|----------|----------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | 3 | 4 | Average |
| % | 1 | 2 | 15 | 19 | 63 | 3.39 |

Product

Students were asked what the target group looked for when buying this BBQ. They were asked to describe the target groups needs/wants and the features that met the needs/wants.

For example:

Barbeque A

i. The potential target group would be councils, owners of caravan/camping grounds

This barbeque suitable for public places such as council parks, national parks and caravan/camping grounds

ii. Needs/wants

Sturdy, relatively vandal proof, constructed on site and not movable, heat source is (hassle free) electricity

Features

Easy to clean, little that can be damaged, coin operated.

Barbeque B

i. Suitable for families to entertain outdoors and want a BBQ which can cook a variety of foods; high-income family who appreciate quality

ii. Needs/wants

The family wants to be able to cook outside and then put the BBQ away when not needed; they need a BBQ that will be able to cook a range of foods that require different processes such as grilling, roasting.

Features

The handle and wheel make it portable; the BBQ has a large surface area to cook on and a lid that allows for roasting.

Barbeque C

i. Suitable to roast cuts of meat; suitable for small families as it is small; affordable to low to middle income families

ii. Needs/wants

Small and portable; meat and vegetables can be roasted

Features

Works like an oven, heat source (heat beads) glow hot, giving authentic BBQ taste and atmosphere.

Barbeque D

i. Suitable for small family with limited outdoor space; (perhaps just a balcony)

ii. Needs/wants

Small and compact, not taking up much storage or operating space

Features

Uses heat beads for authentic BBQ taste/atmosphere; small and compact, very portable

Barbeque E

i. Suitable for small family to use indoors

ii. Needs/wants

Small BBQ suitable to use indoors (perhaps through winter); can be used outdoors if there is electricity available

Features

Small, compact and portable; energy source is at the flick of a switch.

bi

| | | | |
|--------------|----------|----------|----------------|
| Marks | 0 | 1 | Average |
| % | 17 | 83 | 0.82 |

Students were asked to name one promotion method, which would suit the potential target group.

bii

| | | | | | | |
|--------------|----------|----------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | 3 | 4 | Average |
| % | 12 | 9 | 29 | 22 | 28 | 2.44 |

Students were then asked to discuss the positive and negative aspects of this method of promotion.

For example:

i. Promotion method

BBQ B – catalogues, letter box drop

ii. Positive aspects

An area can be targeted, e.g. an affluent area for an expensive BBQ, low cost promotion

Negative aspects

Sometimes people discard catalogues so you may not reach the intended market, or some people have notices on their letter box asking that no advertising material is delivered.

c

| Marks | 0 | 1 | 2 | Average |
|-------|---|----|----|---------|
| % | 7 | 28 | 65 | 1.57 |

Students were asked to discuss two reasons that may cause the low numbers of sales in a BBQ that has been on the market for 12 months.

For example:

- competitors are offering a similar item at a lower price, so customers are buying the cheaper product
- a superior high tech product has been released so customers are purchasing the newer product.

Question 3

a

| Marks | 0 | 1 | 2 | Average |
|-------|----|----|----|---------|
| % | 40 | 22 | 38 | 0.98 |

A common error was the confusion between a mobile telephone and a payment plan for mobile phones. Mobile phones have a 'planned obsolescence' and students were asked to explain what this meant.

For example, planned obsolescence is when a product is introduced onto a market, with a planned limited life span.

b

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|-------|----|---|----|----|----|---------|
| % | 32 | 7 | 17 | 15 | 29 | 2.01 |

Students were asked to discuss the benefits and problems to consumers with the planned obsolescence of mobile phones.

Consumers

Benefit

Products are cheaper, easily replaced, customer can feel up-to-date

Problems

Service and repair is discouraged, products have to be replaced more frequently. Constant costs to update from present model.

c

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|-------|----|---|----|----|----|---------|
| % | 30 | 8 | 20 | 15 | 27 | 1.99 |

Students were asked to discuss the benefits and problems to companies in the planned obsolescence of mobile phones.

Companies

Benefits

Increased employment, more profits, products cheaper to produce as they do not use durable costly parts

Problems

Storage of old product parts for repair, company image may suffer as the products may appear cheap and shoddy.

d

| Marks | 0 | 1 | 2 | Average |
|-------|----|----|----|---------|
| % | 34 | 28 | 38 | 1.03 |

Students were asked to discuss some of the environmental problems associated with planned obsolescence.

Environmental

- use of more materials therefore more energy is required to produce the products
- more rubbish in landfill.

Section B

Design Brief

Question 4

Students were asked to list two important specifications from the Design Brief.

- from each specification they were asked to develop a criteria for evaluation question
- they were asked to justify the importance of this evaluation criteria
- they were asked to explain how it could be checked or tested to see if the specification had been met.

Example – selected product – seating/wood

Specification one – the seating must be easily set up and dismantled

It was expected that student responses would be logical, expressed in question form and justify the relevance of the question.

ai

| | | | |
|--------------|----------|----------|----------------|
| Marks | 0 | 1 | Average |
| % | 27 | 73 | 0.73 |

bi

| | | | |
|--------------|----------|----------|----------------|
| Marks | 0 | 1 | Average |
| % | 28 | 72 | 0.72 |

Evaluation criteria

Does the seat collapse easily and is it quick and easy to set up?

aii

| | | | | |
|--------------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | Average |
| % | 39 | 26 | 35 | 0.96 |

bii

| | | | | |
|--------------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | Average |
| % | 39 | 25 | 36 | 0.96 |

Justification

Students and parents will be setting up the seating so it needs to be easy for them to do as they will have limited time and expertise.

aiii

| | | | | |
|--------------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | Average |
| % | 19 | 36 | 45 | 1.26 |

biii

| | | | | |
|--------------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | Average |
| % | 22 | 34 | 44 | 1.22 |

Test or method of checking

Student responses needed to demonstrate how the success of the evaluation criteria could be ascertained, e.g. make a prototype and have parents and students set it up and dismantle it. Ask them what problems they encountered.

Question 5

Annotated Design Brief

Clarity and detail of drawing

| | | | | | | | | |
|--------------|----------|----------|----------|----------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | 3 | 4 | 5 | 6 | Average |
| % | 5 | 8 | 16 | 21 | 24 | 16 | 10 | 3.37 |

Suitability for the product's intended function

| | | | | | |
|--------------|----------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 12 | 24 | 39 | 25 | 1.78 |

Clear annotation that satisfies the brief specifications

| | | | | | |
|--------------|----------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 14 | 26 | 32 | 28 | 1.73 |

Aesthetic appeal

| | | | | | |
|--------------|----------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 16 | 38 | 32 | 14 | 1.43 |

Innovation/creativity of design

| | | | | | |
|--------------|----------|----------|----------|----------|----------------|
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 20 | 40 | 29 | 11 | 1.30 |

On the following pages, sample responses are provided.

See three student examples:

Question 5

Annotated Design Brief

Design your product in the space provided below. You must pay particular attention to the following:

- clarity and detail of drawing 6 marks
- suitability for the product's intended function 3 marks
- clear annotation that satisfies the brief specifications 3 marks
- aesthetic appeal 3 marks
- innovation/creativity of design 3 marks

MALE UNIFORM KEY

specification.

complex process

innovative idea.

attractive visor with logo/name for protection in sun.

embroidered logo and printed 'light flashes' →

small breast pocket for whistles, pens etc.

shirt tucked in gives presentable yet casual appearance.

black denim pants - suitable for warmer + colder weather. Black colour to draw attention to top and colour scheme.

large logo so officials are recognisable from back also.

zip pocket that houses plastic hood for wear in wet weather.

zip pocket to put things such as zip-off sleeves and temporarily un-needed notes, pens etc. (innovative)

polo neck protects neck from harsh sun.

Cotton knit polo top - appropriate for warm weather and easy care.

striking logo makes officials easily recognise.

pants are 'slouch' for comfort.

pants are made from denim - easy-care.

embroidered pant leg.

wind-proof layer inside jacket for protection.

polar fleece for cold weather.

JACKET FRONT VIEW

embroider logo (complex process)

zip-off sleeves for mild weather 18 marks

SECTION B - continued

official's sun footwear

vibbed hems and thumbholes for cold weather to cover hands but still allow for full range of motion (innovative) (complex process)

dark blue sleeves to make logo on top.

ROCK BAY

ROCK BAY

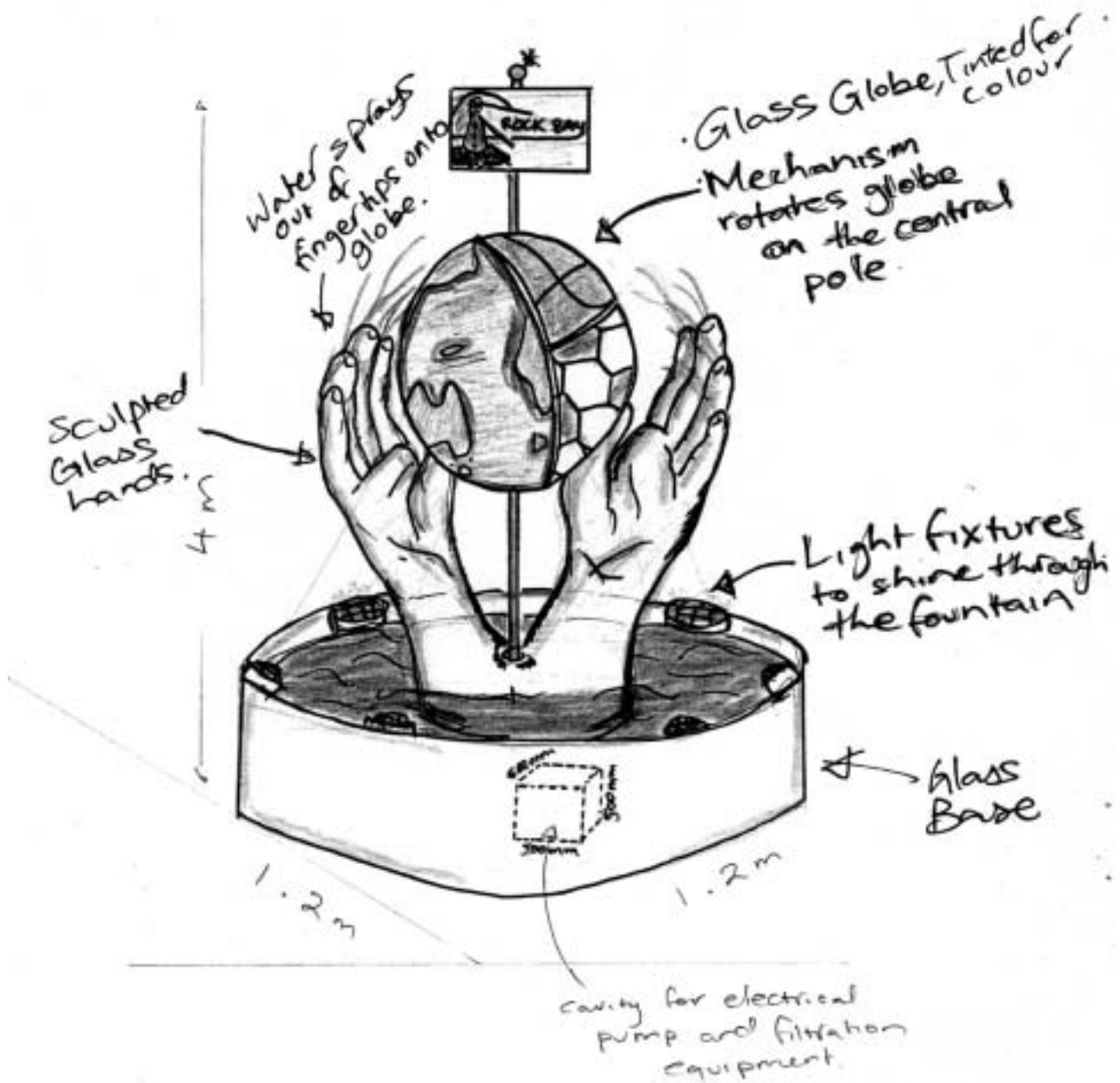
FIBRES/YARNS FABRICS UNIFORM FOR EVENT OFFICIALS

Question 5

Annotated Design Brief

Design your product in the space provided below. You must pay particular attention to the following.

- clarity and detail of drawing 6 marks
- suitability for the product's intended function 3 marks
- clear annotation that satisfies the brief specifications 3 marks
- aesthetic appeal 3 marks
- innovation/creativity of design 3 marks



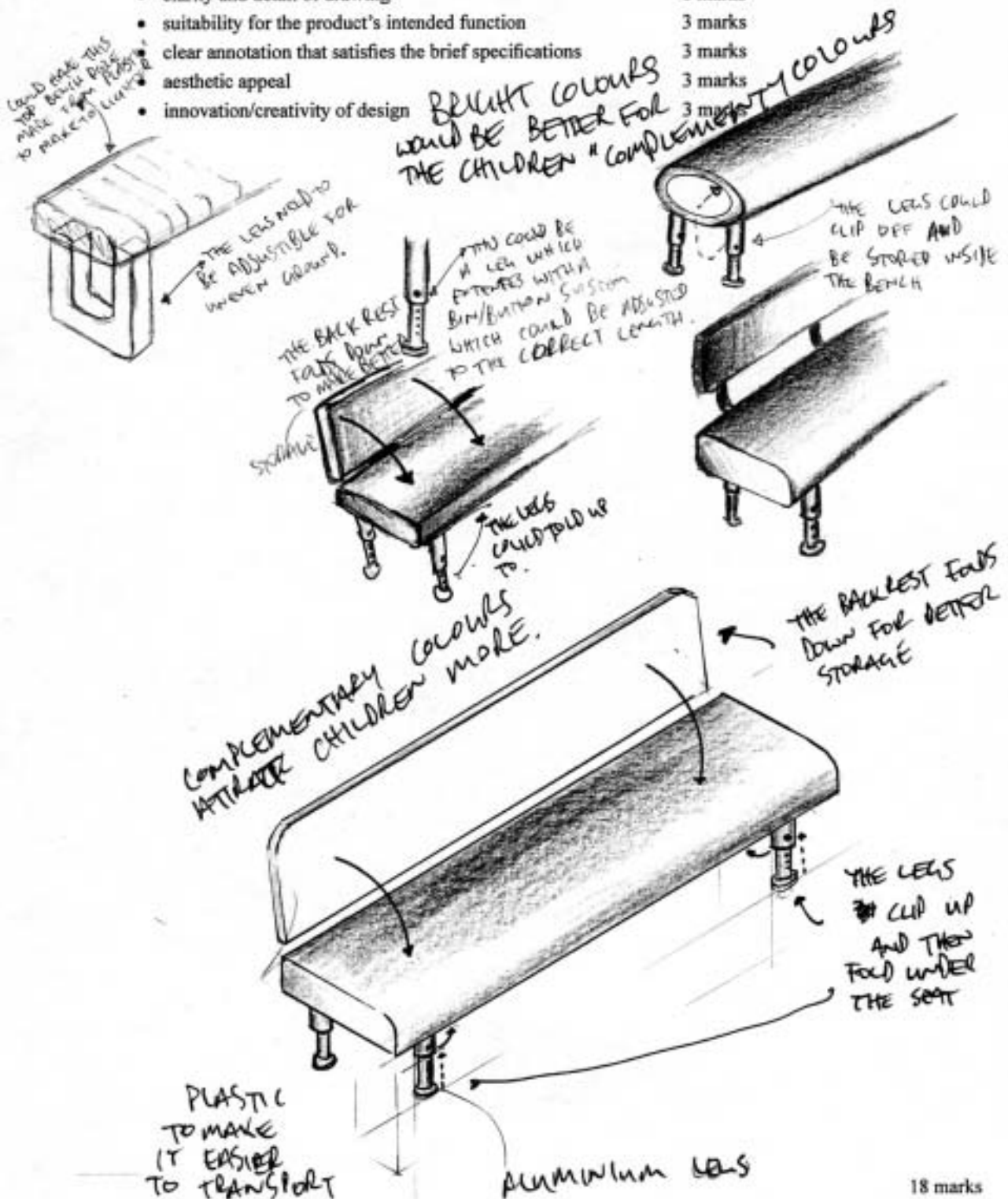
CERAMICS.GLASS – FOUNTAIN OF UNITY

Question 5

Annotated Design Brief

Design your product in the space provided below. You must pay particular attention to the following.

- clarity and detail of drawing 6 marks
- suitability for the product's intended function 3 marks
- clear annotation that satisfies the brief specifications 3 marks
- aesthetic appeal 3 marks
- innovation/creativity of design 3 marks



18 marks

WOOD/METAL/PLASTICS – COLLAPSIBLE SEATING

Question 6

Students were asked to name a specific material that could be used to produce their design. Answers such as wood, plastic, metal are generic terms and were not accepted.

ai-ii

| Marks | 0 | 1 | 2 | 3 | Average |
|-------|----|---|----|----|---------|
| % | 10 | 8 | 24 | 58 | 2.30 |

ai

Name a specific material used in your design.

For example – treated pine

aii

Explain its suitability for the product you have designed.

Suitable for outdoor use due to the treatment process that the timber has gone through. The seat will be used outdoors so a weather resistant timber is required.

bi-iii

Drawing 1

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|-------|----|---|----|----|----|---------|
| % | 21 | 6 | 17 | 26 | 30 | 2.38 |

Drawing 2

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|-------|----|---|----|----|----|---------|
| % | 31 | 5 | 16 | 23 | 25 | 2.06 |

Name and draw two complex processes that would be used in your design.

Some responses indicated that students did not understand the question. The two drawings needed to be of processes, (hopefully construction process) although the examiners accepted finishing processes.

Students were asked to explain where and why each process would be used. Many students discussed how to do a process and not 'where' on the product they would use the process or 'why' they would use it, rather than some other process.

Question 7

Students were asked to use five specific headings to discuss the possible environmental impacts of the product they designed. This question was not answered well by many students.

Treated Pine

i

| Marks | 0 | 1 | 2 | Average |
|-------|----|----|----|---------|
| % | 42 | 25 | 33 | 0.91 |

Sourcing and processing of the materials from which the product is made

- native forests were clear felled to allow plantation pine to be grown
- treatment process for treated pine
- energy is used for felling/machining the trees.

ii

| Marks | 0 | 1 | 2 | Average |
|-------|----|----|----|---------|
| % | 45 | 25 | 30 | 0.84 |

Manufacturing processes

- energy used to assemble products in factory
- disposal of waste material (it is unsafe to burn treated pine and 'run off' must not leach in to water table).

iii

| Marks | 0 | 1 | 2 | Average |
|-------|----|----|----|---------|
| % | 36 | 21 | 43 | 1.07 |

Transport

- truck/transport pollution and use of fossil fuels.

iv

| Marks | 0 | 1 | 2 | Average |
|-------|----|----|----|---------|
| % | 57 | 18 | 25 | 0.68 |

Use of the product

- minimal disturbance of soil when seat is being used although rubbish may be left behind by users.

v

| Marks | 0 | 1 | 2 | Average |
|-------|----|----|----|---------|
| % | 28 | 40 | 32 | 1.03 |

Disposal of the product

- adds to landfill and treated pine contains chemicals that may leak into streams etc.
- cannot be safely burnt.

Denim – cotton

- cotton farming requires the use of large amounts of pesticides and irrigation water
- cotton cloth manufacture requires the use of bleaches and dyes; both have environmental impacts
- Australian cotton farms are a long way from the seaboard cities; truck transport is over long distances, trucks use fossil fuels
- cotton once manufactured into products, has no impact on the environment, except during laundering
- cotton is a long-wearing product and will usually be discarded because it no longer fits, or it is unfashionable
- it can be resold in an op. shop, or used as cleaning cloths
- it will rot away when finally disposed of.

Synthetic materials – polyesters, nylons etc.

- in general, made from petroleum or coal tar which are non-renewable fossil fuels
- manufacture of all synthetics requires the use of chemicals; all chemicals produce waste and some pollution in their manufacture and in the manufacture of the synthetic fabric
- transport of raw materials and the finished cloth require the use of trucks and ships using non renewable fossil fuels
- synthetic fabrics once manufactured into products have no impact on the environment except for laundering
- synthetic fabrics all create major environmental impacts with their disposal; they do not rot and they will be with us forever in some form, unless they can be recycled.

Question 8

a

| Marks | 0 | 1 | 2 | 3 | Average |
|-------|----|----|----|----|---------|
| % | 14 | 19 | 27 | 40 | 1.93 |

Research and development

Students were asked to name a product and discuss the types of research and development that could be undertaken before the product was mass produced. Generally, students discussed the logical development of a product. But some students did not demonstrate any knowledge of research.

For example – evening gown

Discuss research and development prior to mass production.

- availability of fabrics and notions
- colour and pattern choices
- properties and characteristics of materials
- other similar products on the market
- seasonal fashion trends.

b

| Marks | 0 | 1 | 2 | 3 | 4 | 5 | 6 | Average |
|-------|----|----|----|----|---|---|---|---------|
| % | 49 | 11 | 15 | 13 | 6 | 3 | 3 | 1.41 |

Many students did not correctly answer this question. The most common error was confusing the ‘product life cycle’ (marketing) and the ‘product life cycle analysis’ (cradle to grave assessment) with the ‘product cycle’.

Students were required to graphically represent the stages of the product cycle and indicate the “processes” involved at each stage.

Correct answers varied in their graphic representation, but were expected to contain most of the following information:

Market research – (ongoing throughout all stages) data collection and analysis of information

Product concept – research and development, problem solving, costing

Product design planning/prototype – drawing, material testing, pattern making, construction

Evaluation and modification – surveys, testing, pattern alteration/adjustments, costing

Production – ordering of materials, set up of machinery, employment of staff, manufacturing

Distribution – compilation of orders, transporting to retail stores or customers

Retail and consumer use – stock control, selling and purchasing

Evaluation and modification – surveys, testing, pattern alteration/adjustments, costing; evaluation may occur at different stages, depending on product

c

| Marks | 0 | 1 | 2 | 3 | 4 | Average |
|-------|----|----|----|----|----|---------|
| % | 20 | 13 | 26 | 18 | 23 | 2.10 |

Students were asked to select one of the following methods of production.

- one off
- mass production

They were then asked to explain the advantages and disadvantages of this production method.

For example:

Production method – one off

Advantages

- garment fits the client's exact measurements
- personal tastes and colours can be taken into consideration
- garment is unique.

Disadvantages

- time consuming and costly
- labour intensive
- more wastage of fabric.

Production method – mass production

Advantages

- large amount of garments can be produced for a lower cost to the consumer because material is purchased in bulk
- standard sizes minimise wastage.

Disadvantages

- big scale production requires a large amount of money to set up
- consumers have to fit into standard sizes
- loss of individuality.

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