Cambridge Assessment International Education

Example Candidate Responses

Paper 3

Cambridge International AS & A Level Design & Technology 9705

For examination from 2016

Version 1

Cambridge Pathway

In order to help us develop the highest quality resources, we are undertaking a continuous programme of review; not only to measure the success of our resources but also to highlight areas for improvement and to identify new development needs.

We invite you to complete our survey by visiting the website below. Your comments on the quality and relevance of our resources are very important to us.

www.surveymonkey.co.uk/r/GL6ZNJB

Would you like to become a Cambridge International consultant and help us develop support materials?

Please follow the link below to register your interest.

www.cambridgeinternational.org/cambridge-for/teachers/teacherconsultants/

Contents

Question 2 6
Example Candidate Response – high 6
Question 5 11
Example Candidate Response – middle 11
Question 7 13
Example Candidate Response – middle 13
Question 9 14
Example Candidate Response – middle 14
Question 10 17
Example Candidate Response – high 17
Question 12 23
Example Candidate Response – high 23

Introduction

The main aim of this booklet is to exemplify standards for those teaching Cambridge AS & A Level Design and Technology 9705, and to show how different levels of candidates' performance (high, middle and low when available) relate to the subject's curriculum and assessment objectives.

In this booklet candidate responses have been chosen from November 2017 scripts to exemplify a range of answers.

For each question, the response is annotated with a clear explanation of where and why marks were awarded or omitted. This is followed by examiner comments on how the answer could have been improved. In this way, it is possible for you to understand what candidates have done to gain their marks and what they could do to improve their answers. There is also a list of common mistakes candidates made in their answers for each question.

This document provides illustrative examples of candidate work with examiner commentary. These help teachers to assess the standard required to achieve marks beyond the guidance of the mark scheme. Therefore, in some circumstances, such as where exact answers are required, there will not be many comments.

The questions and mark schemes used here are available to download from the School Support Hub. These files are:

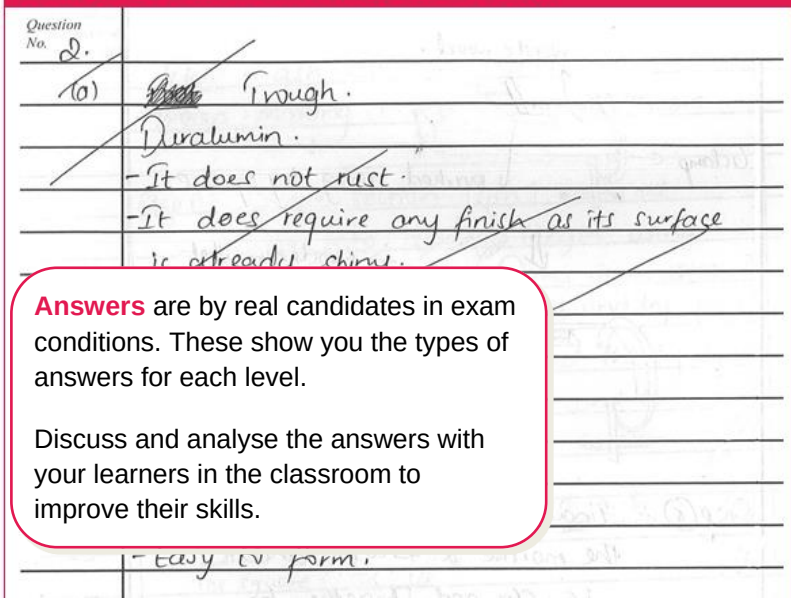
November 2017 Question Paper 32

November 2017 Paper 32 Mark Scheme

Past exam resources and other teacher support materials are available on the School Support Hub www.cambridgeinternational.org/support.

How to use this booklet

This booklet goes through the paper one question at a time, showing you the high-, middle- and low-level response for each question. The candidate answers are set in a table. In the left-hand column are the candidate answers, and in the right-hand column are the examiner comments.

Example Candidate Response – high	Examiner comments
	1 The candidate earns 1 mark for citing 'acrylic' as a suitable material. 2 marks are awarded for giving appropriate reasons. Mark for (a) = 3/3

Answers are by real candidates in exam conditions. These show you the types of answers for each level.

Discuss and analyse the answers with your learners in the classroom to improve their skills.

Examiner comments are alongside the answers. These explain where and why marks were awarded. This helps you to interpret the standard of Cambridge exams so you can help your learners to refine their exam technique.

How the candidate could have improved their answer

(a) The reasons given for the candidate's choice of material could have been more detailed.

(b) The candidate needed to explain how the ac included details of how it would be held in the not enough). The candidate named the corre be held in place while the joints hardened.

This section explains how the candidate could have improved each answer. This helps you to interpret the standard of Cambridge exams and helps your learners to refine their exam technique.

Common mistakes candidates made in this question

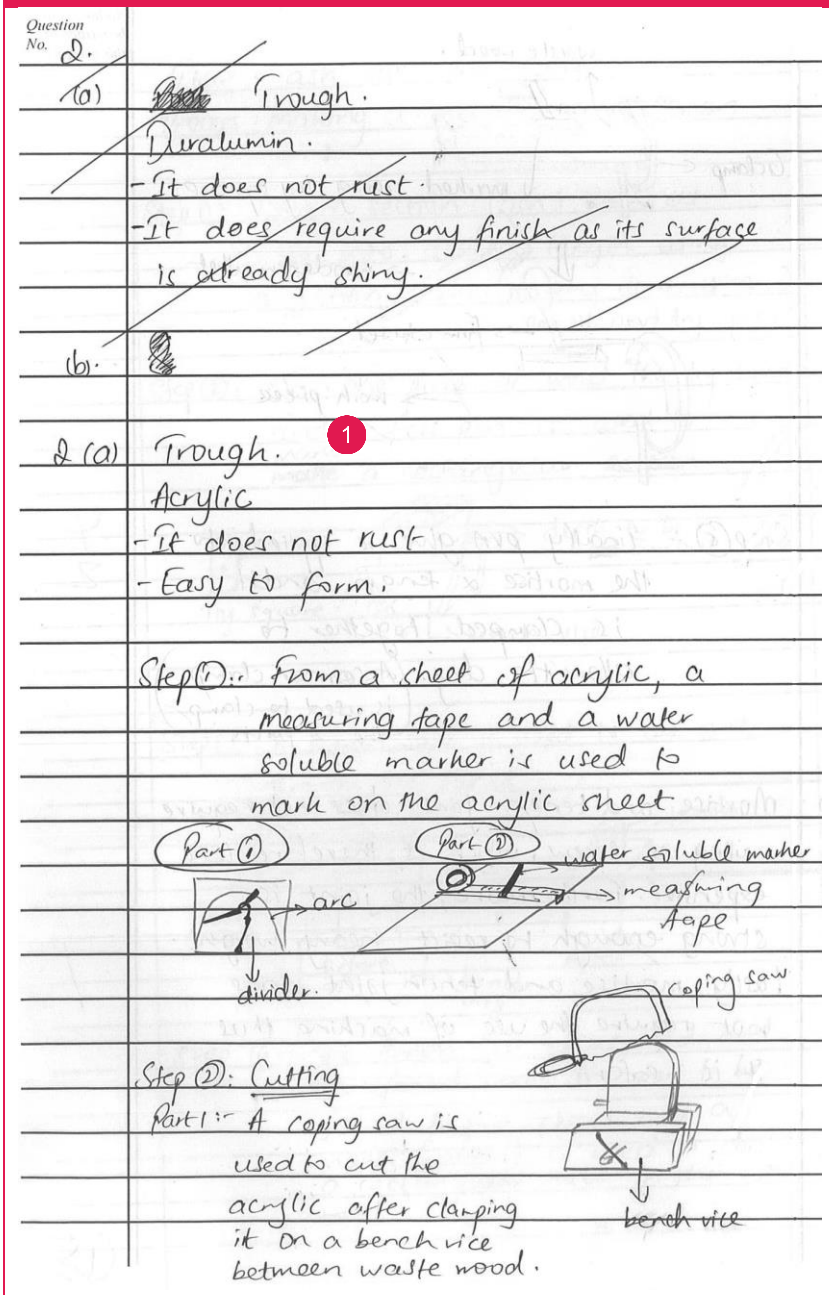
(a) Many candidates stated a suitable material for the pro for their choice. 'Easy to shape' was a common respo

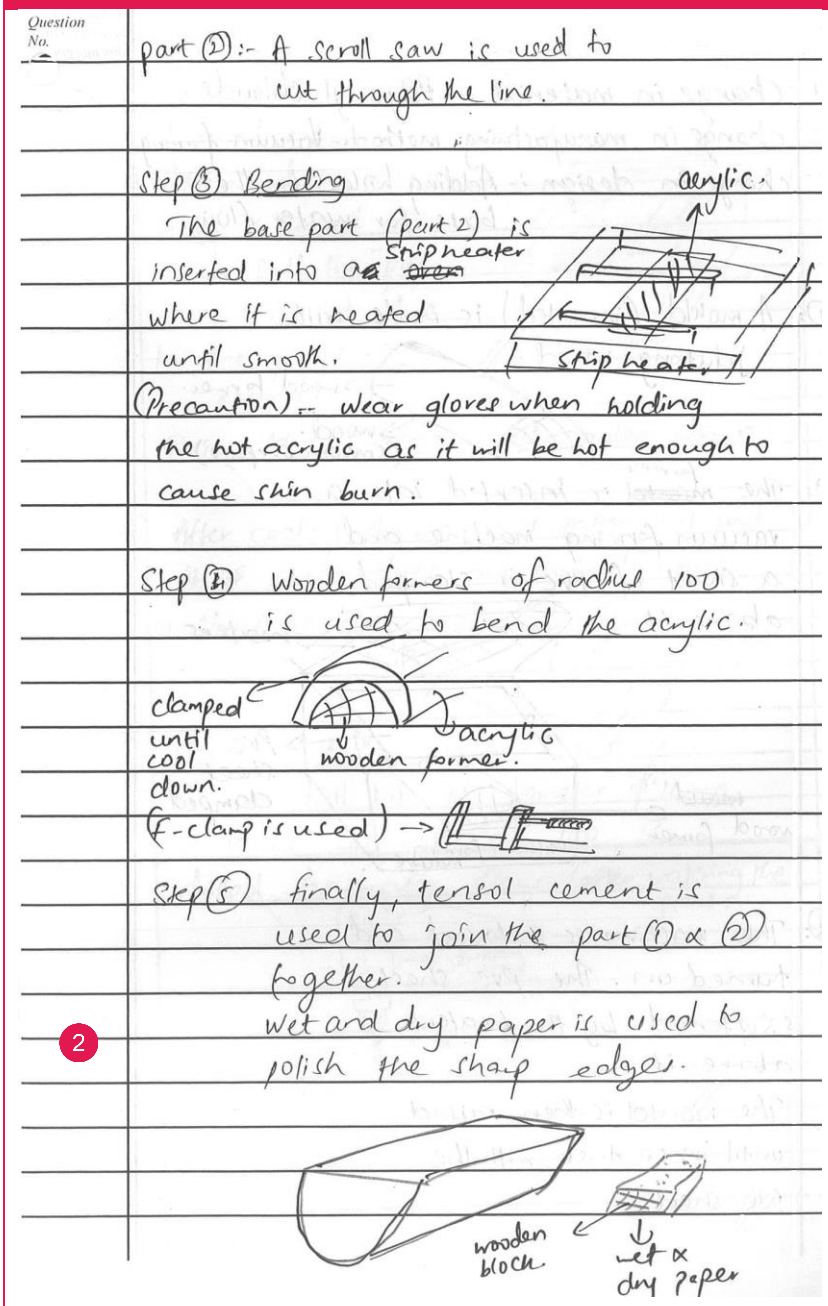
(b) Time allocation – some candidates spent far too long

Lists the common mistakes candidates made in answering each question. This will help your learners to avoid these mistakes and give them the best chance of achieving the available marks.

Often candidates were not awarded marks because they misread or misinterpreted the questions.

Question 2

Example Candidate Response – high	Examiner comments
	1 The candidate earns 1 mark for citing 'acrylic' as a suitable material. 2 marks are awarded for giving appropriate reasons. Mark for (a) = 3/3

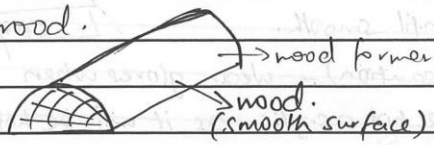
Example Candidate Response – high	Examiner comments
	2 A detailed response describing the key stages in making the trough, along with clear annotated sketches. The candidate describes appropriate marking out and cutting procedures, including health and safety precautions. Mark for (b) = 7/9

Example Candidate Response – high	Examiner comments

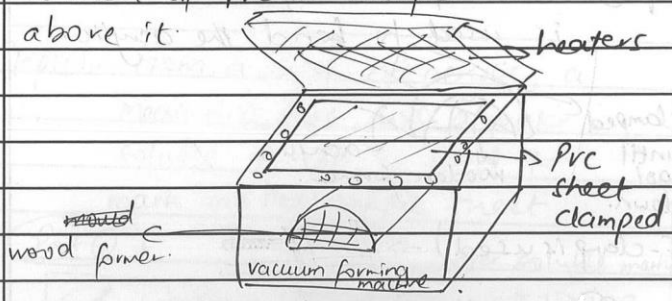
Question No.

(c) Change in material :- Polyvinyl Chloride.
change in manufacturing method :- Vacuum forming
change in design :- Adding holes to the base for water flow.

Step (1) :- A mould (inverted) is made with jelutong wood.

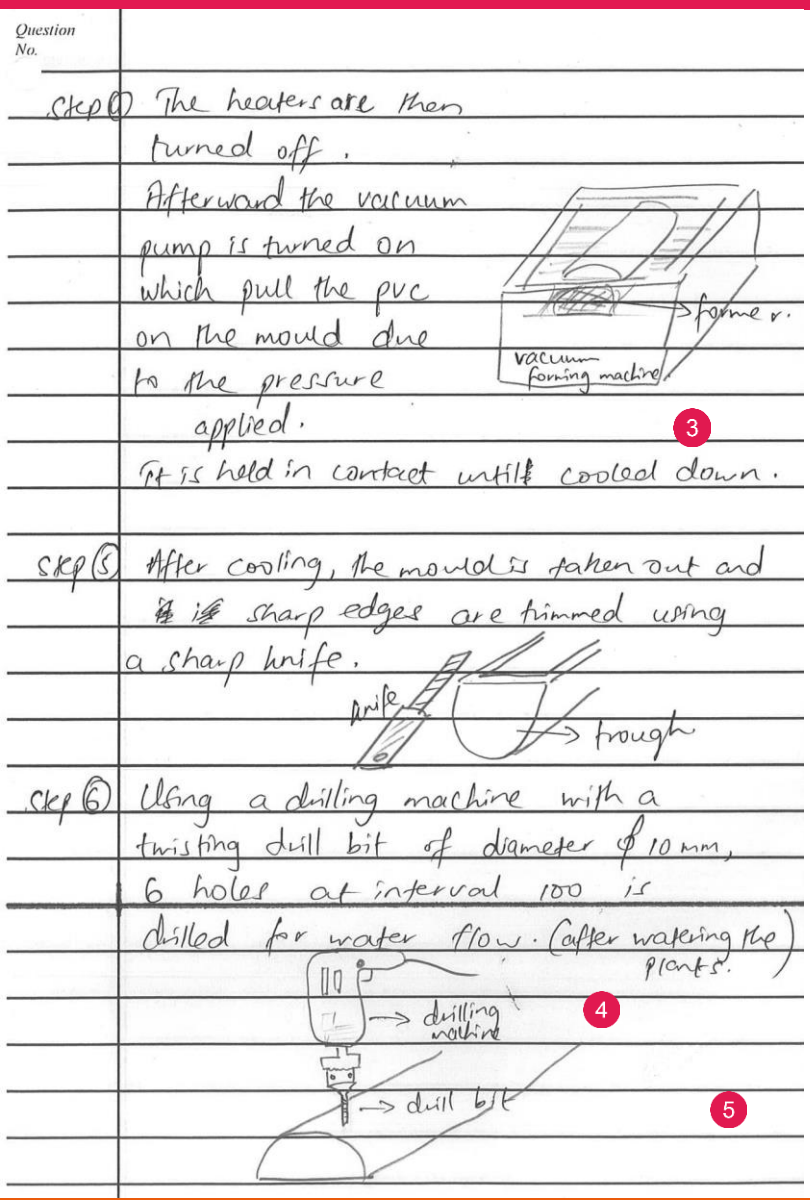


Step (2) :- The ~~mould~~ former is inserted into a vacuum forming machine and a sheet of PVC is clamped above it.



Step (3) : The machine is closed and turned on. The PVC sheet is softened by the heaters above it.

5 The mould is then raised until in contact with the PVC sheet.

Example Candidate Response – high	Examiner comments
	3 The manufacturing method and vacuum forming are appropriate changes for producing a batch of 100 troughs. 4 Drilling holes for drainage is a good modification of the trough, but it is not relevant to changing the batch size. 5 The manufacturing process is described well here, earning 7 out of a possible 8 marks. Mark for (c) = 7/8 **Total mark awarded = 17 out of 20**

How the candidate could have improved their answer

(a) The reasons given for the candidate's choice of material could have been more detailed.

(b) The candidate needed to explain how the acrylic sheet could be heated uniformly until pliable, and then included details of how it would be held in the correct shape on the former (just showing the clamp was not enough). The candidate named the correct cement but gave no details about how the pieces would be held in place while the joints hardened.

(c) More details showing draft angle would have earned full marks, or mentioning the use of a multiple-former to form more than one trough at a time. The candidate needed to include more detail about the former used to manufacture a batch of 100 troughs.

Common mistakes candidates made in this question

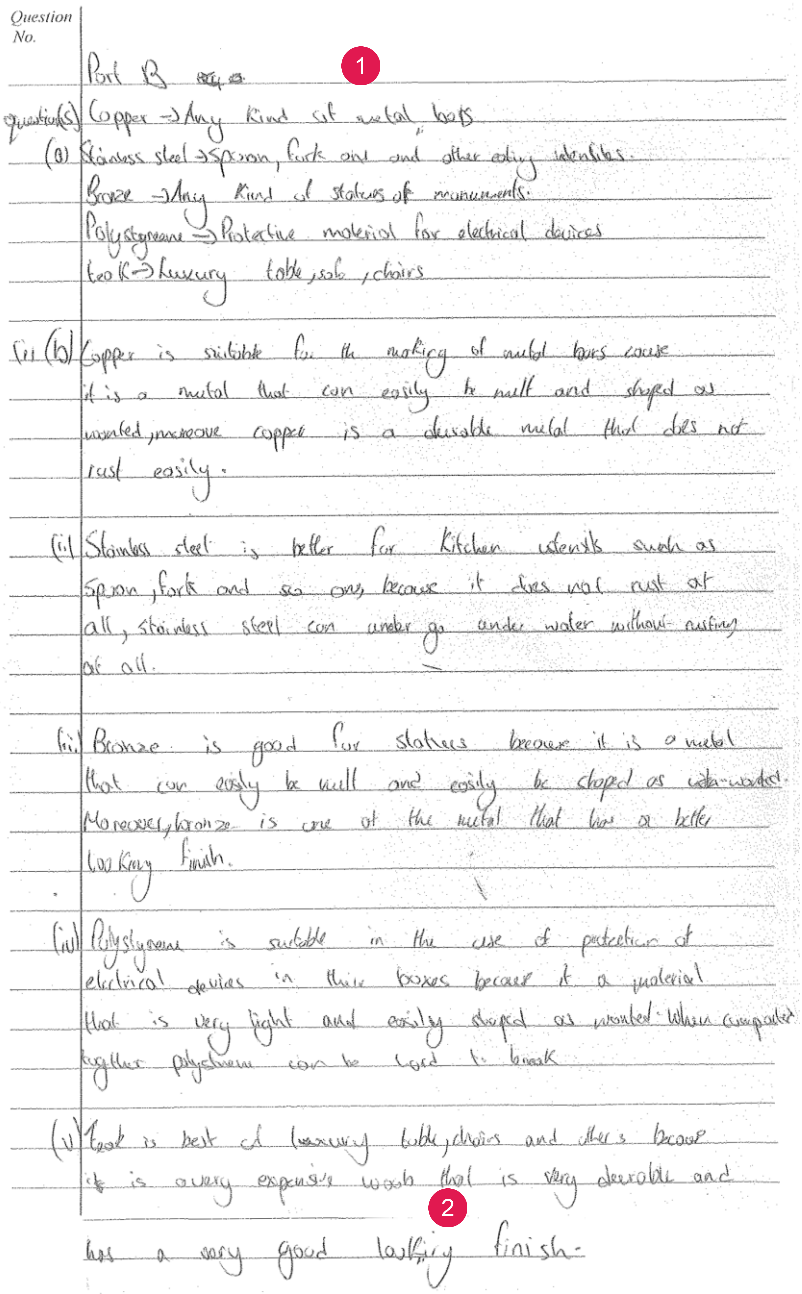
(a) Many candidates stated a suitable material for the product, but then gave very brief, unjustified reasons for their choice. 'Easy to shape' was a common response that was not acceptable.

(b) Time allocation – some candidates spent far too long drawing sketches for every stage of manufacture. Candidates should give a full sequence of manufacture and use detailed sketches with annotations for up to three or four key stages only.

(c) A significant number of candidates produced very brief responses to this part. Many gave a brief list of points or, in some cases, single words with no clarification. Some described the process to be used without stating the reason why the process was better for manufacturing 100 of the chosen part.

Question 5

Example Candidate Response – middle


Question No.

Part B

Question(s)

Copper → Any kind of metal bats

(a) Stainless steel → Spoon, fork and other eating utensils.

Bronze → Many kind of statues of monuments.

Polystyrene → Protective material for electrical devices

teak → luxury table, sofa, chairs

(i) (b) Copper is suitable for the making of metal bats cause it is a metal that can easily be melt and shaped as wanted, moreover copper is a desirable metal that does not rust easily.

(i) Stainless steel is better for kitchen utensils such as spoon, fork and so ons because it does not rust at all, stainless steel can undergo under water without rusting at all.

(ii) Bronze is good for statues because it is a metal that can easily be melt and easily be shaped as wanted. Moreover, bronze is one of the metal that has a better working finish.

(iii) Polystyrene is suitable in the use of protection of electrical devices in their boxes because it a material that is very light and easily shaped as wanted. When compared together polystyrene can be used to break

(iv) Teak is best of luxury table, chairs and ots because it is a very expensive wood that is very desirable and has a very good working finish.

Examiner comments

1 The candidate gives four correct applications of the chosen materials.

Mark for (a) = 4/5

2 These are brief responses, giving some reasons why the materials are suitable.
2 marks for 'copper';
1 mark for 'stainless steel';
2 marks for 'bronze';
1 mark for 'polystyrene';
1 mark for 'teak'.

Mark for (b) = 7/15

Total mark awarded = 11 out of 20

How the candidate could have improved their answer

(a) The candidate needed to give a clearer statement for ‘copper’.

(b) The candidate needed to explain in more detail why the materials were particularly suitable. For stainless steel, the candidate could have referred to the hardness of the material or to its highly polished finish. Specific reference to casting, especially the ability to be cast with fine detail, would have been helpful in explaining the suitability of bronze.

The candidate needed to make specific reference to expanded polystyrene and to include other properties such as heat insulation and the ability to absorb impact to prevent damage to the product.

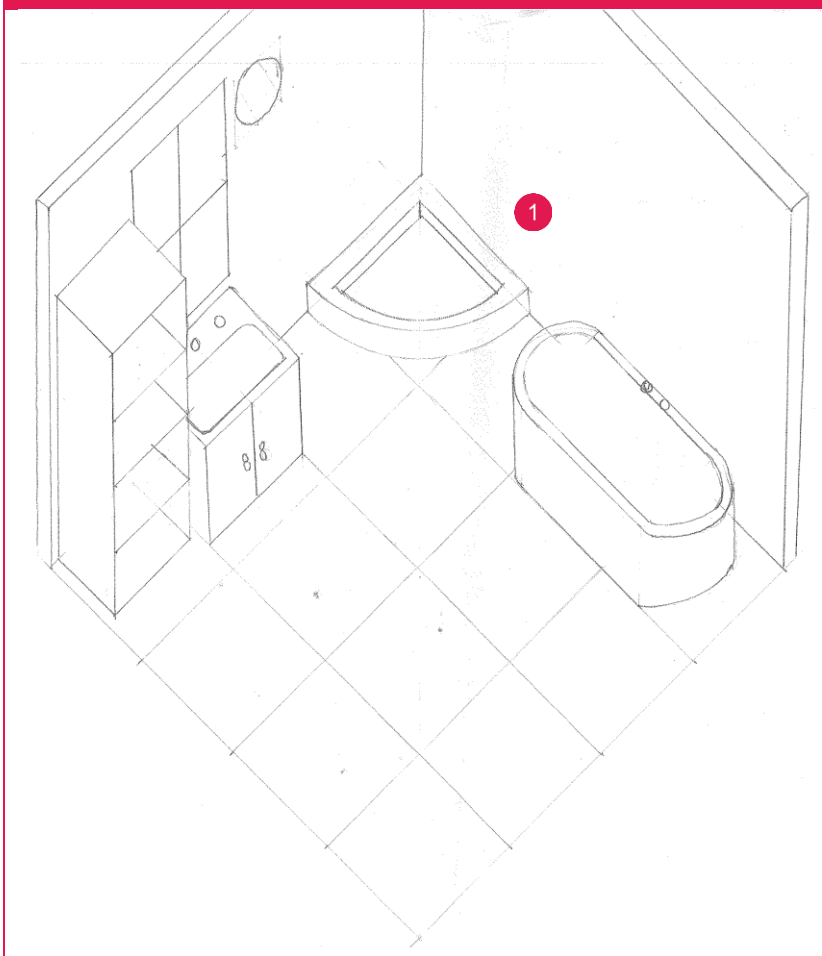
References to the exterior usage qualities of teak or sustainability would have gained credit.

Common mistakes candidates made in this question

(a) Some candidates misread the question, describing the properties of the materials and omitting to give a specific product.

(b) Many candidates gave far too brief descriptions containing limited detail of why each material was suitable, and as a result did not access the mark ranges.

Question 7

Example Candidate Response – middle	Examiner comments
	1 All the components are included and drawn in the correct planometric. Scale 1 out of 1 mark Cabinet 1 out of 2 marks Sink unit 2 out of 3 marks Window 1 out of 2 marks Mirror 1 out of 2 marks Shower tray 2 out of 2 marks Bath 2 out of 3 marks Overall layout 2 out of 2 marks Accuracy 1 out of 3 marks **Total mark awarded = 13 out of 20**

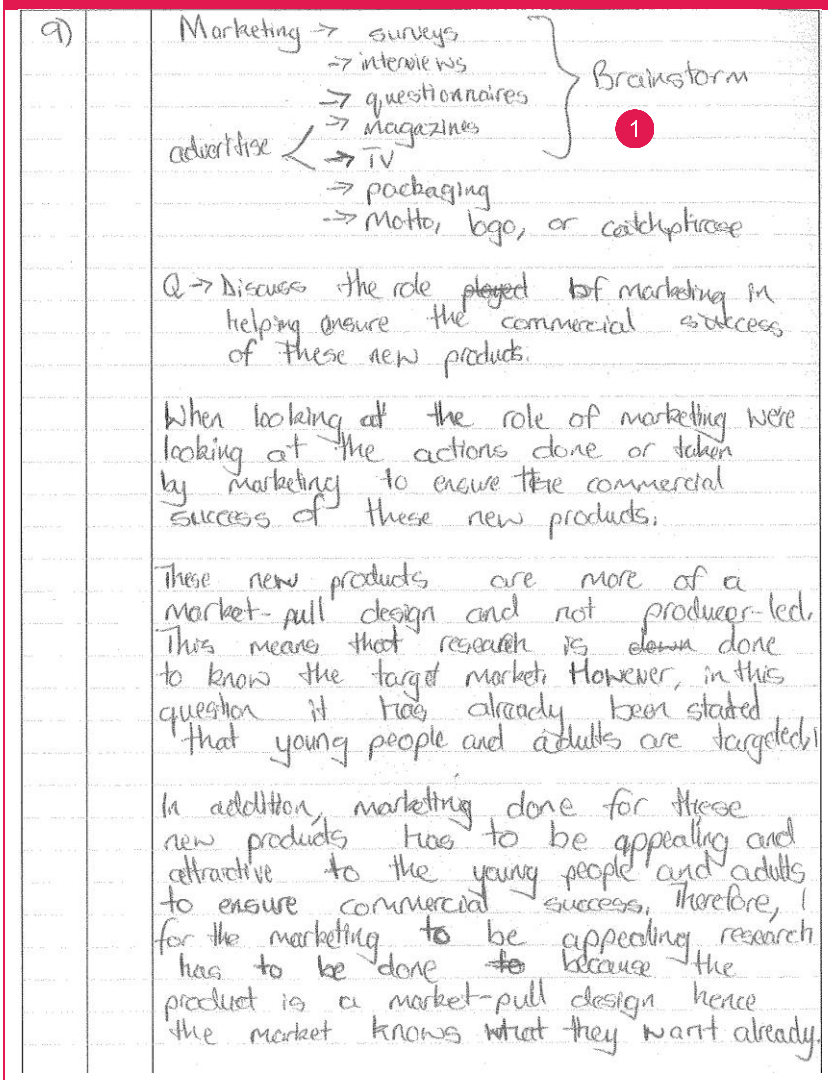
How the candidate could have improved their answer

Scale	1 out of 1 mark	All features were clearly visible.
Cabinet	1 out of 2 marks	Size of cabinet was incorrect; the candidate should have indicated thickness of material used.
Sink unit	2 out of 3 marks	Needed to include rounded front edges and depth of sink.
Window	1 out of 2 marks	Needed further detail, e.g. window depth
Mirror	1 out of 2 marks	No thickness of mirror indicated; could have included simple glass render.
Shower tray	2 out of 2 marks	
Bath	2 out of 3 marks	Depth of bath not indicated; untidy right end of bath.
Overall layout	2 out of 2 marks	
Accuracy	1 out of 3 marks	Some details were missing; line quality could have been better.

Common mistakes candidates made in this question

Some candidates did not use the time available particularly well and did not fully complete the planometric drawing, omitting one or more features. Drawings often had no evidence of construction to position and included only an outline for the features. The features were often not drawn to scale or they were inaccurate and incomplete. Line quality was not good in a number of instances.

Question 9

Example Candidate Response – middle	Examiner comments
	1 It is helpful for candidates to plan out their responses, although this example is limited with regard to marketing.

9)

Marketing → surveys
→ interviews
→ questionnaires
→ magazines
advertise → TV
→ packaging
→ motto, logo, or catchphrase
} Brainstorm 1

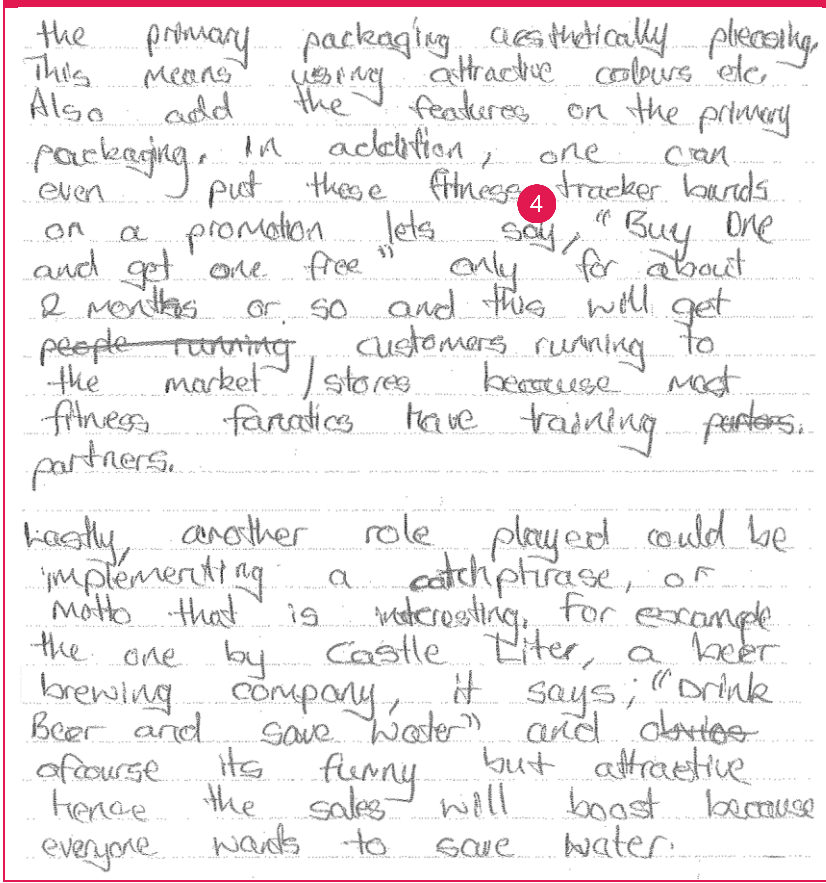
Q → Discuss the role ~~played~~ of marketing in helping ensure the commercial success of these new products.

When looking at the role of marketing were looking at the actions done or taken by marketing to ensure the commercial success of these new products.

These new products are more of a market-pull design and not producer-led. This means that research is ~~done~~ done to know the target market. However, in this question it has already been stated that young people and adults are targeted.

In addition, marketing done for these new products has to be appealing and attractive to the young people and adults to ensure commercial success. Therefore, I for the marketing to be appealing research has to be done ~~to~~ because the product is a market-pull design hence the market knows what they want already.

Example Candidate Response – middle	Examiner comments
The research to be done includes surveys, interviews, questionnaires to know what features they would want included on the designs. Already, by doing questionnaire people are left in suspense, they already cannot wait for the product. Therefore, marketing has to be used to make people curious even before the product is made. 2 In added addition, Marketing can ~~usrue~~ ensure commercial success by massive advertisement. Advertising will include utilizing the media to full potential. This means that it will be on television, radio and even on the magazines just to get everyone to know about this. As the wise man said, 'Rome wasn't built in a day' therefore, commercial success would be built by good marketing. Another role played by marketing to ensure marketing success is to let the market know the new and exciting features on the products for example, letting the market know that the new wrist band shows calories burn, heart rate, the distance run or walked and even the time taken for all this. By this the fitness fanatics get intrigued 3 Moreover for these new products commercial success can be ensured by making	2 The candidate mentions research and advertising issues. 3/8 3 Two key issues are described here. 4/8

Example Candidate Response – middle	Examiner comments
	4 The candidate gives examples of advertising and promotion. 3/4 **Total mark awarded = 10 out of 20**

How the candidate could have improved their answer

Examination of issues – The candidate described general issues of research and advertising (although it could be argued that these are general knowledge), thereby achieving the wide range of relevant issues mark band, 4–8 marks. This response did not cover the wider aspects of marketing, for example, product feasibility, user trialling, price and placement.

Quality of explanation – Two key issues were described, but the discussion lacked evidence, explanation and structure.

Supporting examples/evidence – The candidate mentioned specific research techniques and the advertising of the fitness band. Placement examples or specific examples of how existing products can be targeted at the target market would have gained more credit.

Common mistakes candidates made in this question

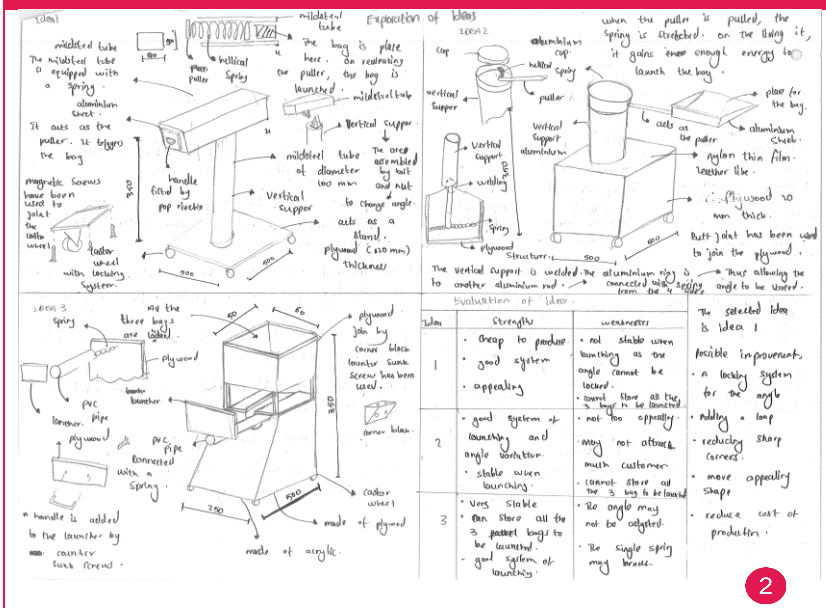
There were few responses to this question. Some candidates tended to concentrate solely on the advertising side of marketing without considering other issues such as reference to marketing push or wider reference to the marketing mix of product , price, place and promotion.

Question 10

Example Candidate Response – high	Examiner comments
	

Example Candidate Response – high	Examiner comments
Specifications Below are some specifications. 1) easily adjusted for angle and distance 2) Easy to use. 3) The material used should be durable and should have good strength to weight ratio. 4) The product should be cheap to produce thus using cheap assembling method and other materials and fittings needed. 5) The material used should be non-toxic. There should be no protruding parts in the product, for safety of the user. 6) The product should be appealing and innovative in order to attract customer. 7) The product should be ergonomic, the hand reach of user should be considered. 8) The product may store the bag as well. 9) The product should be stable and should have good balance when using.	1 A good range of issues are considered in this analysis. 5/5 At least five valid and justified specification points. 5/5

Example Candidate Response – high



2

Examiner comments

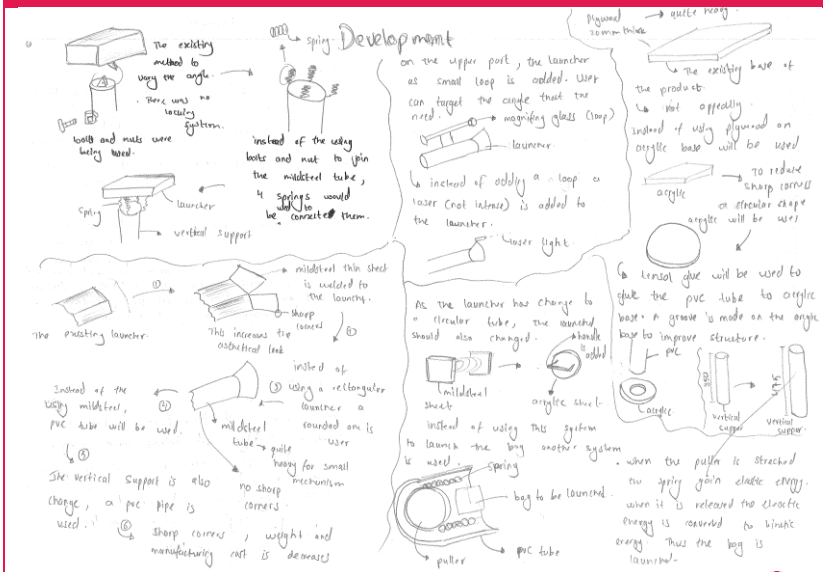
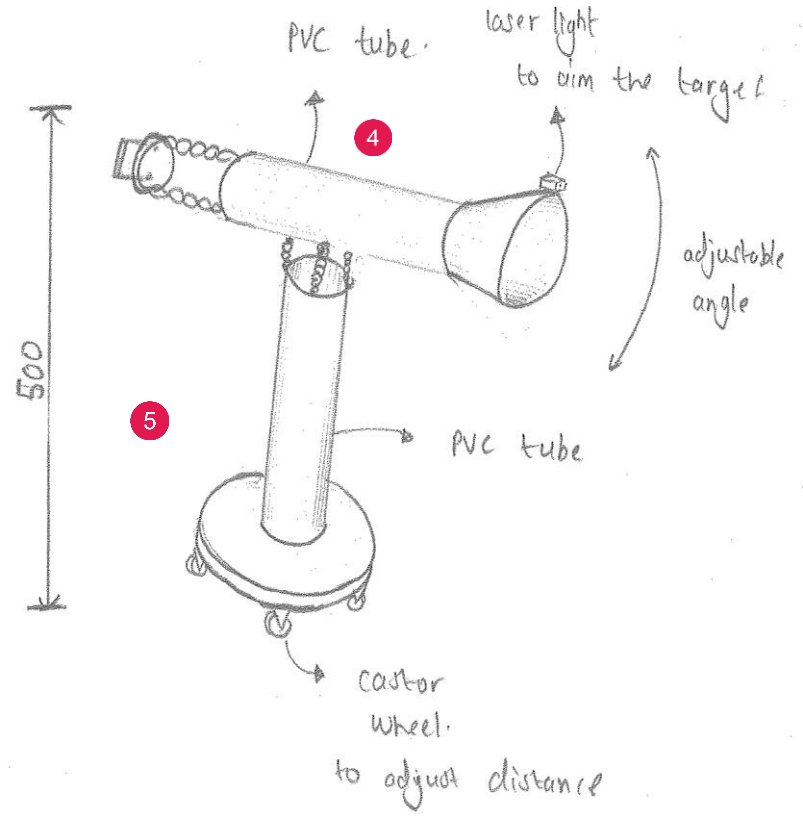
2 Three different concepts are explored here, with some annotation and evaluation of ideas. 5/5

There is clear annotation related to each specification. 4/5

Different ideas, with some innovation. 4/5

The strengths and weaknesses of each idea are evaluated, with a clear decision supporting the selection of the idea for further development. 4/5

Clear sketches, additional detail and appropriate annotation. 5/5

Example Candidate Response – high	Examiner comments
 3  	3 Several functional and constructional developments are given here. 5/5 This is mainly description, but most decisions are explained. 4/5 A good range of appropriate materials is proposed. 3/3 Good coverage of appropriate constructional details. 6/7 The developments are well presented: clear sketches with good supporting annotation. 4/5 4 An outline of the final idea. 6/10 5 The materials and components are labelled, but there is limited dimensional detail. 2/5

Example Candidate Response – high	Examiner comments

Evaluation.

V/S Specifications

SN	Specification of	comment
1)	Is angle and distance adjustable.	Both of them are adjustable. distance – castor wheel angle – spring.
2)	Easy to use	Yes the product is easy to use
3)	Is the product stable 6	The product is not so stable as there is a small base.
4)	Is it safe to use.	The product is safe to use as it does not have protruding parts non toxic material have been used.
5)	Is the material durable and does the product have good strength when using	The material is durable but the product is not too strong

personal evaluation

Some areas could have been further developped. to increase stability and balance when using. The product have meet most of the specifications points. A good base could could have been designed. A good method for adjusting angle could be made.

6 Some functional issues are raised in the evaluation. 3/5

Total mark awarded = 65 out of 80

How the candidate could have improved their answer

The final selected idea did not fulfil all the required tasks efficiently; for example, the spring arrangement between the two pvc tubes was not suitable.

Some materials and parts were labelled, but the candidate needed to add significantly more dimensional detail.

The candidate pointed out some functional issues in their evaluation, for example, lack of stability, but did not suggest any modifications or improvements.

Common mistakes candidates made in this question

Many candidates repeated the specifications given in the question and included general points such as ‘aesthetically pleasing’ or ‘environmentally friendly’, without adding any further specific, justified points. Acceptable specification points included:

- the product must be stable in use to provide accurate launching
- the product must not require excessive force to launch the bag
- the product must have a method of being secured firmly when used inside and outside
- the product should be easy to assemble and disassemble for ease of storage.

The weakness of some candidates’ specifications impacted upon their ability to evaluate, both in the generation and exploration of ideas and also in the evaluation of the final proposal.

A significant number of candidates focused on only one type of propulsion method. Many candidates did not show details of how the propulsion system would actually work to launch a bag.

Evaluations were often weak, due in part to the limited specifications given earlier in the question. Very few candidates made specific reference to the proposed solution and most candidates did not suggest possible improvements in their final evaluation.

Question 12

Example Candidate Response – high

SEC B
No 12

[ANALYSIS]

Materials:

As the product need to be flat pack, therefore the material used is important so as to be carried and assembled.

Aesthetic:

As the product will be displaying card in a restaurent, therefore it is imp to consider the shape to please the client.

Safety:

As the product need to be transported, it is important that the design is secured from containers to fall out accidentally while being displaced.

Ergonomics:

As the product need to be carried, it is important to cater for the user comfort during his displacement.

Functions:

As the product will need to be flact pack it is important for easy dismounting so as to be userfriendly

1

[SPECIFICATION]

2

Materials:

The material used should provide strength to hold containers in it and light enough for easy handling.

Aesthetic:

The product should display the card in an aesthetic manner so as to attract the user eyes in front of the table not eye catching during eating

Safety:

The product should secure the container to avoid the container in it to fall down accidentally during displacement.

Ergonomics:

The product should provide good handle for the user hand to avoid uncomfortable during transportation.

Functions:

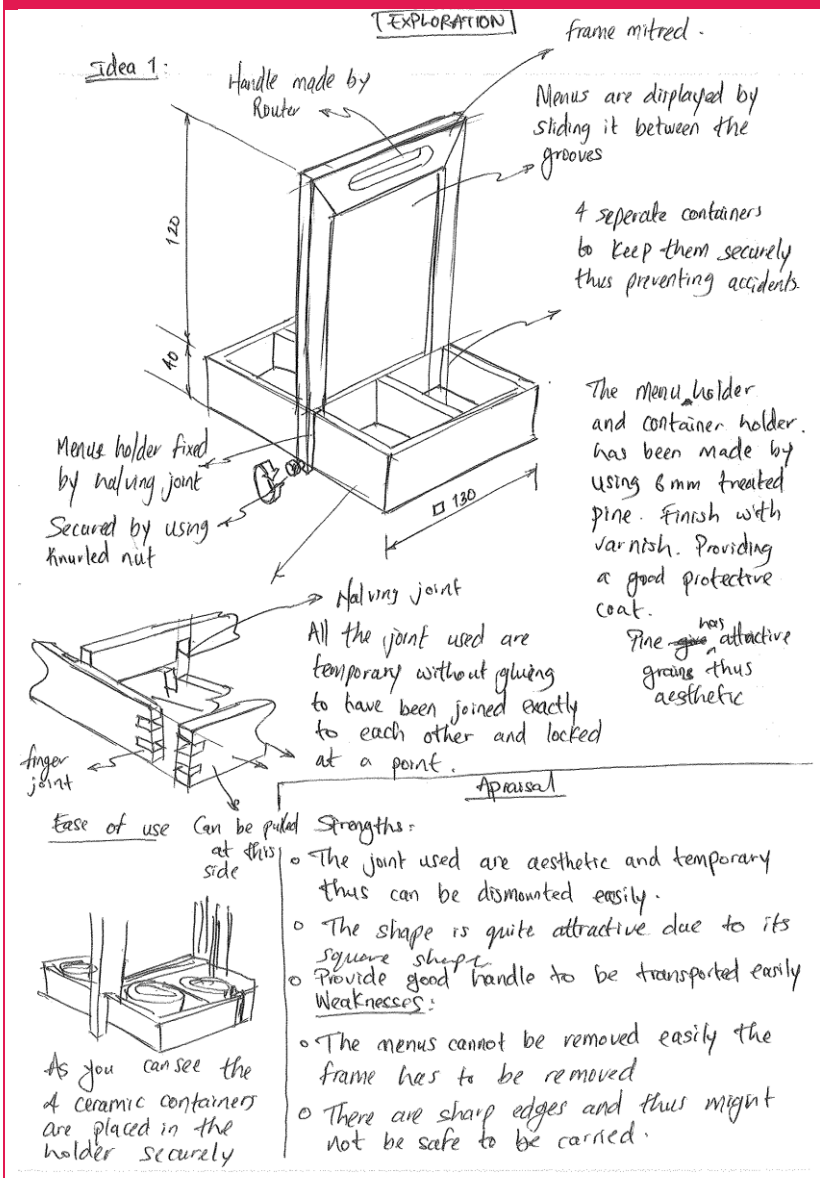
The product should be easily dismounted while not in use.

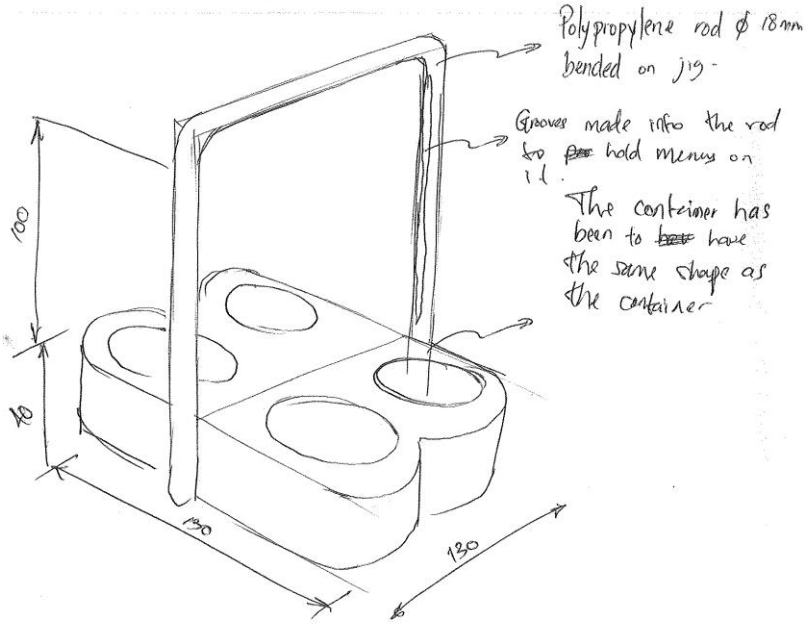
Examiner comments

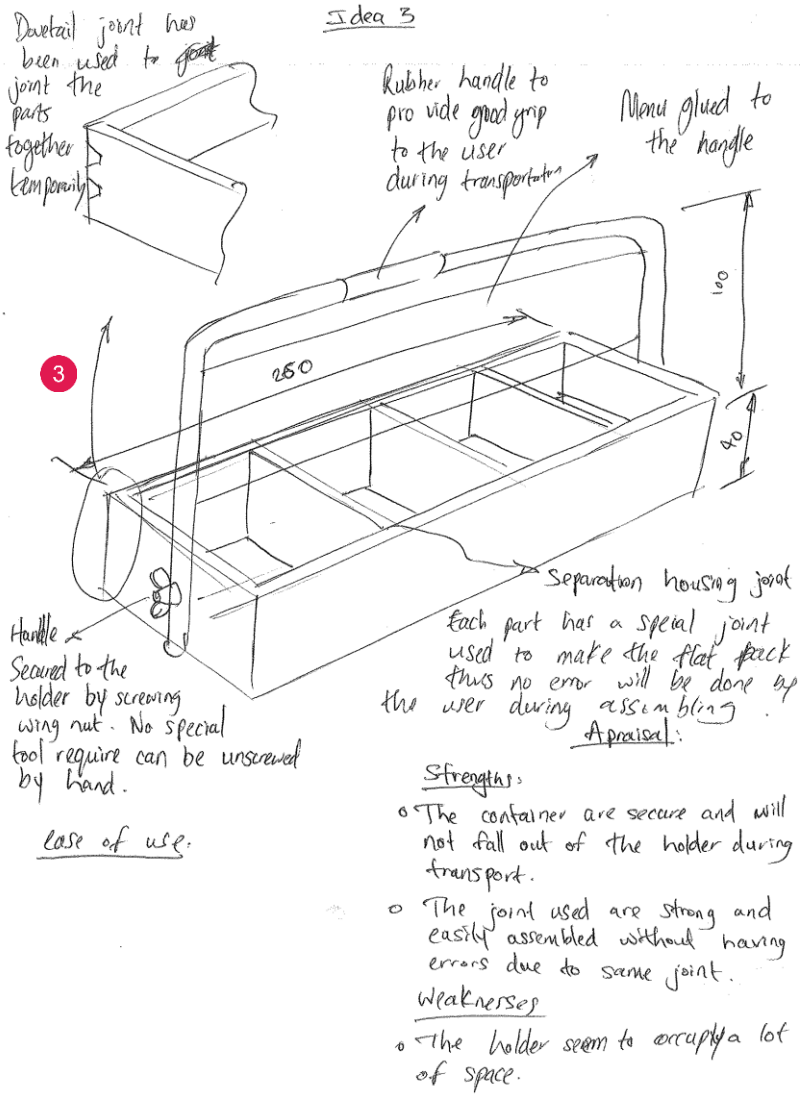
1 Most of the issues are considered in this analysis, with the focus mainly on transportability. 4/5

2 Valid and justified specification points. 5/5

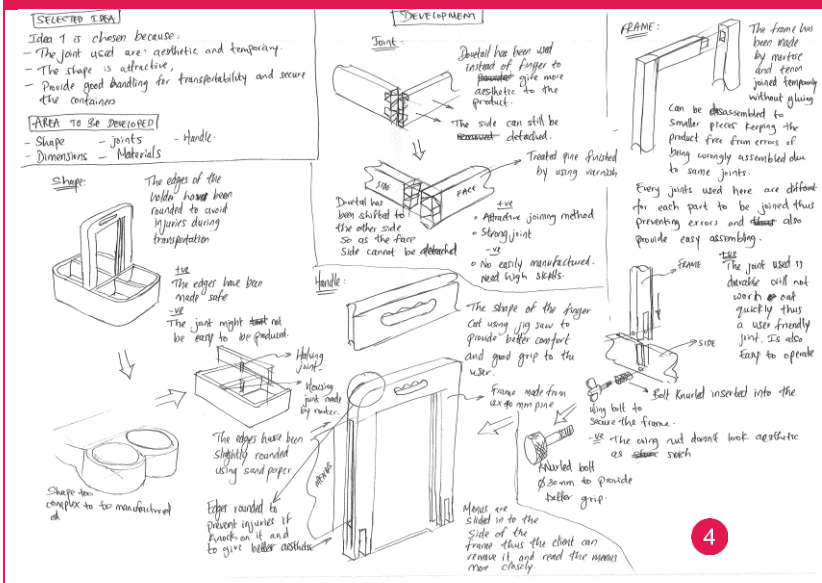
Example Candidate Response – high	Examiner comments



Example Candidate Response – high	Examiner comments
Idea 2  Apraisal Strengths: o Is very aesthetic since the holder has the same shape as the container. Weaknesses o Difficult to be produced in flat pack o Join cannot be used for this type of shape. o	

Example Candidate Response – high	Examiner comments
	3 A good range of different ideas, with some analysis of idea 3. 5/5 Well annotated. 4/5 Different ideas are proposed, with some innovation. 4/5 The candidate clearly identifies and evaluates the strengths and weaknesses of each idea. They include adequate reasoning to support the idea they select for development. 4/5 Generally good use of annotated sketches.

Example Candidate Response – high



4

Examiner comments

4 Several functional and constructional developments are given here. 5/5

Very good descriptions of constructional details. 4/5

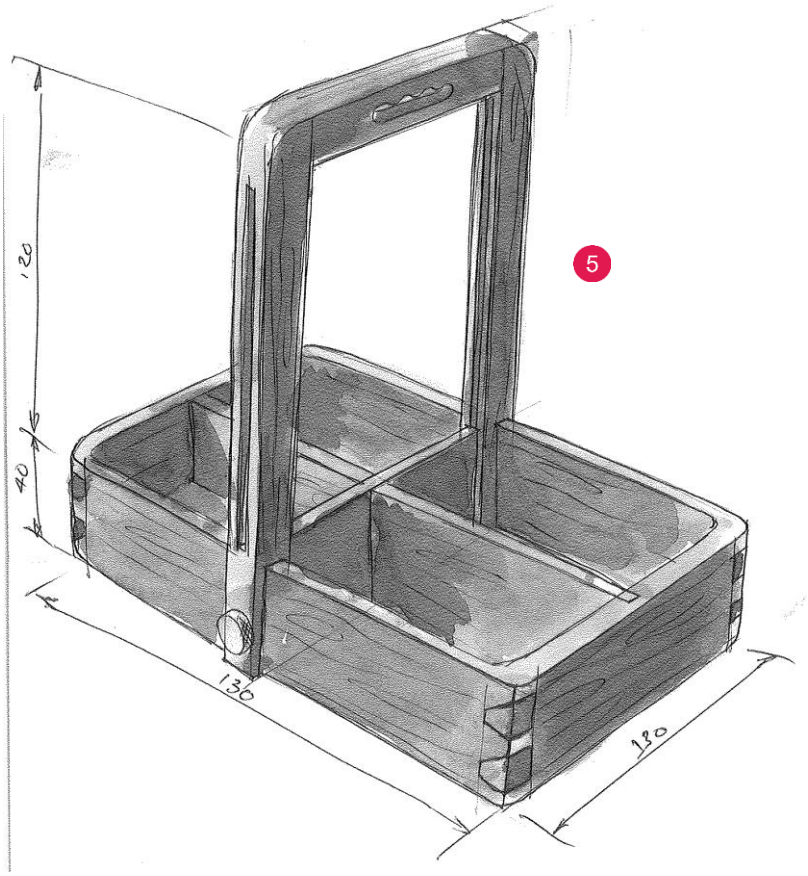
A range of suitable materials are proposed. 3/3

Most constructional details are outlined. 6/7

Clear and well-presented sketches, with good supporting annotation. 5/5

Example Candidate Response – high	Examiner comments

PROPOSED SOLUTION



5

EVALUATION

6

Criteria	Remarks.
Is the product function/ flat pack.?	The product can be disassembled easily all the joints are temporary by slab joining and screwing
Does the product provide easy handling and transport	The product is made from pine thus is light and can be transported by the user. The handle made are ergonomic and provide good handling.
Is the product appealing?	The joint used are aesthetic and thus will attract the user.
Is the product safe to be carried.	There are no sharp edges and parts which would hurt the user during transportation.

5 A clear drawing of the proposed solution. 5/10

The drawing includes details, with some dimensions given. 4/5

6 The candidate includes some evaluative remarks relating to function here. 3/5

Total mark awarded = 62 out of 75

How the candidate could have improved their answer

Analysis – Most issues were considered in this analysis, but they focused mainly on transportability. There was no reference to menus.

Specification – The design was annotated well, but not all the features were described or justified.

Exploration – The candidate proposed different ideas, along with some innovation and evaluation leading to development. To improve their answer, they should have included more comment on the flat pack requirements.

Development – The sketches were good and clearly annotated. However, they lacked details on some features.

The candidate included very good descriptions of constructional detail but did not explain all the functional change decisions.

The candidate outlined most of the constructional details. However, the dovetails were incorrect in some sketches.

Proposed solution – The proposed solution did not fulfil the requirement set by the question for the product to be flat pack. The space allowed for the containers was too large: they could move and spill their contents.

Evaluation – The candidate included some evaluative remarks but did not suggest any improvements or modifications.

Common mistakes candidates made in this question

Some candidates offered flat pack solutions which used resistant materials, then designed suitable connecting methods and/or used knock-down fittings in their proposals. However, a significant number of candidates did not access the full mark range as they did not satisfy the requirement for the product to be produced as a flat pack.

There were some excellent innovative solutions with many candidates demonstrating sound knowledge and understanding of developments (nets) and rigid-card construction methods. A significant number of candidates, however, presented variations of one basic idea rather than using the opportunity to be creative.

Evaluations were again relatively weak on this question. See comment on Question 10.

Cambridge Assessment International Education
The Triangle Building, Shaftesbury Road, Cambridge, CB2 8EA, United Kingdom
t: +44 1223 553554
e: info@cambridgeinternational.org www.cambridgeinternational.org