

# Example Candidate Responses

## Paper 3

### Cambridge International AS & A Level Design & Technology 9705

For examination from 2016



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## Contents

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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

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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](http://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
<p>Question No. 2.</p> <p>(a) <del>Acrylic</del> Trough. Duralumin. - It does not rust. - It does not require any finish as its surface is extruded clean.</p> <p>- Easy to form.</p>	<p><b>Examiner comments</b> 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.</p> <p><b>1</b> The candidate earns 1 mark for citing 'acrylic' as a suitable material. 2 marks are awarded for giving appropriate reasons.</p> <p>Mark for (a) = 3/3</p>

**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.

## 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 was held in place (the candidate included details of how it would be held in the trough but this was not enough). The candidate named the correct material but did not explain how it would 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

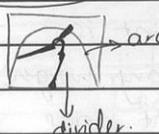
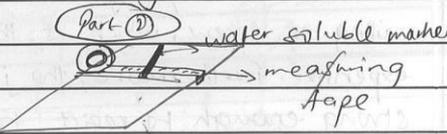
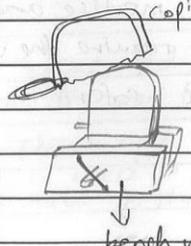
(a) Many candidates stated a suitable material for the project but did not explain why they chose it. 'Easy to shape' was a common response.

(b) Time allocation – some candidates spent far too long on part (a) and did not finish part (b).

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

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.

## Question 2

Example Candidate Response – high	Examiner comments
<p>Question No. 2.</p> <p>(a) <del>Aluminium</del> Trough.            Duralumin.            - It does not rust.            - It does not require any finish as its surface is already shiny.</p> <p>(b) <del>Aluminium</del></p>	
<p>2 (a) Trough. <span style="color: red; border: 1px solid red; border-radius: 50%; padding: 2px;">1</span>            Acrylic            - It does not rust            - Easy to form.</p>	<p><span style="color: red; border: 1px solid red; border-radius: 50%; padding: 2px;">1</span> The candidate earns 1 mark for citing 'acrylic' as a suitable material. 2 marks are awarded for giving appropriate reasons.</p>
<p>Step ①: From a sheet of acrylic, a measuring tape and a water soluble marker is used to mark on the acrylic sheet</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Part ①</p>  <p>divider</p> </div> <div style="text-align: center;"> <p>Part ②</p>  <p>water soluble marker measuring tape</p> </div> </div> <p>Step ②: <u>Cutting</u></p> <p>Part 1: A coping saw is used to cut the acrylic after clamping it on a bench vice between waste wood.</p> <div style="text-align: center;">  <p>copied saw bench vice</p> </div>	<p>Mark for (a) = 3/3</p>

Example Candidate Response – high

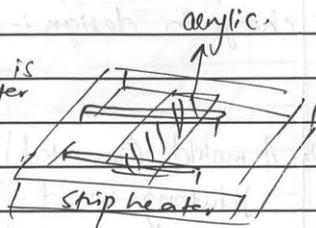
Examiner comments

Question No.

part (2):- A scroll saw is used to cut through the line.

Step (3) Bending

The base part (part 2) is inserted into a ~~area~~ <sup>strip heater</sup> where it is heated until smooth.



(Precaution)- wear gloves when holding the hot acrylic as it will be hot enough to cause skin burn.

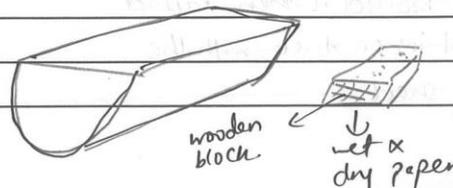
Step (4) Wooden formers of radius 100 is used to bend the acrylic.

clamped until cool down. acrylic wooden former.

(F-clamp is used) →

Step (5) finally, tenisol cement is used to join the part (1) & (2) together.

Wet and dry paper is used to polish the sharp edges.



2

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

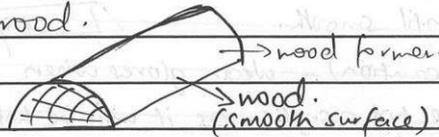
Example Candidate Response – high

Examiner comments

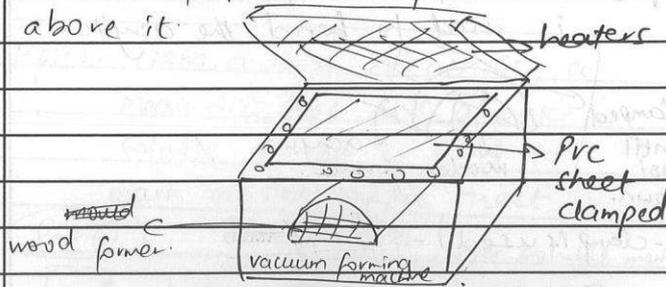
Question No.

(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~~<sup>former</sup> 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.

Step (4): The mould is then raised  
until in contact with the  
PVC sheet.

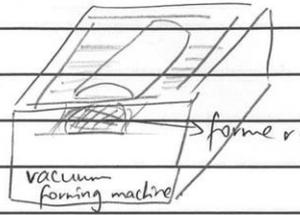
Example Candidate Response – high

Examiner comments

Question No.

step 1) The heaters are then turned off.

Afterward the vacuum pump is turned on which pull the pvc on the mould due to the pressure applied.



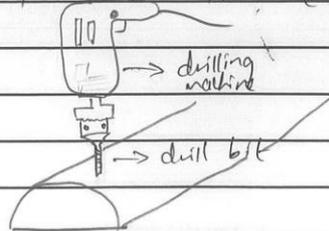
3

It is held in contact until cooled down.

step 2) After cooling, the mould is taken out and sharp edges are trimmed using a sharp knife.



step 3) Using a drilling machine with a twisting drill bit of diameter  $\phi 10$  mm, 6 holes at interval 100 is drilled for water flow. (after watering the plants.)



4

5

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

## Examiner comments

Question No.

Part B 1

Question (a) Copper → Any kind of metal, brass  
 (i) Stainless steel → Spoon, fork and other eating utensils.  
 Bronze → Any kind of statues of monuments.  
 Polystyrene → Protective material for electrical devices  
 Teak → Luxury table, chairs

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

(i) Stainless steel is better for kitchen utensils such as spoon, fork and so on, because it does not rust at all, stainless steel can under go 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 looking finish.

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

(iv) Teak is best of luxury table, chairs and other because it is a very expensive wood that is very durable and has a very good lasting finish. 2

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.

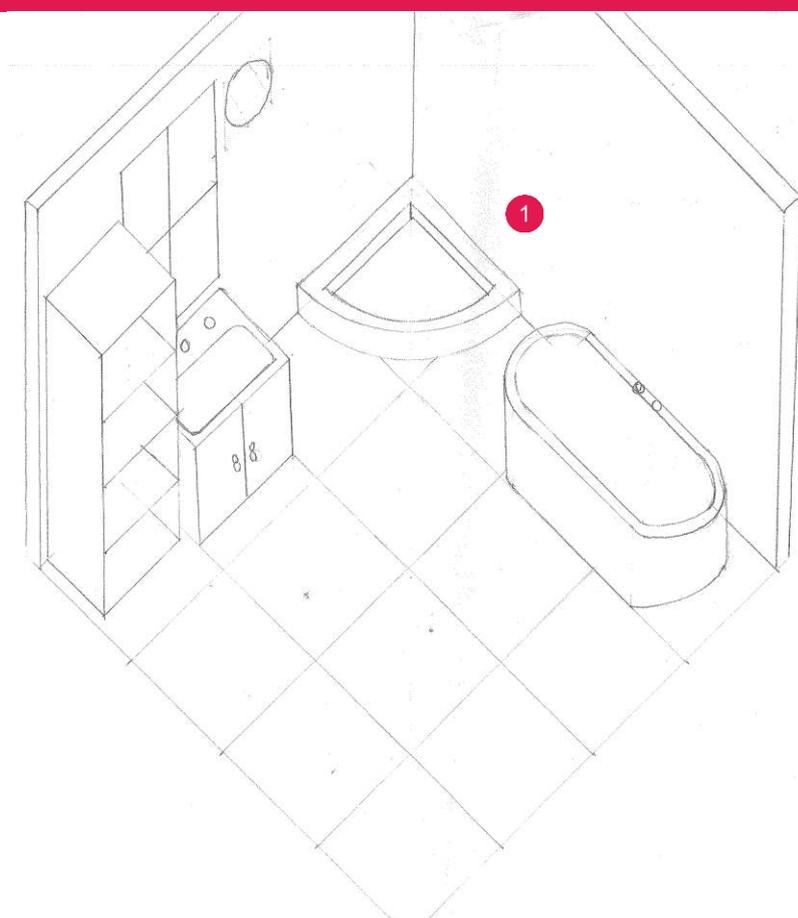
The candidate needed to make specific reference to expanded polystyrene and to include other properties such as heat insulation and the ability to absorb impact to prevent damage to the product.

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																		
	<p><b>1</b> All the components are included and drawn in the correct planometric.</p> <table> <tr> <td>Scale</td> <td>1 out of 1 mark</td> </tr> <tr> <td>Cabinet</td> <td>1 out of 2 marks</td> </tr> <tr> <td>Sink unit</td> <td>2 out of 3 marks</td> </tr> <tr> <td>Window</td> <td>1 out of 2 marks</td> </tr> <tr> <td>Mirror</td> <td>1 out of 2 marks</td> </tr> <tr> <td>Shower tray</td> <td>2 out of 2 marks</td> </tr> <tr> <td>Bath</td> <td>2 out of 3 marks</td> </tr> <tr> <td>Overall layout</td> <td>2 out of 2 marks</td> </tr> <tr> <td>Accuracy</td> <td>1 out of 3 marks</td> </tr> </table> <p><b>Total mark awarded = 13 out of 20</b></p>	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
Scale	1 out of 1 mark																		
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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																		

### 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

9) Marketing → surveys  
→ interviews  
→ questionnaires  
→ magazines  
→ TV  
→ packaging  
→ motto, logo, or catchphrase

advertise ← } Brainstorm 1

Q → Discuss the role played by 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 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, for the marketing to be appealing research has to be done because the product is a market-pull design hence the market knows what they want already.

1 It is helpful for candidates to plan out their responses, although this example is limited with regard to marketing.

## Example Candidate Response – middle

## Examiner comments

The research to be done includes surveys, interviews, questionnaires to know what features <sup>they</sup> 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 ~~add~~ addition, marketing can ~~use~~ 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 burnt, 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

the primary packaging aesthetically pleasing. This means using attractive colours etc. Also add the features on the primary packaging. In addition, one can even put these fitness tracker bands on a promotion lets say, "Buy One and get one free" only for about 2 months or so and this will get people running customers running to the market / stores because most fitness fanatics have training partners.

lastly another role played could be implementing a catchphrase, or motto that is interesting, for example the one by Castle Lite, a beer brewing company, it says; "Drink Beer and save water" and obviously of course its funny but attractive hence the sales will boost because everyone wants to save water.

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
<p style="text-align: center;"><u>Analysis</u></p> <p>Below is an analysis of the given situation.</p> <p><b>Material</b></p> <ul style="list-style-type: none"> <li>wood, wooden battens, meranti, plywood, mdf and time</li> <li>plastic             <ul style="list-style-type: none"> <li>↳ thermoplastic or thermosetting plastic can be used.</li> </ul> </li> <li>metal - aluminium, mild steel, brass</li> </ul> <p><b>Aesthetics</b></p> <p>The product should be appealing and innovative in order to attract customer</p> <p><b>Cost</b></p> <p>The product should be cheap to produce</p> <p><b>User</b></p> <p>The customer who want to play are the users.</p> <p><b>Ergonomics</b></p> <p>The product should be safe and ergonomic thus reducing body fatigue.</p> <p><b>Safety</b></p> <ul style="list-style-type: none"> <li>↳ no protruding parts and no intricate body movement</li> </ul> <p><b>Size</b></p> <p>The size of the bag should be considered</p> <p><b>Environment</b></p> <ul style="list-style-type: none"> <li>↳ can be placed both outside and inside</li> </ul> <p><b>Method of assembly</b></p> <ul style="list-style-type: none"> <li>↳ Bolts and nuts can be used             <ul style="list-style-type: none"> <li>↳ screws</li> <li>↳ joint in wood → tenon joint</li> <li>↳ welding, brazing, soldering</li> </ul> </li> </ul> <p><b>Function</b></p> <ul style="list-style-type: none"> <li>- be adjustable at different angle and distance.</li> <li>- easy to operate.</li> </ul>	

## 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 assembly 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

Examiner comments

**idea 1**

**Expectation of Ideas**

when the puller is pulled, the spring is stretched. on the thing it, it gains enough energy to launch the bag.

**idea 2**

**Expectation of Ideas**

The vertical support is welded the aluminum rod & connected with spring. This allowing the angle to be stored.

**idea 3**

**Expectation of Ideas**

the selected idea is idea 1

possible improvements:

- a locking system for the angle
- making a loop
- reducing sharp corners
- more appealing shape
- reduce cost of production

**evaluation of ideas**

idea	Strength	Weakness
1	<ul style="list-style-type: none"> <li>cheap to produce</li> <li>good system</li> <li>appealing</li> </ul>	<ul style="list-style-type: none"> <li>not stable when launching as the angle cannot be locked</li> <li>cannot store all the bags to be launched</li> </ul>
2	<ul style="list-style-type: none"> <li>good system of launching and angle variation</li> <li>stable when launching</li> </ul>	<ul style="list-style-type: none"> <li>not too appealing</li> <li>may not attract much customer</li> <li>cannot store all the 3 bags to be launched</li> </ul>
3	<ul style="list-style-type: none"> <li>Very Stable</li> <li>Can store all the 3 packet bags to be launched</li> <li>good system of launching</li> </ul>	<ul style="list-style-type: none"> <li>the angle may not be adjusted</li> <li>the single spring may break</li> </ul>

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																		
<p>Evaluation.</p> <p>v/s specifications</p> <table border="1"> <thead> <tr> <th>SN</th> <th>Specification pt</th> <th>comment</th> </tr> </thead> <tbody> <tr> <td>1)</td> <td>IS angle and distance adjustable.</td> <td>Both of them are adjustable. distance - castor wheel angle - spring.</td> </tr> <tr> <td>2)</td> <td>Easy to use</td> <td>Yes the product is easy to use</td> </tr> <tr> <td>3)</td> <td>IS the product stable</td> <td>The product is not so stable as there is a small base.</td> </tr> <tr> <td>4)</td> <td>IS it safe to use.</td> <td>The product is safe to use as it does not have protruding parts non toxic material have been used.</td> </tr> <tr> <td>5)</td> <td>IS the material durable and does the product have good strength when using</td> <td>The material is durable but the product is not too strong</td> </tr> </tbody> </table>			SN	Specification pt	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	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
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<p>personal evaluation</p> <p>Some areas could have been further developed to increase stability and balance when using.</p> <p>The product have meet most of the specifications. A good base could have been designed. A good method for adjusting angle could be made.</p>		<p>6 Some functional issues are raised in the evaluation. 3/5</p> <p><b>Total mark awarded = 65 out of 80</b></p>																		

### 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	Examiner comments
<p>SEC B Nº 12</p> <p style="text-align: center;"><u>ANALYSIS</u></p> <p><u>Materials:</u> As the product need to be flat pack, therefore the material used is important so as to be carried and assembled.</p> <p><u>Aesthetic:</u> As the product will be displaying card in a restaurant, therefore it is imp to consider the shape to please the client.</p> <p><u>Safety:</u> As the product need to be transported, it is important that the design is secured from containers to fall out accidentally while being displaced.</p> <p><u>Ergonomics:</u> As the product need to be carried, it is important to cater for the user comfort during his displacement.</p> <p><u>Functions:</u> As the product will need to be flat pack it is important for easy dismantling so as to be userfriendly</p>	<p>1 Most of the issues are considered in this analysis, with the focus mainly on transportability. 4/5</p>
<p style="text-align: center;"><u>SPECIFICATION</u></p> <p><u>Materials:</u> * The material used should provide strength to hold containers in it and light enough for easy handling.</p> <p><u>Aesthetic:</u> 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</p> <p><u>Safety:</u> The product should secure the container to avoid the container in it to fall down accidentally during displacement.</p> <p><u>Ergonomics:</u> The product should provide good handle for the user hand to avoid uncomfortable during transportation.</p> <p><u>Functions:</u> The product should be easily dismantled while not in use.</p>	<p>2 Valid and justified specification points. 5/5</p>

EXPLORATION

Idea 1:

Handle made by Router

Frame mitred

Menus are displayed by sliding it between the grooves

4 separate containers to keep them securely thus preventing accidents

Menus holder fixed by halving joint

Secured by using knurled nut

Halving joint

All the joint used are temporary without gluing to have been joined exactly to each other and locked at a point.

The menu holder and container holder has been made by using 6mm treated pine. Finish with varnish. Providing a good protective coat.

Pine ~~is~~ <sup>has</sup> attractive grain thus aesthetic

Appraisal

Ease of use Can be pulled at this side

Strengths:

- The joint used are aesthetic and temporary thus can be dismantled easily.
- The shape is quite attractive due to its square shape
- Provide good handle to be transported easily

Weaknesses:

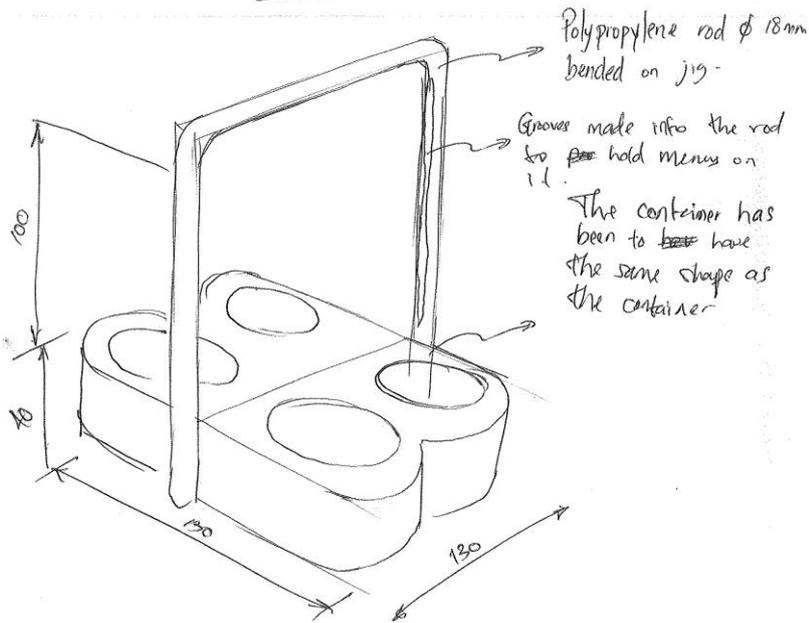
- The menus cannot be removed easily the frame has to be removed
- There are sharp edges and thus might not be safe to be carried.

As you can see the 4 ceramic containers are placed in the holder securely

Example Candidate Response – high

Examiner comments

Idea 2



Appraisal

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

Idea 3

Dovetail joint has been used to ~~join~~ joint the parts together temporarily.

Rubber handle to provide good grip to the user during transportation.

Menu glued to the handle.

3

250

100

80

Separation housing joint

Each part has a special joint used to make the flat pack thus no error will be done by the user during assembling.

Appraisal:

Strengths:

- o The containers are secure and will not fall out of the holder during transport.
- o The joint used are strong and easily assembled without having errors due to same joint.

Weaknesses:

- o The holder seem to occupy a lot of space.

Handle Secured to the holder by screwing wing nut. No special tool require can be unscrewed by hand.

ease of use:

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

Examiner comments

**SECRET IDEA**

Idea 1 is chosen because:

- The joint used are aesthetic and temporary.
- The shape is attractive.
- Provide good handling for transportability and secure the containers.

**AREA TO BE DEVELOPED**

- Shape
- Joints
- Dimensions
- Materials
- Handle

**Shape:**

The edges of the holder frame have rounded to avoid injuries during transportation.

The edges have been made safe.

The joint might not all be easy to be produced.

Holding joints

Holding joint made by router.

The edges have been slightly rounded using sand paper.

Edges rounded to prevent injuries if pushed on it and to give better aesthetic.

Shape is complex to be manufactured.

**DEVELOPMENT**

**Joint:**

Ductal has been used instead of finger to produce quite more aesthetic to the product.

The side can still be removed detached.

Treated pine finished by using varnish.

Ductal has been shifted to the other side so as the finger side cannot be detached.

Use

- Attractive joining method
- Strong joint
- No easily manufactured, need high skills.

**Handle:**

The shape of the finger cut using jig saw to provide better comfort and good grip to the user.

Frame made from 2x4x8 pine.

Ball knurled inserted into the using ball to secure the frame.

The wing nut doesn't look aesthetic as other such.

Rounded ball of 20mm to provide better grip.

Moss are added to the side of the frame that the chest can remove it and read the names more closely.

**FRAME:**

The frame has been made by router and jointed temporarily without gluing.

Can be disassembled to smaller pieces keeping the product free from errors of being wrongly assembled due to same joints.

Every joints used here are different for each part to be joined thus preventing errors and also provide easy assembly.

The joint used is detachable will not work out quickly thus a user friendly joint. It is also easy to operate.

4

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

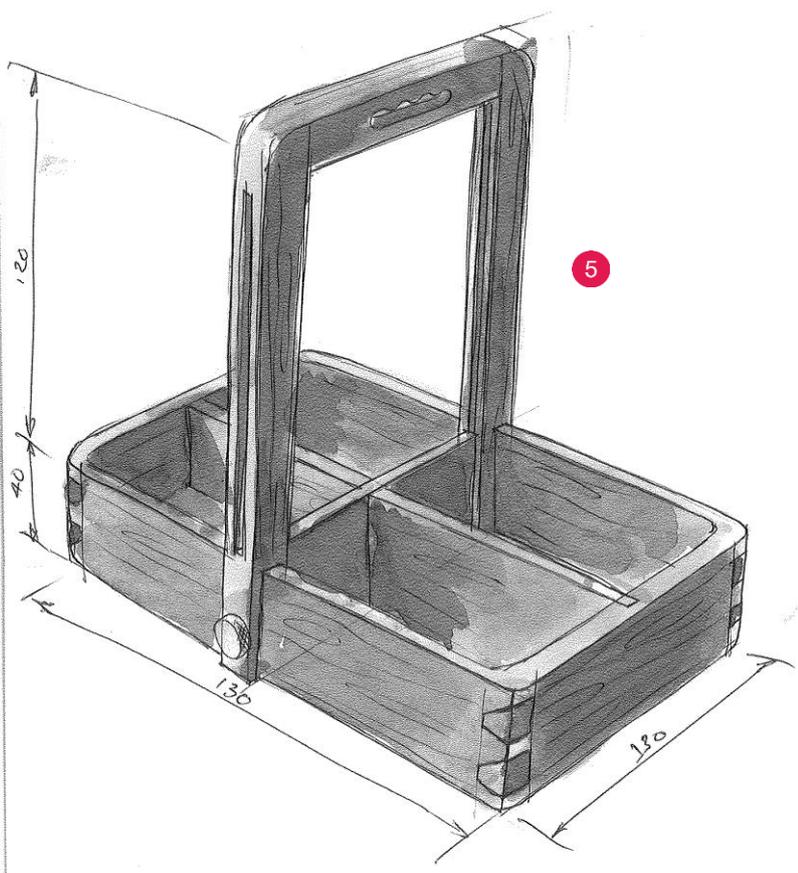
Most constructional details are outlined. 6/7

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

**Example Candidate Response – high**

**Examiner comments**

PROPOSED SOLUTION



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

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

EVALUATION

Criteria	Remarks.
Is the product functional/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 this 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.

**6**

**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.

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