

Design & Technology

Advanced GCE A2 H453

Advanced Subsidiary GCE AS H053

OCR Report to Centres

January 2013

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

This report on the examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the examination.

OCR will not enter into any discussion or correspondence in connection with this report.

© OCR 2013

CONTENTS

Advanced GCE Design and Technology: Product Design (H453)

Advanced Subsidiary GCE Design and Technology: Product Design (H053)

OCR REPORT TO CENTRES

| Content | Page |
|------------------------------------|-------------|
| Overview | 1 |
| F521 Advanced Innovation Challenge | 2 |
| F522 Product Study | 8 |
| F523 Design, Make and Evaluate | 18 |
| F524/01 | 22 |
| F524/02 | 25 |

Overview

Report to Centres

The overall standard of work seen this was very similar to previous January sessions.

The majority of centres are familiar with the examining routine for unit F521: The Advanced Innovation Challenge and candidates are expanding their range of design thinking. It is important that when preparing candidates for this examination, techniques are employed to allow candidates to present ideas quickly and to familiarise themselves with the workbook and the time allocation for each section. Candidates should not try to predict the challenge and include pre-prepared work, such as specifications, in their job bag.

It is also advisable to read through the teachers' instructions for both Session 1 and 2 before embarking on an Advanced Innovation Challenge for the first time with students.

There was a large number of outstanding F522 Product Studies presented this year. More candidates are submitting work as e-portfolios for this Unit. Candidates make very good use of digital technologies to record the development of their work in 'real-time' and show effective evidence of interactive dialogue.

Centres are reminded however that when submitting e-portfolios for F522: Product Study and F523 Design, Make and Evaluate, care should be taken to ensure that video files are appropriate in terms of value to the project. Some candidates included large numbers of lengthy High Definition video files, resulting in excessively long times for the presentations to load. Centres are reminded to test the presentations to ensure that they are packaged correctly. In a number of cases the video files were not accessible. It would be helpful if candidates included a separate folder for video files so that if moderators cannot access the files through the presentation they would be still be able to be viewed.

There were very few projects presented for F523 Design, Make and Evaluate. It was clear that most candidates who re-submitted work had made some effort to add to or improve aspects of their work in order to improve on their previous mark.

The majority of responses to F524/01 and F524/02 were for Resistant Materials with significant numbers attempting the Manufacturing and Graphics Products questions.

The overall standard on both papers was good, and it was pleasing to see increasing successful attempts at Question 3 Food. A number of candidates did not read the question fully for part (e) (ii) and did not take into account batch size when manufacturing the given component.

It is helpful if the reports are read in conjunction with the full specification and appropriate mark schemes.

F521 Advanced Innovation Challenge

General Comments

Administration

It is important that both examination papers are dispatched to the appointed examiner in one package as soon as the reflection paper has been completed on the date set by OCR. Candidates will have access to their challenge work booklets during session 2; however they are not to write in it.

Answers must be completed in the booklets provided, there is additional space in the challenge booklet should candidates require it; however, the use of this space should be labelled carefully with the box number that the work relates to.

Additional JCQ supplementary sheets should be avoided if possible and additional paper of any kind should not be stuck into the booklet. It is expected that inspirational material is stuck into the booklet to aid designing; this material is brought in as part of the job bag. Candidates should not access the internet during this examination.

Running the Challenge

Centres are reminded that the role of the teacher is that of a facilitator and not that of a normal classroom teacher. They are there to provide access to modelling materials, monitor health and safety issues and read the teacher script to candidates, elaborating and explaining where this is indicated.

Teachers must not:

- give advice to candidates about the design or manufacture of their product;
- cut materials to the correct shape or dimension for students.

It must be made clear to all candidates that this is an examination to assess the individual student's designing and modelling capability.

A number of candidates continue to approach the challenge with pre-conceived ideas and have failed to respond directly and creatively to the design challenges. A few candidates misinterpret challenges, either because they do not read them with sufficient care or because they choose to base their work on practiced work to a design challenge. Each challenge has specific key areas that candidates will need to address fully with fresh innovative thinking to respond to the challenge.

It is the centre's responsibility to provide a suitable range of modelling materials for candidates. It is not advisable for candidates to bring their own materials for modelling as this will hamper design thinking.

A 'job bag' should contain inspirational materials, images and information about materials, anthropometrics that could be useful when designing. Candidates must not share resources or job bags during this examination.

The quality of photographs is generally good but examiners have reported some problems with the photographs presented for assessment. These problems include: failing to focus on the object, photographs being printed at a size too large for the allocated positions within the workbook. Photographs must be stuck into the correct boxes in the booklet, a small number of candidates stuck photographs of existing products in place of where the pictures of the models should be. It is important that the centre provides colour images of a good quality

Centres are reminded that three photographs is the minimum required. Additional photos can be added to the workbook. This is particularly important if it is necessary to show other parts or views of an artefact or mechanisms to fully illustrate the final outcome. Extra photographs can be included in the evaluation or progress report boxes. It is recommended that if candidates wish to annotate photographs, that a second print is produced and stuck into either the appropriate section of the workbook or into the 'additional space' and clearly labelled and then annotated.

Security of Workbooks

Centres are reminded of the importance of appropriate security of all workbooks between the three sessions of the Innovation Challenge.

Work of Candidates

Again some highly creative work has been seen this session from candidates who have shown both design flair and sound technical knowledge. A significant part of the preparation for the exam should include techniques to allow the candidates to present ideas quickly and practice of workbook completion under timed conditions. Examiners are aware of the pressure on candidates in this examination and marks are awarded with this in mind.

Areas such as specification, evaluation of ideas and final products and the realisation continue to discriminate well between candidates. They are testing higher order thinking skills and these areas should be taught throughout the AS course.

The Challenge Assignment

Initial Thoughts

Candidates used a combination of text and drawings to explore the challenges within the theme of 'retail' and identified possible design areas/problems. Some candidates failed to think creatively about the challenge or context and suggested only very predictable or narrow responses. Many candidates explored ideas in depth; thinking creatively, whilst considering the indoor or outdoor environment, users and space they were designing for. Those scoring highly explored the challenge widely expressing their thoughts and expanding further on them.

Design Brief

Candidates should be encouraged to write clear and precise design briefs that develop the design challenge further and offer scope for creativity. The majority of candidates identified the appropriate user groups for their products. The best design briefs expanded upon the design challenge clearly adding users and extra market information in them.

Specification

The more successful responses are where candidates concentrate their thinking on the functional and user needs of the product in the design situation and ensure that the relevance of all points are explained. Candidates are advised to focus on functional aspects when writing a specification. Specific detail is required for high marks in this section, eg weight, size and material properties. Specifications made up of vague or generic points or that lack justification make it hard for candidates to move into the top mark band.

A number of candidates did not fully engage with the challenges set, missing the key points and so lost marks in this first section.

Ideas

This section continues to see an encouraging improvement and candidates are sketching a good range of ideas in most cases. The quality of annotation seen was very good, with relevant notes relating to the specification and construction and material details. The best candidate responses also had integrated sources of influence in their ideas section.

Initial ideas on the whole were creative, with some excellent examples of innovative thinking, and good use of annotation and sketching. Higher performing candidates produced a range of functionally different ideas that clearly related to their specification, situation and the potential users. Originality and creativity are key aspects of this criterion. There are still candidates presenting one idea in this section, it should be remembered a range of ideas is required.

Candidates used a combination of drawings, text, annotation and occasionally modelling/photographs to show their ideas. Higher performing candidates gave different views of objects or parts of objects and clearly communicated their creative design thinking and included specific detail of materials and manufacture/constructional techniques. This is an area that still needs developing, many candidates do not include details of specific materials that could be used for the product.

An improvement was seen in this session for the evaluation section with good evaluative annotation in the designing section, where candidates had clearly detailed why they had chosen their idea but also why they had disregarded others. Where evaluations were poor, candidates had not explained why they took the idea forward and why others were rejected.

Reference to source of inspiration/job bag was usually given although not always with pictures. The better examples of evidence from job bags were where candidates had collected a very broad range of items and took their inspiration from unrelated inspirational objects. Candidates should be advised against copying or presenting existing solutions as their own.

Many candidates had a clear structure to present their feedback in box 10 showing comments/response/modifications. Clearly this is something that is influenced by good practice in coursework in individual centres.

Development of Ideas

There also continues to be improvement in this section, most candidates use notes or annotations to show how they are developing and improving their design towards an optimum solution that satisfies the design brief, specification and needs of the user. Again only the most able candidates suggested specific materials and very few considered methods of manufacture for their developed idea. Materials were often generic eg wood, plastic or not appropriate for the design. It should be remembered that in this section the materials and construction are those that would be used for the product should it be manufactured commercially.

It is also expected in this section that the size of the product is considered. Dimensions of individual features, components and/or thicknesses of materials are considered by the more able candidates.

Plan for Modelling

Action plans were mixed, often these were very general and referred to ‘cutting out all pieces from the materials’ and similar vague statements. The best candidates produced detailed flow or block diagrams referring to individual parts of their model and the actions required / equipment needed to make them, some even allocating time to each action.

Recording Progress and Modelling

Many candidates are meeting the criteria in the middle band of marks – this is mainly due to two things; models that do not fully reflect the developed idea and poor reflection, and recording sections.

Some candidates give only brief statements in their progress reports with no real detail to show examiners what modifications/amendments or successes have been made. Those who have used extra photos or sketches of details of their models tend to complete these boxes more successfully.

Candidates that provide little more than a cursory description of what they have done in the modelling are unable to reach the top band of marks for the progress report – reflection of modelling should illustrate with sketches/photos technical problems they have encountered and highlight how they have overcome these.

Most centres have a better understanding of the type of models required although many candidates concentrate exclusively on the aesthetics of their design ignoring any functional detail (eg folding mechanisms). The main point here is for candidates to use appropriate modelling materials to enable them to fully reflect their design.

Candidates need to be able to develop their quicker modelling skills using a variety of materials. Creative use of common inexpensive materials is probably the easiest way for candidates to score well in this section. Kits should not be used for final models as it restricts the candidate’s ability to model their design accurately and skilfully; as does the use of existing products to form part of, or most of their model. The use of collected materials should also be avoided (loo rolls, cereal boxes, plastic bottles).

The skills section cannot be highly marked if candidates have just stuck together collected items to form a model. Many candidates are meeting the criteria in the middle band of marks – this is mainly due to two things; models that do not fully reflect the developed idea and poor reflection and recording sections.

Evaluation

Some improvement was seen this session for the evaluation section. Candidates who structure the section as 'S and W', 'Evaluation' and 'Modifications'. usually achieve success in this section. However, many candidates fail to record their further modifications in sufficient detail and some don't indicate any possible weaknesses of their product.

A very small number of candidates just talked about their model and not the product so failed to score any marks. The best responses clearly evaluate against the specification, provide strengths and weaknesses and realistic improvements with sketches.

This is still however one of the weaker areas in most candidates responses. Where candidates did evaluate they tended to focus on strengths with little mention of weaknesses in their product and in doing so restricted their marks, there can be a tendency to repeat the specification rather than evaluating their product against their specification and justifying how their product had met the relevant point.

Comments on Individual Challenges

Challenge One

A product for small or large quantities of shopping in a retail environment. This was a popular question. Many candidates produced interesting and potentially practical proposals.

Challenge Two

Hot and healthy fast food meal. There were very few responses to this question, seasonal produce often lead to a seasonal theme with this paper being sat just before Christmas.

Challenge Three

A product for carrying shopping home. This was also a popular question. Some interesting proposals were seen but many of these were quite substantial and did not really respond to the 'minimal cost' requirement. Some of the textiles responses were similar to existing tote bags.

Challenge Four

Relaxation for two people, this was the most popular question. The vast majority designed seating areas – sometimes with some music or entertainment, massage facility and storage for belongings. The more successful candidates explored relaxation beyond seating in their Initial Thoughts and Ideas.

Challenge Five

A sculpture for the entrance of a large sports store. There were some interesting responses seen often incorporating new technologies or an interactive element.

Challenge Six

A product to encourage separation of food waste and packaging. This challenge was also quite popular, many responses were predictable and some candidates focused purely on packaging rather than food waste. Some interesting responses were seen, many of which had an interactive element to appeal to children and teenagers.

Reflection Paper

It was pleasing to see more candidates producing more focused responses and addressing the bullet points; accessing the full mark range available. It is evident that the more successful candidates are planning their answers ensuring all bullet points are addressed in relation to the topic of the question. Not all candidates support the points fully with specific examples in reference to their product.

Question 1

Candidates tended to perform better on this question than Q2. They were nearly all able to identify and describe the USPs of their product, however many did not go on to explain this USP and the reasons this made their product commercially viable.

The second bullet point was less well answered and showed a lack of understanding of what was meant by commercial viability, although many candidates were able to suggest a suitable level of production for their product but gave no explanation of why it was suitable and did not gain the 'S' (supporting points) to this part of their answer.

The marketing of the product to the end user was answered well by many candidates who were able to appreciate a suitable and specific method of marketing to either the shoppers of the shopping centres/shops. Where candidates failed to gain marks they had merely provided generic information on marketing methods that were often unsuitable for their designed product.

Question 2

It was surprising that there were so many candidates that did not seem to have an appreciation of ergonomics. However many candidates were able to suggest a number of suitable ergonomic improvements to their product, but they did not always make use of sketches to support their improvement ideas.

The second bullet point was less well answered and often candidates gave generic information on manufacturing processes or talked about the production methods for the whole of their product, rather than just the suggested improvements.

Many candidates did appreciate and give valid reasons for cost changes to their product in the light of the suggested improvements but often did not get beyond simple comments such 'would cost more/less/about the same' with little justification; common answers included cost would increase due to increased material, although not often explaining how or why.

Many candidates did not mention the possibility of standard components and all seemed to assume they would have to start making the entire product again from scratch. Many candidates seemed to think that injection moulding is a cheap process and that changing a mould would not cause significant cost implications.

It should be noted that it is stated in the specification; "candidates have the opportunity to reflect on the challenge by answering questions that require them to consider their product. These will be derived from a design, manufacturing or marketing perspective, including: sustainability and the environment; product life; social, moral and cultural issues; environmental issues; inclusive design; the human interface; aesthetics; scale of production; production technologies; fashion; marketing; commercial issues." These areas should be taught through the 'AS' course, and students should learn to apply knowledge to products when evaluating and analysing. Candidates should be familiar with technical terms related to these topics.

F522 Product Study

General Comments

Most, but not all, entries in this January session were re-submissions from June 2012. Moderators appreciated the efforts of some centres to highlight additional work undertaken either by 'post it' stickers or on screen annotation.

Most centres are now using the interactive CSF form which correctly totals candidate marks and together with meeting the requirement to send the Centre Authentication form (CSS160) and the MS1.

The purpose of the moderation process is to bring all samples seen to within a common national standard. This is achieved by scaling any centre that falls outside the acceptable OCR tolerance. The usual practice for any centre which has not been scaled but which is approaching the accepted tolerance is to inform the centre of this on the moderator report to centres.

There has been a very noticeable increase in the percentage of candidates submitting work as an e-portfolio. Some inspirational work has again been seen, in particular with the 'real time', 'hands on' approach usually evident in the 'product focus', strengths and weakness comparison' and 'testing sections'.

This feature however makes the most impact in the 'development of improvement section' where it is a mandatory requirement and often used as a feature of 'ongoing evaluation'. Moderators again report with enthusiasm how engaging some of these presentations can be in particular the 'interactive dialogue' where candidates discuss and crucially respond to comments made by third parties.

Excellent and inspirational work was again seen this session, by candidates submitting A3 folders. In particular work in the 'creative and innovative ideas section' often provides free flowing high quality annotated sketching which is sometimes not evident in e-portfolios.

There was also evidence this session however, of small scanned images being included in A3 presentations, this is often a poor feature of some e-portfolios and should not be replicated here with A3 folders. Candidates submitting using paper folios also need to ensure that the mandatory requirement for interactive dialogue is met. This can be achieved by real time – first hand comments either added directly to design sheets or on 'overlay sheets': There was some good evidence of this practice. Retrospective or 'neatly typed up' comments reformatted after discussions should not be encouraged and often have a negative effect on outcomes. Actual comment by those making them and the responses of the candidate are required in 'real time'. – as they actually happen and not later!

There is still a marked 'divergence of approach' evident between CD/A3 presentations and the best advice is for both of these routes to develop the strongest feature of the other –in essence CD presentations often have outstanding use of real time interactive dialogue but sometimes tend not to develop the freedom of design ideas expected through high quality annotated sketching (scanning in whole design sheets would be an advantage).

A3 folders are generally stronger on the quality of detailed annotated sketching in the development of ideas section but sometimes lean too heavily on retrospective comments, which are often typed. This does not meet the requirement for 'real time interactive dialogue'. Meeting in the middle would be an excellent idea! Centres however should note that submitting A3 and CD content for one individual candidate is not allowed.

Section by section guidance on Product Study requirements for Unit F522

These comments are common to most sessions and are added to when moderators raise additional issues for attention.

Moderator's comments for this current session have been added in italics.

This product study should take candidates 30 hours to earn up to 120 marks.
(1 hours work should notionally equate to 4 marks)

OCR recommended A3 /PP allocations are indicated for each section - the total should not exceed 20.

Product focus and analysis (8) (2 x A3/PP)

Products can be selected from any of 8 different focus areas:

- Built Environment and construction, Engineering, Food, Graphic Products, Manufacturing, Resistant Materials, Systems and Control, Textiles.

For marks in the top band all of the following should be addressed:

Detailed description of the intended purpose of **one single selected named** product (not a range)

Key Criteria used in the design of the product.

- The needs of the manufacturer.
- The needs of the consumer.

Where all four of the above have not been covered the centre should consider awarding marks in the lower bands. Moderators report that the needs of the manufacturer section is not covered to sufficient depth.

Some candidates and some whole centre groups are still considering generic groups of products. The first page of the candidate product study should state quite clearly and categorically what **specific, single named product** has been selected for analysis.

Candidates who do not present real time evidence and interactive dialogue should not be marked in the top band.

Ongoing comments from Moderators:

- A wide range of interesting products was chosen.
- Many centres are now showing the chosen product actually being used with the use of video.
- Some centres are not encouraging the candidates to show an image of the product in this section.
- The section relating to 'manufacturers needs is still the weakest area in this section. Points raised are often very generic. Some centres are allowing candidates to pick generic product areas like 'toothbrushes' but on the whole this section is very good. Many centres are showing the product in use.
- Analysing products students had produced, as part of GCSE coursework requirements is not appropriate and should be discouraged.
- *Good range of products selected on the whole.*

Strengths and weaknesses comparison (12) (2x A3/PP)

Good candidates should be encouraged to analyse the strengths and weaknesses of a *product* in *comparison* with similar products. Good responses often include a conclusion or summary, which relates similar products back to the single selected named product.

Poor responses often include charts and tables populated with Internet images with no identification of the strengths and weaknesses of the selected product.

Candidates should be encouraged to show evidence of actually using a range of products, which are compared with the selected product.

For marks in the top band the following should be addressed: function, suitability of materials and manufacturing processes, ergonomics, aesthetics and cost.

Ongoing comments from Moderators:

- Candidates are not comparing a range of products against the original.
- It is not obvious which is the better product.
- Limited conclusions drawn.
- Little evidence of the candidates actually experiencing the products.
- A 'hands on' approach to this section is required!
- (There is now good evidence that this is being adopted)
- Some centres introducing video to this section, which enhances the work.
- 'Old table' format still being used by some centres. Some candidates however had made these interactive by the embedding of videos in the charts. This is an excellent feature to be encouraged.
- Weaker candidates are still relying on internet images/information.
- *Answered well in most cases. Nice evidence of some candidates being more 'hands on' with their analysis of similar products using video clips.*

Moral Implications (8) (1 x A3/PP)

Identify and analyse the moral implications associated with environmental, social and economic issues in the design and use of the product.

Moral implications should be considered in relation to the design and use of the product chosen for study:

The clear emphasis of this section is now on the **moral implications** associated with three specific issues. Centres need to prepare candidates for this by organising and structuring **ethical debates** about the environment, social cultures and economic issues.

The term 'economical *issues*' should be avoided as it encourages a discussion of general cost issues, which is not what is intended. A far wider debate about the effects of the global economy and exploitation of workers is required.

Marks in the top band are not awarded in many cases. Centres may wish to consider inviting staff from 'critical thinking' or business departments to facilitate discussions, or inviting in visiting speakers.

Ongoing comments from Moderators:

- Many centres are not presenting a good response to this section. There are still cases where centres award top band marks for 'middle band thinking'.
- The ethical consideration of moral implications needs to be integrated into the AS course – it contributes to other areas of study.
- *Much improved – lots more detail in comments.*
- *Some centres using sustainability tools from 'The Practical Action Green Book.'*
- *Evidence from one centre of interaction with an 'in school business studies department' enhanced the ethical debate relating to the wider implications of the global economy.*

Brief and specification for improving the product (8) (1 x A3/PP)

The design brief presented should relate to improving the single selected chosen product in some way. Centres should award marks in the lower bands where an improvement is not identified, or where the proposal is to redesign a complete product.

Moderators still report that many candidates are still trying to improve too many aspects of their selected product.

Proposals to redesign a complete new product should always be marked in the lower bands

Specifications need to be detailed and justified, resulting from the objective analysis of the original product.

Where there is little or no justification centres should award marks in the lower bands. It can help if the justification for each specification point is clearly identified by using a different font size, style or colour - better candidates often use this technique, and it would help candidates in the middle and lower bands.

Ongoing comments from Moderators:

- The majority of candidates identified an improvement or in many cases a number of improvements. (One will do!)
- The specification was not drawn from the analysis of the original product.
- Many focused on ergonomic improvements.
- Colour code, italics and tables were used to good effect.
- Centres generally accurately mark this section.
- 'Most centres scored highly – nice to see more detailed briefs this year.'
- Still some instances of weaker candidates trying to redesign the whole product.

Development of improvement (56) (10 x A3/PP)

This section relies on the integration of three separate requirements for successful completion. There is a very large allocation of marks for this assessment criterion; this is deliberate as it was considered during the development of this Unit that this is where the majority of candidates would choose to spend their time and energies.

As there will be many different approaches to this section appropriate to different focus areas, it might be helpful to consider that the expectation in relation the notional guideline of 4 marks per hour means that candidates should devote 14 hours to this section.

56 marks is a very large allocation to accurately apportion in three mark bands and in the past some centres found this difficult. For the last three sessions OCR has provided a new CSF F522 form to make this task easier.

The 56 marks have now been broken down into three sections as identified below. Additional advice is also given on the new CSF F522 form to award marks in different bands within each section. The new interactive mark sheet is available on the OCR web site.

Please make sure this new form is used in the future as it enables marks to be appropriately awarded and cuts down clerical and addition errors. Please note that only the interactive form automatically adds up candidate marks.

The three sections:

Present a wide range of innovative/creative initial ideas, which demonstrate a high level of development using high quality annotated sketching, real time digital images and interactive dialogue. (14 marks)

The expectation here, for marks in the top band, is that a wide range of innovative/creative initial ideas are presented which demonstrate a high level of development using high quality annotated sketching. Simplistic sketches with little or no annotation should be awarded marks in the lower band.

The expectation is that a specific improvement is developed, a few candidates try to re-design a whole product, and this is not the intention of this section.

Integrate this with real time evidence of a wide range of appropriate prototype models. (36 marks)

Moderators again reported some very high quality models were presented using a range of modelling materials. Many moderators however pointed out that some centres were concentrating on producing one high quality single prototype. This may produce a high quality outcome but will not access the full range of marks available for the development of a wide range of appropriate prototypes.

Evaluate ideas against the specification in real time and justify the choice of one idea worthy of being taken forward. (6 marks)

It is important that Candidates evaluate their ideas against the specification and clearly justify decisions made. Where little reference is made to the specification, centres should award marks in the lower band.

No marks at all should be awarded where there is no reference to the specification. Centres should note that it is impossible for candidates to access these marks if the original specification is missing. Zero for the specification automatically results in zero for the evaluation against it.

Where candidates choose to annotate their ideas sheets, they must make it clear which specification points are being cross-referenced. Colour highlighting can help in this respect. Better candidates clearly rationalise the choice of one idea to be further developed.

Interactive dialogue is mandatory in the development section, this can be best addressed by ongoing evaluation, which seeks the views of others and then provides evidence of responding to points raised.

Ongoing comments from Moderators:

- For this specification, for all focus areas, there is a need for presenting innovative and creative ideas, which are annotated. This is required for an E-portfolio as well as A3 portfolios-many candidates re-submitting again this January did not provide sufficient well-annotated design sheets.
- In a small but significant number of submissions there was no evidence at all of any annotated design sketches, where no work is being presented –no marks should be awarded.
- The use of ‘interactive dialogue’ is mandatory in the development section –real time comments from third parties should be an essential feature.
- For this specification centres should encourage the use of ongoing evaluation on the candidate ideas sheets.
- Previous practice of tabulating responses to this section could still be relevant to the justification of an idea to be taken forward but should not be encouraged as the main mechanism for ongoing evaluation which is best provided in real time as ideas develop.
- ‘We still need to see developed annotated sketching’
- General standard of sketching quite poor.
- A great deal of 2D sketching.
- Some evidence of on-going evaluation through annotation, video and audio.
- Good use of CAM modelling.
- Range of modelling materials used.
- Some good instances of centres integrating the modelling more and using it to develop the idea.
- Some very high quality models which enabled realistic testing to take place.
- Good quality photographic evidence in most centres.
- Table approach to evaluation used less and candidates are using other pupils to evaluate with the use of video.
- Significant number of good quality but single products produced, not a wide range.
- Centres scored better when candidates developed through their sketches.
- There should be a more exploratory route throughout this section-pretty sketching is one thing –proper development and experimentation is another.
- Still some centres awarding high marks for few models but more instances of integrated modelling/development from the better candidates.
- Many centres are still awarding high marks for terminal evaluation rather than ongoing. Students who constantly referenced their spec deserve the higher marks.
- *Still a limited use of interactive dialogue in many cases.*
- *Not many examples of high quality sketching.*
- *Still too many centres relying on a page or two of nice drawings – ‘then into models’. – A backward step.*
- *Still need to focus on a more exploratory route throughout this section. – Good sketches need to be combined with decent exploratory work.*
- *One centre made good use of CAM to produce final developments.*

Testing of final developed idea (12) (2 x A3/PP)

There is no requirement to make a test rig -Candidates can if they want to! Any appropriate method or system to formally test and evaluate the final developed idea will meet this requirement. Testing must be formally planned and implemented. Appropriate tests might include using a product or getting others to use it.

A scientific or technical test could also be appropriate for some focus areas. Whichever method is thought by the candidate to be appropriate -there must be formally presented results. The results should be presented in real time, clearly and concisely.

Many candidates are still using customer surveys; some of these produce low level numerical data, which was of little value. Candidates should be encouraged to deepen the level of their analysis. It is worth emphasising again that real time evidence is required.

Copying out neatly the responses of others is counter productive-it could actually result in reduced marks if there was no real evidence of real people being involved. Presenting blank questionnaires in this section should be discouraged.

Ongoing comments from Moderators:

- Test rigs are still being produced rather than testing the final design. (these are still acceptable but should not be contrived)
- Testing of the product often involved a customer survey or a questionnaire, which produced low-level numeric data.
- Some excellent examples of testing by outside agencies related to the chosen product.
- Videos used well by centres using PowerPoint in this section.
- Centres should make candidates aware of the need to plan as well as carry out testing; this feature is often omitted and leads to moderation adjustments. In general if no planning is evident marks should not be awarded in the top band.
- Appropriate testing is open to interpretation but many centres are awarding marks for limited testing – a questionnaire to friends seems to be the order of the day for many. PM note – this is a growing and worrying trend where there is lack of formal planning and superficial data.
- *This section has a relatively high proportion of the total marks 10%! –nearly equating to the whole of the marks for the creative ideas.*
- *Appropriate testing is open to interpretation and many centres are awarding high marks for what moderators consider to be inappropriate (very limited) testing:*
- *A questionnaire to friends seems to be the order of the day for many.*
- *A few more centres made use of video feedback from peers.*

Centres need to critically analyse what is appropriate for candidates working at this level

Produce a summary of the results of the product development with detailed analysis of how the prototypes and final tests contributed to establishing the validity of the chosen idea.

Present one further improvement in detail. (8) (2 x A3/PP)

In addition to the presentation of the final test results, Candidates should summarise the results of their prototyping and suggest one further possible improvement to the product. There are three distinct sections to this assessment criterion. For marks in the top band, all three areas need to be considered. Better candidates show a clear annotated sketch of a further improvement. Analysis of results is also a more complex matter than simply stating results in a table.

Ongoing comments from Moderators:

- Some candidates completed a separate section as a conclusion; others relied on the summary produced during the development section.
- Centres are awarding high marks in this section without addressing all three aspects.

- *Many centres are awarding inappropriate marks just for the analysis of the testing – this section requires a broad look back at the whole process of development. Marks can be reduced if there is not a reflection on the whole process.*

Communication (8 marks)

Use a wide range of high quality text, graphical techniques, digital technology, and interactive dialogue as appropriate to present information. (8 marks All 20 A3 sheets/PP slides)

The use of ICT must be included in the range of communication techniques used in the presentation of the folder; an over-dependence on the use of ICT/CAD should however be avoided. A combination of different approaches is to be encouraged. Candidates should not over enhance the background of their ideas sheets if this impairs the clarity of presentation.

Many moderators reported again that it is hard to read through some ‘over decorative backgrounds. Some candidates spend a disproportionate amount of time in enhancing the appearance of their pages, often at the expense of clarity. Candidates presenting on CD still need to provide evidence of annotated sketching.

This assessment requirement is not met by scanning in a few small images amongst other computer-generated designs. Many candidates try to avoid this issue.

- For this specification the use of ‘real time digital images ‘ is mandatory - they have to be used to record evidence of work as it actually happens.
- OCR is encouraging the use of short video clips, with sound bites (interactive dialogue) recorded as part of an E-Portfolio on a CD.
- If the preferred option is to continue to use a paper portfolio - Digital photographs must be used and interactive dialogue must be presented in alternative forms which show a positive response to the first hand opinions of others. Overlay sheets could provide an opportunity for comment without affecting the quality of candidate presentation. Comments should not be retrospective and re-typing should be avoided.
- Communication in this specification relates to the whole product study.
- Candidates should not over-enhance the background of design sheets.
- The use of Arial 10 pt (min) should be encouraged for PowerPoint presentations – this is widely available and does not corrupt.
- Additional steps should be taken for the next session to ensure that files produced by candidates using PP2010 can be viewed fully on a standard pre 2010 XP laptop.
- The overall ethos for this specification is based on ‘real time recording ‘of events as they actually happen. The expectation was that the majority of centres would submit projects as e-portfolios - this remains the OCR preferred option.

Ongoing comments from Moderators:

- The vast majority of folders were well organised and matched the layout of the mark scheme.
- Many cases of imaginative use of digital technology and some interactive dialogue. Centres should be encouraged to use digital technology to enhance the quality of the candidates work.
- Centres should be encouraged to develop e-portfolios at the earliest opportunity.
- Candidates using PowerPoint are advised not to over-enhance their presentations as dynamic effects can detract from academic content.
- Some candidates are still spending a considerable amount of time detailing the manufacture of models - there are no marks for this.
- Many centres still appear to be using A3 paper folders.
- *This session the majority of presentations were through e-portfolios.*
- *Marked fairly accurately again this year - centres are slowly realising the importance of interactive dialogue, but only a few candidates go out of their way to highlight it in their folios.*
- *One centre submitted 'Publisher files' – This is not the OCR preferred format.*

Summary of Main features for Unit F522

- The ethos of the Unit remains -A single specific named product is selected and shown in use - a detailed description of the product is given together with needs of manufacturer and consumer. Key criteria are identified. Throughout the study an identified improvement is developed, tested and evaluated.
- A 'real time' digital image of the selected product in use will be an essential feature.
- Products for analysis can be selected from any of 8 different focus areas:
- Built Environment and construction, Engineering, Food, Graphic Products, Manufacturing, Resistant Materials, Systems and Control, Textiles.
- Work can be presented on 20 sheets of A3 paper or CD ROM equivalent to current OCR approved standard. (currently PP)
- Please consult the OCR guidance booklet for submitting E-Portfolios. In particular guidance on 'Pack and Go' or 'Package for CD' facility for PowerPoint. Videos will not work without this facility being used. This booklet stipulates acceptable formats and should be strictly observed.
- For the Product Study please do not over enhance backgrounds.
- Please use Arial font at least 10pt - this is widely available - can be read easily - does not corrupt.
- If video clips are used: 3-5 of no more than 20 sec. each would be appropriate. - Make sure they work from an individual CD on an independent stand-alone laptop.
- A candidate must submit either an A3 paper folder **or** an individual CD **not** both.
- A Centre can submit some candidate's work as A3 paper folders and some as CD's.
- Centre and candidate name and number must be on all paper and individual CD's.
- CD's must have full details on both the outside cover and written on the actual CD.
- Work must be recorded in real time and digital technologies must be used.
- The ideas section and modelling are linked in a section called 'Design Development'. The approach to this section will differ depending on the focus area studied by the candidate. The key thing is that the development is appropriate to the product and the focus area.
- For this specification prototype modelling should be fully integrated in to the development of creative ideas and ongoing evaluation. Different focus areas should respond with an appropriate balance of prototyping, which suits the development of improvement for their selected product.
- Centres and candidates should note that creative /innovative ideas should be presented through a wide range of high quality annotated sketching. It is essential that this is represented in both A3 and CD based projects.

- It is important that all focus areas do respond with presenting an appropriate range of prototyped developments.
- One single 'final prototype' is not within the overall ethos of the specification.
- The requirement to make a test rig is no longer necessary this has been replaced with the need to plan and implement an appropriate test on the final developed idea it is however still possible to submit one if it is considered an appropriate test.
- Communication skills should include the use of digital technology, and interactive dialogue - candidates who fail to use these techniques should be marked in the lower bands.
- Interactive dialogue involves discussing the selected product/ comparative products /prototype development/ongoing evaluation and testing with others and responding to suggestions made.
- It could be used in other sections – many candidates use this feature to advantage in the moral implications section.
- In all cases evidence of interaction should be recorded in real time with the active comments of those involved recorded first hand and not retrospectively. Re-typing of genuine first hand comments is totally counterproductive and should be avoided.

F523 Design, Make and Evaluate

General Comments

There was only a very small entry in this session. The majority of candidates resubmitted coursework from the June 2012 session, and it was evident that efforts to improve the standard and quality of responses had been made.

Candidates had chosen a range of coursework titles that were appropriate to the requirements of the examination. There was considerable variation in complexity and demand, in terms of both designing and making.

It was pleasing to see sensibly scaled projects on the whole, but in some cases the overall complexity of the projects as executed and the range and/or depth of skills involved in the design development, making and evaluating was insufficient for candidates to attain the marks awarded by the Centre.

Generic responses to the assessment criteria were common, where responses did not relate directly to the specific project and which lacked the focus and relevant detail required at A2 level. Such work was often over-rewarded by Centres, where marks in the lower bands were more appropriate.

As in previous session, candidates made limited reference to the commercial and marketing aspects of design and manufacture throughout their projects. It was pleasing, however, to see the benefit of greater reference to the needs of a client or specific target audience, and in some cases regular contact with a specific client at key stages during the designing.

Some candidates' portfolios did not follow the structure of the assessment headings. In these cases it was difficult to follow the process of design and to interpret the evidence presented.

Skills in a wide range of applications using ICT, CAD and CAM were seen, and some candidates presented a professional standard of work. The downloading of large sections of text and images from the Internet is of limited benefit at this level and a more personal and interactive analysis of data and products is recommended.

The majority of candidates entered this session used PowerPoint software to record and present their coursework as an electronic portfolio. Some file sizes were excessive, and in some cases videos did not open directly from the PowerPoint presentation.

Comments on Individual Sections

1 DESIGN BRIEF 3 marks

Present a design brief for a marketable product

Four key areas need to be addressed in this section for maximum marks to be possible:

- Brief details of the CONTEXT – the situation, the problems, the need.....
- A clear and precise BRIEF - what the candidate will be designing, making and evaluating
- Clear reference to MARKETING - details of the target market / client - the important aspects of design and manufacture if this product is to be marketable
- Reference to KEY ISSUES that will be important during the designing.

The marking of this section tended to be lenient when compared with the OCR standard. The majority attained the middle mark band.

2 INFORMATION, INSPIRATION and INFLUENCES 9 marks

**Obtain information relevant to the design of the product
Present a range of evidence to show the sources of inspiration and influences on the designing**

Centres' marks were lenient in most cases in this section. Very high marks were sometimes given when there was no primary research or 'personal-contact' investigation and little inspiration derived from the evidence.

For marks to enter the top mark band (7-9 marks) there must be clear evidence of:

- personal contact (person to person, not via email or letter etc.) with a client or representation of the target market

AND/OR

- personal contact with existing / similar products (the actual products - not internet image, photograph, etc.)
- Quantitative and technical data such as measurements, capacities, weights, and timings, are necessary if high marks are to be awarded.

3 DESIGN SPECIFICATION 3 marks

Produce a design specification for the product

Centres' assessments in this section tended to be lenient when compared with the OCR standard.

For the highest mark to be awarded in this section, candidates must state detailed requirements by reference to specific aspects of the product, including technical, numerical, measurable targets. This will include sizes (eg maximum or minimum/range of adjustments, positions), capacities, weights, quantities, nutritional values, costs/budgets, performance, life span, and features required, wherever possible. Candidates' responses mostly fitted the descriptor for the middle assessment box, with very few candidates scoring full marks.

4a DESIGN, DESIGN DEVELOPMENT and MAKING 57 marks

- **Demonstrate competence in the design, design development and making of the product, to include the following package of evidence:**
- **the generation and exploration of design possibilities**
- **the use of digital technologies**
- **experimenting and modelling**
- **the refining and defining of a final design through ongoing evaluation, and**
- **the planning and making of the product**

The package of evidence presented by candidates in this section should include all five key areas listed above.

The overall sophistication, difficulty, and intellectual challenge involved in the designing and making will influence marks in this section. A simpler project will need to be carried out in greater depth to achieve the same marks as a more complex project.

In general, candidates displayed an integrated approach to designing, with freehand sketches, 2D and 3D modelling including computer modelling and evaluative commentary used to communicate design thinking and a progression of design.

In several cases, Centres' marking in this section was lenient when compared with OCR benchmarking and standardising examples.

- **the generation and exploration of design possibilities**

Candidates produced a range of initial design possibilities, although some showed little innovation or exploration and were based on fairly obvious commercially available designs. In a significant number of cases a more thorough development phase (to expand and confirm design detailing) was needed rather than a jump from a chosen design concept to final chosen product.

- **the use of digital technologies**

Digital technology such as photography, scanning, CAD was used, and videos in e-portfolios. Also CAM was used in the modelling and making processes, with candidates usually presenting appropriate evidence to support the Centre assessments.

- **experimenting and modeling**

To raise attainment in this section, candidates are encouraged to further expand their design development through modelling and experimenting. The benefits of using modelling and trials as a means to further explore ideas, to develop the design, and to obtain helpful client feedback cannot be overstated.

- **the refining and defining of a final design through ongoing evaluation**

Greater attention to technical aspects in the refining and defining stage of design development is needed to improve candidates' performance in this section. Details of dimensions, materials, construction, ingredients, components, and fittings, are needed to access higher marks. Client or target market feedback is an important element of ongoing evaluation.

Overall, Centre's assessments of the level of competency demonstrated by candidates in this section were generous when compared with the OCR standard.

- **the planning and making of the product**

Centres' assessments were sometimes generous in this section with high marks awarded to well finished but undemanding products. Some candidates included evidence of planning but this was often more of a retrospective log or diary of making.

4b INNOVATION 15 marks

Show innovation

An assessment of the innovation shown will be influenced by the overall complexity, challenge, and level of difficulty involved in the project as a whole.

Marks in this section were generally in line with the OCR section, and *'proportionate'* to marks in other sections.

5 TESTING and INDEPENDENT EVALUATION of the FINAL PRODUCT 9 marks

Show evidence of the testing of the final product against the specification

Identify and state strengths and weaknesses in the product

Respond to independent evaluation

There are three clear requirements for candidates' responses if they are to satisfy the assessment objective:

- TESTING to the Specification
- STRENGTHS and WEAKNESSES
- INDEPENDENT EVALUATION

All three elements need to be covered thoroughly and in depth for the highest mark to be supported. In most cases the Moderator was unable to confirm high marks awarded by the Centre where candidates had not clearly addressed all three requirements.

6 MARKETING PRESENTATION 15 marks

Using appropriate techniques create a marketing presentation suitable for the final product

It is recommended that Centres make the teaching of the principles of marketing a higher priority. In a number of cases candidates did not show consideration of the basic aspects of product distribution, selling, and promotion.

For marks in the highest mark band to be awarded, a thorough, in-depth coverage of all key aspects is needed, including designs for promotional materials such as posters, leaflets, advertisements, presentations, and websites. Responses covering a more limited range of aspects in depth, or a wider range in less depth, should be given marks in the middle mark band.

Specific marketing aspects needing consideration in this section include:

- The 'Unique Selling Proposition' (USP)
- The '4 P's of Marketing' – Product, Price, Place, and Promotion
- Suitable media for the promotion of the product
- Product identity and branding
- A product 'logo' or trademark
- Packaging - the presentation and protection of the product.

7 REVIEW and REFLECTION 9 marks

Review and reflect on the effectiveness of the designing and making process that led to the final product

Consider the possible wider implications and impact of the product, including possible future developments

There are three clear requirements for candidates' responses if they are to satisfy the assessment objective:

- REVIEW and REFLECT
- WIDER IMPACT
- FUTURE DEVELOPMENTS

All three elements need to be covered thoroughly and in depth for the highest mark to be supported. In most cases the Moderator was unable to confirm high marks awarded by the Centre where candidates had not clearly addressed all three requirements.

Specific considerations in this section include:

- An insight into the process of designing and making
- Honest comments about the learning that has taken place.
- Use of Life-Cycle Analysis (LCA) to evaluate the wider impact of the product.
- Moral, ethical, and sustainability issues, together with economic and manufacturing issues.
- The likely success of the product in the market place.
- Developments relating to potential industrial and commercial production (diagrams).
- Future developments including quality improvement or design variations (diagrams).

F524/01

General Comments

The most popular question was Question 6: Resistant Materials followed by Question 4: Graphic Products and Question 5: Manufacturing. There were an increased number of candidates attempting Question 3: Food.

The vast majority of candidates fully complied with the rubric but a very small number attempted more than one question. This should be discouraged as the quality and detail of the response for this paper would be limited and it would restrict the amount of time that they spend on the F524/02 paper. This consequently impacts upon the overall mark.

Parts (a), (b), (c), (d) and (f) are common across all questions.

Part (a) was answered well with most candidates giving at least two justified design requirements for the given product. Some candidates did not justify their design requirement or gave brief, generic product requirements and did not receive credit.

Part (b) was also well answered. Most were able to give two benefits of automated systems. Increased accuracy and efficiency and lower labour costs were the most common responses.

There were some excellent responses to part (c). Most candidates described the responsibility of employers to ensure that the workplace, plant and machinery are safe and that safe practices and procedures are in place. A number of candidates did not achieve full marks by giving very brief descriptions of school workshop practice with little reference to the Health and Safety at Work Act.

Part (d) was generally well answered. A significant number of candidates lost marks by not referring to examples.

Part (e) assesses specific material content from the focus area.

Most candidates answered (e) (i) well, stating a specific material example with appropriate properties or performance characteristics given. In some cases, reasons for choice of material were not related to the requirements of the product in question.

For part (e) (ii), most questions include the instruction for candidates to 'Use a flowchart and/or annotated diagrams to support your answer'. In most cases candidates made the decision to use annotated diagrams to ensure that they include sufficient detail to access higher marks. Some candidates produced very detailed and full flowcharts, which included the same level of technical detail. A significant number of candidates however produced a flowchart with very limited detail to describe the given process, and consequently did not achieve the higher mark range.

There was a wide and varied range of appropriate and feasible manufacturing methods proposed for part (e) (ii).

A number of candidates did not fully comply with the rubric for (e) (ii). Some candidates missed key elements of the question eg batch size was not considered for some questions. For Question 6, it would be very unlikely that a batch of 50 components would be injection moulded. Part (f) is a 'discuss' question. Candidates were generally well prepared to raise and explain a range of issues and include supporting evidence or examples.

There was a wide range of responses to part (f), many candidates achieving very high marks. Most candidates raised specific issues relating to pollution. Answered were generally full and detailed. Some candidates discussed generic green issues with limited reference to pollution and consequently did not access the higher mark range.

A number of candidates missed out on achieving full marks by not including additional evidence or specific detail/examples to support their answer.

Further comments related to parts (e) and (f) are referred to in the Comments on Individual Questions.

Comments on Individual Questions

Question 1 Built Environment and Construction

A few candidates attempted this question. Whilst some had appropriate knowledge and understanding of surface finishes a significant number attempted this question with no understanding of accepted methods and fixing techniques.

Question 2 Engineering

Very few candidates attempted this question.

Question 3 Food

It is pleasing to see that a small number of candidates made successful attempts at this question. Most were able to explain the reasons why Daily recommended Values are printed onto food packaging and produced outline descriptions of the manufacture of pre-packed sandwiches.

Question 4 Graphic Products

A popular question. For (e) (i) a number of candidates correctly provided specific details of the material to be used for the pop up card. Whilst there were a number of very good answers to (e) (ii), a significant number produced very brief flowcharts, lacking in detail. The best responses made good use of annotated diagrams, in some cases as part of a flow chart, to fully describe the process of artwork generation, printing, die cutting, folding and assembling the cards.

Question 5 Manufacturing

A number of candidates attempted this question. For part (e) (i), almost all identified a suitable material with appropriate properties for the table top although a few ignored the stem, where it described the table top as wooden, and gave a plastic material. There were a few excellent responses to (e) (ii). Most candidates produced flow charts (including appropriate sketches) of the machining and assembly of the parts for the table top.

Question 6 Resistant Materials

This was the most popular question with a wide range of responses. There was a wide range of materials proposed for both of the parts of the music stand for part (e) (i). The music sheet holder was the most popular choice. Many responses to (e) (ii) were outstanding; fully detailed methods describing the production of a batch of 50 parts, including details of the jigs and formers required. A wide and varied range of appropriate manufacturing methods was given.

Some candidates described methods, eg Injection moulding, which would not be appropriate for such a small batch.

Question 7 Systems and Control

There was a very limited response to this question. Most candidates correctly drew a labelled diagram of a mechanism to provide the reciprocating or oscillating motion for the brush head for (e) (i).

A few candidates achieved high marks by drawing an appropriate circuit diagram of a timer to provide bleeps every 30 seconds whilst in use. Most gave full details of relevant calculations.

Question 8 Textiles

Most candidates who attempted this question were able to give the appropriate characteristics or properties of closely woven polyamide fabric that made it suitable for a work apron in answer to part (e) (i).

There were some outstanding responses to part (e) (ii). They were often fully detailed descriptions of the manufacture of the work apron and were mostly a combination of flowchart and annotated diagrams.

F524/02

General Comments

The format of this paper and the generic mark scheme have remained unchanged for a number of years. The performance of candidates was broadly similar to that of previous sessions; some areas of the assessment are completed well but others remain relatively weak.

Comments on each of the marking criteria:

Specification Points (S):

Candidates are asked to write three specification points. To be awarded full marks each point must be directly relevant to the brief and justified in relation to the function of the product, the potential user or the manufacturer of the product.

Many candidates continue to lose marks in this section by simply repeating information given in the question or making generic points relating to issues such as the need to be cost effective, aesthetically appealing or ergonomically suitable. Factors such as these are relevant to *all* products so to be given credit in this section they must be given more specific detail and be carefully justified indicating more specifically how each would influence the design of the product.

Candidates are strongly advised to consider the key functional aspects of the product when writing their specification points. All specification points should be over and above the basic outline for the product set out in the question.

Range of Ideas (R):

To achieve high marks in this section there are two complementary demands: firstly to produce a number of **different** concept solutions to the design brief set in the question, secondly to show development within these concepts to provide details of possible alternatives to better suit the needs of user and / or manufacturer. Particular credit is given for innovative ideas, which show an original approach to the design brief.

The majority of candidates performed quite well in the first of these demands but many failed to reach the higher marks because they showed little if any evidence of development beyond the initial concept.

Technical Detail (D):

- Assessment of this criterion was based on three strands:
- consideration of methods of construction, assembly or manufacture,
- understanding of suitable materials, components, or ingredients
- details of dimensions or quantities.

At this level of examination candidates are expected to have detailed knowledge of materials and components, and how these are used to construct, assemble and manufacture commercial products from their focus area. In this unit they are expected to be able to relate this knowledge to their own design proposals. The more successful candidates showed good subject knowledge by offering realistic options for construction and justified choices of materials by reference to their properties and performance.

In some cases suggestions for construction and materials were inappropriate, whilst a significant number of candidates continue to make no reference to specific materials or construction. No credit is given for generic terms such as 'wood', 'metal', 'plastic' or 'card'.

A significant number of candidates draw detailed diagrams of manufacturing processes, such as injection moulding. This is unnecessary and no additional credit is given for these diagrams.

In most cases dimensional detail was somewhat lacking with only overall sizes given. For full credit in this area at least some more detailed dimensions must be given, for example thicknesses of material or sizes of standard components that would be used to produce the product.

Evaluation of ideas with reference to specification and volume production (E):

Many candidates seem to confuse descriptive annotation with truly evaluative commentary. Relatively few consider the strengths and weaknesses of their designs from the point of view of the end users, retailer or manufacturer. This is all the more disappointing because the ability to evaluate design proposals is assessed in the AS Advanced Innovation Challenge and both AS and A2 coursework units.

Unfortunately in many cases comments were summative rather than evaluative becoming simple statements that did not show any evidence of balance in value judgement.

Final Developed Outcome (F):

This section has improved significantly over the last few sessions with most candidates showing a complete final idea with specific features identified and explained.

A significant number of candidates produce detailed final evaluations sometimes with a summary of strengths and weaknesses for the product. This is not necessary to achieve high marks and it is clear that some candidates must spend a considerable amount of time on this final sheet.

Communication (C):

The mark awarded for communication is based on a combination of factors:

- the overall clarity of presentation evident in the layout of the three design sheets of the paper
- the range and quality of graphical skills evident
- the use of clear annotation which communicates the quality of the candidate's design thinking
- The more able candidates show impressive skill, managing to communicate broad concepts whilst also including useful detailed sketches and informative notes on clear, attractive sheets.

Comments on individual questions

The number of responses to some questions was quite low so it is impossible to give sensible general comments to all questions. **This applies to questions 1, 3, 7 and 8.**

Question 2: A service stand for bicycles (Engineering focus)

This question was answered quite well by some students who showed good technical knowledge. In some cases the range of concept ideas was relatively small but this was compensated for by more thorough development of details of parts of the design.

Question 4: A product to display and dispense leaflets (Graphic Products focus)

A range of responses was seen to this question. The more successful candidates concentrated on the function of the product – its three-dimensional structure and construction. Some candidates spent too much time considering the layout and content of the leaflets that would be displayed in the stand.

Question 5: A (flat pack) storage unit for video games and equipment (Manufacturing focus)

This relatively popular question was answered by many students who did not understand the implications of flat pack construction, for the manufacture of products. The more successful candidates considered the use of knock down fittings, slotted and clipped construction together with the need for simple assembly to suit the needs of the end user.

Question 6: A toy vehicle that children can sit on (Resistant Materials focus)

This popular question resulted in a wide range of responses. The majority of concept ideas were quite predictable, being based on typical vehicles from everyday experience. The most significant difference between the most able and the less able candidates was in the level of technical detail shown to make the design function. Better responses included detail of mechanisms and fastenings that would be found on many successful ride-on toys.

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

Education and Learning

Telephone: 01223 553998

Facsimile: 01223 552627

Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

Oxford Cambridge and RSA Examinations
is a Company Limited by Guarantee
Registered in England
Registered Office; 1 Hills Road, Cambridge, CB1 2EU
Registered Company Number: 3484466
OCR is an exempt Charity

OCR (Oxford Cambridge and RSA Examinations)
Head office
Telephone: 01223 552552
Facsimile: 01223 552553

© OCR 2013

