

# **Design & Technology (Resistant Materials)**

General Certificate of Secondary Education **GCSE J306**

General Certificate of Secondary Education (Short Course) **GCSE J046**

## **Reports on the Units**

---

**January 2010**

**J046/J306/R/10J**

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, 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 2010

Any enquiries about publications should be addressed to:

OCR Publications  
PO Box 5050  
Annesley  
NOTTINGHAM  
NG15 0DL

Telephone: 0870 770 6622  
Facsimile: 01223 552610  
E-mail: [publications@ocr.org.uk](mailto:publications@ocr.org.uk)

## CONTENTS

General Certificate of Secondary Education Resistant Materials (J306)

General Certificate of Secondary Education (Short Course) Resistant Materials (J046)

### REPORTS ON THE UNITS

<b>Unit/Content</b>	<b>Page</b>
Chief Examiner's Report	1
A561	5
A562	9
A564 Technical aspects of design and making	13
Grade Thresholds	15

# Chief Examiner's Report

This report provides an overview of the work seen in the written examination Units 2 and 4 and the Controlled Assessment Unit 1, for candidates who took the examination during this series. It precedes a more detailed report to centres from each subject area within the Innovator Suite and highlights general issues that have occurred across the suite of specifications.

*Note: No centres submitted a controlled assessment portfolio for Unit 3 – Making Quality Products, in any of the specifications within the Innovator Suite this session.*

This report has been prepared by the Chief Examiner, Assistant Chief Examiners, Principal Examiners and Principal Moderators and covers all specifications within the Innovator Suite. It should be read in conjunction with the examination papers, the mark schemes, and the marking criteria for assessment given in the specification booklets.

This is the first examination year for the new Innovator Suite.

An important point for teachers to note about the Terminal Rule in relation to this suite of specifications and re-sits:

The terminal rule is a QCDA requirement. Candidates must be entered for at least two units out of the four (full course) at the time that they certificate. i.e. the end of the course.

**Please be aware that the QCDA rule states that marks scored for terminal units will be the marks used in the calculation of candidate grades. Therefore, if one of the candidate's terminal units is a re-sit and the mark is poorer than the original mark, the poorer mark will be used to calculate the final grade for that candidate.**

Obviously, the terminal unit marks are then added to the highest marks scored in the other units making up the certificate.

Teachers are reminded that it is also a requirement of QCDA that candidates are now credited for their accurate use of spelling, punctuation and grammar across all four units.

## WRITTEN EXAMINATION - UNITS 2 AND 4

The overall performance and range of results for Unit 2 varied considerably. Many of the candidates demonstrated a general awareness of the main points and issues linked to sustainable design and the 6Rs.

In **Unit 2 - Section A** of the papers most candidates across the suite attempted to answer some of the questions, some candidates however did give no response answers. Candidates need to be encouraged to have a guess at the multiple choice style of questions.

There was evidence this year that candidates had not been properly prepared for the **Unit 2** examination and in particular;

- Section A, was poorly answered by some of the candidates. It is important to ensure that candidates have an awareness and understanding of trends and innovations in design and manufacture, labelling, packaging and the impact that the design of products is having on the environment, society and the economy.
- Candidates need to be able to identify signs and symbols in particular giving information about materials, products and safety issues in relation to environmental and design issues.
- Candidates must take great care when circling their answers in Section A, that they do not circle more than one answer; completely clear incorrect circles to eradicate confusion in marking.

## *Reports on the Units taken in January 2010*

It was also noticeable that candidates had not read the instructions correctly and centres would benefit from explaining the correct examination procedures and requirements to the candidates.

**Unit 2 - Section B**, showed more varied responses and teachers need to ensure that they read the subject specific reports for further detailed feedback on specific issues and individual question performance.

Generally candidates lacked the specific knowledge and understanding required to answer some questions with rigour. Such answers included:

- 'Environmentally friendly' and 'better for the environment' or 'damages the environment'.
- To 'recycle' and 'recycling' is good for the environment.

Many candidates did manage to use subject specific terminology in their answers which is to be commended.

Candidates have struggled to answer specific questions with regard to 'explain' or 'describe' and have a tendency to list their responses rather than giving justified reasons.

The questions marked with an asterisk \* provided candidates with the opportunity to give a detailed written answer combining good subject knowledge with an ability to produce a structured response. Few candidates were able to do this well, but most candidates did score two or more marks from the six available for this question.

Hand-writing, at times, was difficult to decipher. Centres are reminded that candidates are assessed on spelling, punctuation and grammar in the extended writing question.

It was disappointing to note that candidates entered for **Unit 4** this session, demonstrated a lack of knowledge and understanding relating to the technical aspects of designing and making and in particular, their knowledge of basic techniques when working with materials. This could have been due to candidates not being equipped with the full knowledge base required for this Unit examination. Care must be exercised here when submitting entries for candidates in Years 9 and 10.

Candidates responded well to the design questions. Most candidates included technical details such as techniques, materials, construction details etc, this is to be encouraged. Candidates should be encouraged to make their sketches large and clear and provide meaningful written notes that **add** to the information given in their sketches.

Centres are to be reminded that questions marked with an asterisk\* provide candidates with the opportunity to give detailed written answers combining good subject knowledge with an ability to produce structured, coherent responses. Candidates in general struggled with this type of question format this session.

It is apparent that candidates need to practice examination technique; reading the questions carefully, responding to the instructions given in the questions and having an awareness of the full range of question formats.

## CONTROLLED ASSESSMENT – UNIT 1

Most centres have been prompt in the dispatch of documentation to OCR and moderators. It is important that centres forward form CCS160 in particular to moderators.

The majority of centres encourage candidates to organise the portfolio according to the different marking criteria strands. This is to be commended as it enables the candidates to produce work that clearly shows an understanding of the requirements of each criteria strand.

This is particularly important when the Centre submits work via the OCR Repository, where individual files are used to store portfolio work. Centres need to ensure that candidates clearly label each file using the marking criteria section headings; this facilitates a more effective completion of the moderation process.

Portfolios should be clearly labelled with the Candidate and Centre name and number, with the Unit code and title also evident. *Specification - 5.3.5 Presentation of work.*

It is also recommended that the OCR cover sheet is evident, outlining the theme and the starting point chosen by the candidate. The section included on this sheet for annotation and notes provides an opportunity for teachers to briefly identify and justify where and why certain marks were allocated. This is useful for moderators to give guidance and appropriate feedback to teachers on the Centre report.

It is good practice to ensure that candidates acknowledge sources of information used for the development of their portfolio work. This can be completed through either a concluding bibliography at the end of the portfolio or acknowledging sources throughout the criteria sections where appropriate.

There was evidence this session of strong teacher guidance influencing candidate portfolios. Where this was evident it greatly hampered the candidate's ability to show flair and creativity, and therefore achieve the higher marks.

Centres are to be reminded that the '*controlled assessment task must NOT be used as practice material and then as the actual live assessment material. Centres should devise their own practice material using the OCR specimen controlled assessment task as guidance.*' *Specification - Section 5.2.2 Using Controlled Assessment Tasks.*

Centres are to be commended on the amount of work produced for the Unit 1 portfolio, which has been realistic in terms of the amount produced and the time allocated to this unit – 20 hours.

Candidates must select one of the Themes specified by OCR as a starting point for the portfolio. Centres are however, permitted to contextualise the starting point appropriately to reflect centre resources and need.

Teachers are to be reminded that Themes for Unit 1 are based around environmental awareness and sustainable resources/processes. Therefore, it is considered good practice for teachers to encourage candidates to consider Eco-design and sustainability when making decisions and combining skills, with knowledge and understanding in order to design and make a prototype product. This knowledge base also acts as a 'spring board' to active learning for Unit 2.

Candidates must be able to demonstrate evidence (either written or visual) that they have a thorough understanding and ability to solve technical problems as they arise through the designing and making process, for the marks awarded in this criteria strand.

It was evident through the portfolio that candidates struggled with the critical evaluation section of the marking criteria. Unit 1 requires that the candidate evaluates the processes and

*Reports on the Units taken in January 2010*

subsequent modifications involved, in the designing and making of the final prototype ONLY. Too many references were made to the performance of the prototype against the specification, which meant that candidates' marks were compromised.

It was noticeable that where candidates had scored the high marks, they had used specialist terms appropriately and correctly and had presented their portfolio using a structured format.

# A561

## Introduction

This has been the first opportunity for centre's to enter candidates for this unit in the new Innovator specification and entries at this stage were understandably lower in number than those already entered for the summer 2010 series.

Candidates work will have been completed under "controlled assessment" procedures for the first time and centres are advised to ensure that they apply the correct levels of control to the production of the candidates work as described in the specification. It was felt that there was evidence of strong teacher input which influenced some candidate's folders and our advice would be to take great care when making the distinction between guidance and prescription during these periods. It is essential that candidates have the opportunity to show individuality in the way they approach the various aspects of this unit.

The requirement of this unit to produce a prototype product, as opposed to a quality product in A563, should be seen as an opportunity for candidates to show some freedom for creativity in their design work. It is for that reason, that along with evidence of the more traditional materials and process that we connect with "Resistant Materials" we will also be accepting prototypes where parts of the prototype may be made in foam, balsa, jelutong instead of durable timber, copper instead of steel or silver, plastozote instead of acrylic etc. Which would then demonstrate an understanding of how the "real" product might be made, have most of the function of the "real" product but not be so demanding in time spent on production, finish etc?

Centres should note that the assessment statements are now used as "best fit" descriptors when they are applied to the candidates work and marking should be positive, rewarding achievement rather than penalising failure or omissions. In order to support this there are no longer separate marks given for any of the individual elements of the assessment objective, only an overall numerical value taking into account the quality of all the work produced by the candidate against the related criteria. This is a fundamental difference between the marking in the legacy specification, where there are, in a number of cases, twelve marks and twelve statements. Centres are therefore advised to look at the three main levels of response - Basic ability, demonstrate ability and works competently as a first indication to use when assessing candidates work.

## Administration

This was the first year that postal moderation has been used in Resistant Material specifications and it is encouraging to report that communication with Centres was good and that all assessment material reached the moderators in plenty of time. Centres had provided individual Controlled Assessment Cover Sheets for each candidate with clear and relevant information; however Centres are also reminded that moderators will still need to receive the Centre Authentication form CSS160 in the future.

There were at least two photographs supplied of the end prototype by all Centres and these were supplemented by others that the candidates presented when recording the stages in producing the practical work. These photographs are an important element of the postal moderation process and Centres are requested to ensure that they supply photographs which are of a sufficient size to provide full details of the prototype product that the candidate has produced.



Centres are reminded that there is a full range of documentation, including downloadable forms and other subject specific support materials on OCR's website: [www.ocr.org.uk](http://www.ocr.org.uk).

## **Content**

Candidate's folders were presented in a logical manner that reflected the four marking criteria strands of the innovator specification. As this was a controlled unit there was no indication of the use of formal writing frames although in some centres the format of each candidate's folder was felt to be very similar in content and presentation. As previously stated Unit 561 is a controlled assessment which should be completed in 20 hours of work and it was apparent that most candidates had produced their folders within the allocated time. The need to provide guidance to candidates regarding editing, suitability of content and concise presentation is mentioned in other areas of this report and with such a tight time allowance it is essential that they are encouraged to edit their content so as to avoid duplication or irrelevant material.

## **Performance of Candidates**

The more successful candidates work tended to reflect the mark allocations given for the four headings in the controlled assessment marking criteria for A561. Centres are therefore advised to use these mark allocations in guidance that they may give to candidates as to the amount of time that they should spend on each of the Creativity, Designing, Making and Evaluation elements of this unit.

## **Creativity**

Candidates are required to select a theme set by OCR in the specification for this subject as part of the control guidance for the unit. This theme can, however, be contextualised in order to best suit centre-specific circumstances.

Once selected, the candidate will then need to identify a specific product or starting point that is associated with the theme to complete a product analysis. For example, if the chosen theme is 'Travel' a candidate may decide to design and model a prototype hand held game which can be used 'on the move'.

The use of the word "creativity" as an assessment heading has possibly caused some confusion in centres. It is intended that the word creativity, as used in this assessment strand, should be related to how the candidate shows this ability through the work they present in identifying trends or design features from their research work.

Centres are therefore advised to prepare candidates prior to starting the controlled assessment on how to edit and present this information to the best effect. We are not expecting to see work that is not relevant, informative or focused upon the theme selected by the candidates.

In the final part of this assessment strand the candidates will then be expected to use this information to write a design brief which will improve, modify or develop the product studied.

Successful candidates clearly showed how they had selected their own problem area from the list of controlled assessment themes stated in the specification. They carried out a thorough analysis of one existing product and then by editing information from other similar research they were able to identify what were good design features and explained the significance of any trends in these existing products. By using notes, sketches and photographs they were also able to give examples of intended users and their likely needs when using the product. From this

candidates were then able to analyse the information that they had gathered before using this to generate a concise Design Brief that clearly identified the product and users.

## **Designing**

Candidates should start this assessment by analysing their design brief and the conclusions that they made from their previous research before producing a detailed specification for their own prototype product. A good design specification should provide the candidates with an essential checklist that will support them when developing the product required in this unit of work.

For this cohort of entry the design specifications produced by candidates varied in content and detail, with some candidates producing simple lists that were so generic and prescribed they could well have applied to any design product.

Most of the candidates used freehand sketching to illustrate their initial design ideas with basic annotation, which in some cases provided little in terms of detail or explanation. The use of CAM in the making element was not always supported by evidence of CAD being used in this assessment as part of the developing and modelling process.

Modelling was then used by a number of candidates to develop their design ideas but this was, in many cases, felt to be limited and just completed because it was a necessary requirement of the unit assessment. It is essential that candidates include evidence of modelling work to show how the product has developed from their earlier designs and to make informed decisions about materials and construction techniques in order to gain full credit for their work.

Most candidates identified a chosen idea but few fully justified their final choice or provided sufficient detail of the product that they wished to make.

Successful candidates having analysed their brief and the conclusions that they had reached from the research were then able to produce a clearly structured design specification which related to the product that they intended to design. Design ideas were presented using a range of graphic techniques, including the use of CAD, which were supported by detailed annotation. Modelling helped them to develop the final solution where they were then able to give details of sizes, possible materials, likely construction methods and processes. Reference to the specifications then helped them to give reasons for the choice of the prototype product that they intended to make.

## **Making**

All of the candidates were able to complete a suitable prototype product within the allocated time for this unit; however, the use of CAM to produce the final product was evident in most of the candidates work submitted for moderation with few if any other processes used in the manufacture. In some cases the final solution seemed to “appear” without any supporting evidence given by the candidate in the folder work and candidates are advised to provide screen shots or CAD drawings if this process is used as one of the construction techniques.

Candidates had planned the stages of making their prototype product, although there was felt to be evidence of teacher input in some centres as the candidates work was very similar in content and presentation. Encouragingly most candidates had then included a record of the key stages in making the prototype product using notes and photographic images. Only a few had then taken the opportunity to use this record to highlight any technical difficulties and problems they had encountered in construction and how they had overcome them.

**Successful candidates** made appropriate choices of materials, tools and equipment and worked skilfully and safely to produce a high quality prototype product suitable for the intended user. They showed evidence of having used a variety of making processes in producing the product and where CAM had been used as one of these techniques they provided supporting evidence in the form of screen shots which indicated understanding and ownership of the manufacturing system. Planning the stages of manufacture had clearly been produced before they started the practical work and they were then able to demonstrate their ability to solve any technical problems in the record they made of the key stages in creating the prototype through comprehensive notes and visual evidence.

## **Evaluation**

Nearly all of the candidates based their evaluation on their prototype product and how it functioned and as result of this all the modifications proposed by candidates were focused upon improvements to the completed prototype product. Centres are therefore reminded the Specification for Unit A561 clearly states that the evaluation should be of the complete designing and making process and not how well the final product functions. Furthermore that any modifications proposed by the candidate should be of ways to improve the designing and making process that the candidate has produced in completing this unit of work only.

**Successful candidates** critically evaluated the processes involved in designing and making the prototype in this unit of work as opposed to the product itself (as in unit A 563). With reference to their initial planning, and the record they produced of the stages in making their prototype product, they were then able to reflect and suggest modifications to improve the design, modelling and prototyping processes using specialist terms with a clear emphasis on the correct use of spelling, punctuation and grammar.

## A562

Candidate's knowledge and understanding of this area of the specification was good. In particular candidates achieved very well on Section A with nearly all candidates achieving at least 10 marks from the fifteen available for this question.

It is pleasing to report that there were few questions with a significant number of "no response" from candidates.

The questions marked with an asterisk\* provided candidates with an opportunity to give a detailed written answer combining good subject knowledge with an ability to produce a structured response. Generally few candidates were able to do this but most candidates did score one or two marks from the six available for this question.

It should be noted that materials used for finishing resistant materials should also be considered in terms of sustainability by candidates as well as the resistant materials themselves.

### **Section A**

- 1 About 80% of candidates correctly identified gas as a non-renewable resource.
- 2 Most candidates showed a good understanding of primary recycling by correctly identifying that leaving a product to biodegrade is not an example of primary recycling.
- 3 Nearly half of candidates correctly identified Risk assessment as the correct name for assessing potential dangers in a factory.
- 4 More than two thirds of candidates correctly identified that the symbol shown stands for Managed Forest.
- 5 About 85% of candidates correctly identified oil as a non-renewable resource.
- 6 More than two thirds of candidates stated that the meaning of Biodegradable is that a material will naturally rot in the ground.
- 7 More than 80% of candidates correctly stated that recycling is the term used when a product is reused or its materials made into another product.
- 8 There was considerable confusion among candidates between "product evaluation" and "product analysis". About a quarter of candidates correctly referred to some aspect of product analysis such as looking at size, shape, materials, and methods of construction or finish.
- 9 This question was poorly answered, many candidates simply guessing what the "c" and "e" could stand for. About a sixth of candidates correctly identified that this symbol means 'conformitee with European standards'.

## Reports on the Units taken in January 2010

- 10 This question was well answered with more than 80% of candidates correctly naming oil or gas.
- 11 This question was well answered with more than 70% of candidates correctly saying that it true that many plastics are made from oil.
- 12 About two thirds of candidates correctly said that it true that ethnic trading is where the basic rights are protected.
- 13 More than 80% of candidates correctly said that it is false that Aluminium drinks cans are difficult to recycle.
- 14 More than 80% of candidates correctly said that it is false that all plastics are biodegradable.
- 15 More than 3/4 of candidates correctly said that it is true that pine is a sustainable resource.

### **Section B**

Some of the handwriting was very difficult to decipher. Candidates should be reminded that answers that cannot be read are likely to score zero marks.

#### **Question 16**

- (a) Most candidates were able to identify that disposal is the last stage of a lifecycle analysis of a product but only around 10% of candidates were able to name transportation of the product for the second mark.
- (b) This question was well answered with 60% of candidates achieving 1 or 2 marks.
- (c) A lot of candidates lost marks by **not** reading the question carefully enough, giving interesting and accurate information, but not the answer to the set question. For example, a number of candidates gave answers related to the **causes** of global warming (*cars, planes, etc.*), but the question was asking for environmental **effects** of global warming (*melting polar ice caps, rising sea levels, changes in weather patterns, etc.*). However, more than 50% of candidates did achieve 1 or 2 marks from the 3 available.
- (d) (i) This question was well answered with most candidates being able to give at least 2 of the remaining 6 R's.
- (d) (ii) This question was about how products can be **designed** to be more environmentally friendly. Many candidates did not consider this in their answers and gave general information relating to Refuse and Rethink which did not answer the question set. Candidates frequently failed to give sufficient detail in their answers to gain marks but nearly 50% of candidates did gain 2 of the available 4 marks.

### Question 17

- (a) There were some excellent, well-informed and well articulated arguments over the choice of either wood or plastic for the easel. Clearly some candidates had been well prepared for this kind of question, using the correct technical terms, using all of the available space, and structuring their answer in manageable paragraphs. However, there were some answers that failed to address the environmental issues of the materials and the manufacture of the easels, with points about safety and usability of the products being common. About 70% of candidates did achieve 1, 2 or 3 marks but only about 8% scoring 5 or 6 marks.
- (b) This question was not well answered. Centres are reminded that materials applies to finishes used on resistant materials as well as the materials themselves. Some candidates did correctly name wax but very few scored the second mark.
- (c) This question was about **environmental** advantages of selling easels close to the workshop where they are made. Many candidates responded with general advantages to either the supplier or the consumer that were not related to the environment so failed to gain credit. Nearly 50% of candidates did achieve 1 mark with answers relating to less fuel used or less pollution produced.
- (d) (i) Knowledge of 'built in obsolescence' was weak. With only around one third of candidates achieving the 1 mark available.
- (d) (ii) This question was not well answered, with about 60% of candidates failing to score any marks. About half of the candidates who did achieve marks failed to give enough detail to gain the second mark available.
- (d) (iii) This question was not well answered, and followed a very similar pattern to question (d) (ii) with about 60% of candidates failing to score any marks. About half of the candidates who did achieve marks failed to give enough detail to gain the second mark available.

### Question 18

- (a) (i) and (ii) This question required explanations of two technical terms: function and aesthetics. Candidates should be advised to consider carefully the number of lines and the number of marks available for an answer. A four-mark question would normally require four points in the answer. Many candidates gave very simplistic explanations of the two terms, such as '*how it works*' and '*how it looks*'. Clearly this is not sufficient for full marks. The functional aspects of the clock are to do with: *telling the time, being able to see what time it is from a reasonable distance, keeping accurate time, easy to reset the time, easy to change batteries when necessary, hang on the wall etc.* The aesthetic aspects of the clock are to do with: *the colour, the texture, the decoration, the appeal and the style, the size, the proportions and the finish, etc.*
- (b) This question was well answered with nearly 50% of candidates gaining the two marks available. A wide variety of correct answers were given relating to materials, production methods, power source, ability to recycle etc.
- (c) (i) This question was well answered with most candidates giving the correct meaning of the symbol. A number of candidates incorrectly gave the meaning as made from recycled materials.

*Reports on the Units taken in January 2010*

- (c) (ii)** This question was well answered with about 70% of candidates gaining at least one mark of which about half gave sufficient explanation to gain the two marks available.
  
- (d)** This question was not well answered. Many candidate simply named a safety device such as goggles, mask or guard but failed to give any further detail for the second mark to be awarded.

# A564 Technical aspects of designing and making

## General comments

Candidates need to make their sketches large and clear and provide meaningful written notes that **add** to the information given in their sketches.

Questions marked with an asterisk\* provide candidates with the opportunity to give detailed written answers combining good subject knowledge with an ability to produce structured, coherent responses.

In addition, candidates should improve their examination technique by reading the questions carefully and responding to the instructions given in the questions.

## Comments on specific questions

### Section A

- 1 (a) (i) Candidates could name a tool to mark out the shape and cut off the waste but only a minority could name a tool used to make the sawn edge flat. 'Sand paper' was usually named to make the surface smooth.
- (ii) Many sensible safety precautions were given when cutting off the waste, although some answers were not specific to the tool named earlier.
- (b) A variety of joints were provided, including butt, lap and dovetail. A mitre joint, without additional strengthening, was not appropriate. Butt joints without the use of nails or dowel did not receive maximum marks.
- (c) Most answers were disappointing. The hardwood keys could be supported by means of two rails and kept apart by some form of 'spacer'. Some potentially good ideas lacked informative additional written notes.
- 2 This question tested candidates' practical knowledge of working and designing with mild steel. Generally the results were disappointing.
- (a) (i) Very few candidates could name the mitre joint shown.
- (ii) Some candidates named a hacksaw and file correctly as the tools used to cut the tube and then make the cut surface smooth. Few could name a scribe as the correct marking out tool. Often, woodworking tools were named.
- (b) (i) The majority of candidates understood the purpose of emery cloth in the preparation carried out before brazing.
- (ii) Very few understood the purpose of flux.
- (iii) Some candidates stated correctly the purpose of the brazing rod.



- (c) The majority of candidates were unable to provide a practical device to secure the safety gate to the wall. Some potentially good designs lacked clarity in the sketches and failed to provide sufficient informative written notes.
- 3
- (a) (i) Whether candidates chose mild steel or aluminium did not affect the general lack of knowledge of performance characteristics demonstrated. The most common answer for both metals was 'strong' or 'stronger'. Candidates must be able to give **specific** performance characteristics relating to materials.
  - (ii) Most candidates suggested the use of a sleeve or bush inserted into the hole to prevent wear.
  - (b) No candidates were able to name polymorph as a suitable 'smart' material from which to make an ergonomic handle.
  - (c) (i) Some candidates showed good details, naming screws as the method of fixing the footballer to the rod. Occasionally, candidates provided details in both the front and end elevations which was helpful.
  - (ii) Candidates did not demonstrate an understanding of the cost effectiveness of the injection moulding process.
  - (d) There were many potentially good ideas for a scoring system. Often candidates concentrated on drawing the whole cabinet of the game rather than on the specific area where the system would be fixed.

## Section B

- 4
- (a) Candidates demonstrated a reasonable understanding of the environmental benefits of MDF, the most common response being that 'trees are not cut down'.
  - (b) Some of the joints shown could be used to construct small boxes but candidates failed to grasp the important reference to the thickness of the MDF being only 6mm. This meant that traditional joints would need some form of reinforcement such as a corner block.
  - (c) Most candidates were able to show a potentially good modification to store paper clips. However, most ideas lacked the support of informative additional written notes.
  - (d\*) Some candidates achieved 1 or 2 marks for this question, providing some relevant points. However, a list of bullet points is not an appropriate response to a question which starts with the command word 'Discuss...' and gives candidates 20 lines for their answer.
- 5
- (a\*) In order to achieve maximum marks for this type of question candidates needed to provide details of manufacture for **both** tables then decide objectively which would be the cheaper to batch produce. As in Question 4(d\*) a list of bullet points is not an appropriate response.
  - (b) The majority of candidates described the use of a coping saw to remove the area. This would not work. The best methods stated that a hole would be drilled first, then a blade from a jig saw or Hegner saw would be inserted to cut out the area. The names of tools and equipment used were generally technically inaccurate.

# Grade Thresholds

**General Certificate of Secondary Education  
Design and Technology (Resistant Materials) (J046 J306)  
January 2010 Examination Series**

## Unit Threshold Marks

Unit		Maximum Mark	a*	a	b	c	d	e	f	g	u
A561	Raw	60	54	48	42	36	30	24	18	12	0
	UMS	120	108	96	84	72	60	48	36	24	0
A562	Raw	60	50	44	38	33	27	21	16	11	0
	UMS	80	72	64	56	48	40	32	24	16	0
A563	Raw	No Candidates									
	UMS	120	108	96	84	72	60	48	36	24	0
A564	Raw	60	54	48	42	36	30	24	18	12	0
	UMS	80	72	64	56	48	40	32	24	16	0

Statistics are correct at the time of publication.

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

**OCR Customer Contact Centre**

**14 – 19 Qualifications (General)**

Telephone: 01223 553998

Facsimile: 01223 552627

Email: [general.qualifications@ocr.org.uk](mailto:general.qualifications@ocr.org.uk)

**[www.ocr.org.uk](http://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