OCR
RECOGNISING ACHIEVEMENT

GCSE

Design & Technology (Electronic Control systems)

General Certificate of Secondary Education **GCSE J301**

General Certificate of Secondary Education (Short Course) **GCSE J041**

Reports on the Units

January 2010

J041/J301/R/10J

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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.

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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

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REPORTS ON THE UNITS

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.

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

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.

A512 Sustainable Design

The vast majority of candidates attempted nearly all of the questions, with very few candidates scoring less than 10 marks. Only a few sections were left blank and not always by the weaker candidates. Few candidates gave answers in correct technical detail, but the section B design and general questions were well answered.

The style of questions in section A helped lower ability candidates make a response. Section B did discriminate more and expected higher levels of knowledge and understanding.

There was evidence of some candidates' poor comprehension skills eg misreading what the question asked for and writing about something else, a few candidates' provided correct answers but in the wrong section.

The quality of the handwritten responses proved to be a problem at times and some candidates used a pen that bled through the paper.

Q 1-6 Most candidates were able to gain full credit here. Question 3 had a spread of answers, indicating a lower level of understanding.

Q7 Few correct responses due to a lack of knowledge of FSC or symbol. A common incorrect response was CE.

Q8 The correct response of "thermosetting plastic", was not well known.

Q9 A common incorrect response here was to consider the given voltage.

Q10 A poor response to a relatively basic question.

Q11-15 Most candidates were able to gain credit here, however weaker candidates often answered 12 and 13 incorrectly.

Q16 (a) Answered well by most candidates.

(b) (1) Disappointing response with some candidates missing the point by providing incorrect answers not based upon **new** technology or answers so vague as to be not worthy of credit.

(b) (2) Environmental issues were identified with electricity and using batteries. Stronger candidates connected these with emissions and disposal. A common mistake was to describe issues with nonelectric cars.

(b) (3) Most candidates were able to gain some credit here, with stronger candidates providing comprehensive answers.

(c) (i) A common mistake was to describe energy use in general and not relate it specifically to the case given. The complexity was lost on many candidates.

(c) (ii) Answered well by most candidates, although a number thought that “high up” was a factor.

(c) (iii) Many incorrect responses included “in solar panels” and “in a generator”. Storing energy was not a well understood concept.

Q17 (a) Generally well answered with most candidates achieving some credit here but a common mistake was to confuse operating instructions with specification points.

(a) The reasons for using LEDs was well understood.

(b) Most candidates were able to gain credit here as the mark scheme provided for a wide choice of responses. Strong candidates provided clear modifications with justifications. Some responses were not directed at children as required.

(c) Most candidates were able to gain some credit here but many responses failed to provide examples related to disabilities and only described issues of general design considerations. Answers were variable and sometimes did not match the level of ability shown when answering other questions. Answers that did consider a variety of disabilities sometimes failed to give examples of the modifications necessary for the types of disability. The question required a discussion of disability not just a list. Some candidates mistakenly assumed the question related to the torch in section (c).

Q18 Poor communication and comprehension skills resulted in some candidates providing the same responses to each section or providing the correct response in an alternative section. There was evidence of misreading the question with candidates answering what they wanted to write about rather than addressing the actual issues. Not all candidates held onto the approach of a designer thinking about each aspect but just stated general solutions.

(a) Most candidates were able to gain some credit here.

(b) The correct response was not well known. A common mistake was to describe general pollution issues. Little reference to the 6Rs from the Specification. Often confused with use and lifetime.

(c) Most candidates were able to gain some credit here.

(d) Not well known, too many candidates repeated answers from sections (a) – (c). Some listed the stages in the life cycle.

(e) Again, repetition of answers from earlier parts but most candidates were able to gain some credit. A good number mentioned “taking apart” and “re-use”, many mentioned “not putting into dumps/landfill sites”.

Grade Thresholds

General Certificate of Secondary Education
Design and Technology (Electronic Control Systems) (J041 J301)

January 2010 Examination Series

Unit Threshold Marks

Component		Max Mark	A*	A	B	C	D	E	F	G
A512	**RAW**	60	50	44	38	33	27	21	16	11
	UMS	80	72	64	56	48	40	32	24	16

The total entry for the examination was 291*

* There were no entries for the other units, there was no aggregation.

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

www.ocr.org.uk

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Facsimile: 01223 552553