GCSE

# ICT

General Certificate of Secondary Education **J461**

General Certificate of Secondary Education (Short Course) **J061**

# OCR Report to Centres

# June 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.

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# Overview

It is pleasing to note an improvement in the ability of the candidates to produce clear, well-targeted responses to questions, with the level of response questions in B061 and B063 soliciting some well thought through and knowledgeable discussions. While the majority of candidates do produce some well-considered discussions some are still simply listing vaguely related points.  These questions are an opportunity for candidates to tell the examiner what they know about a topic. Having a focus for the response helps candidates produce better answers.

Many of the questions were well answered but there are still a number of candidates who produce superficial answers to questions and do not have the depth of knowledge required for the specification.  It is vital the concepts in the specification are taught to the students, they cannot answer the questions effectively based just on their life experiences.  It is also important for candidates to cover the whole of the specification; questions can come from any part of the specification.

There were a number of issues concerning controlled assessment summarised in the reports for units B062 and B064, and it is important that centres take due regard of the regulations regarding these units. Centres should note that any form of template, excessive guidance, writing frame, feedback, and re-working of the tasks after assessment is strictly forbidden.

There is also a clear pattern in the controlled assessment units showing that those candidates who organised their work effectively were able to achieve higher marks.  The organisation, often into a single time-based document, telling the story of the development clearly focussed their minds on the task in hand and how it could develop.  Those with many disparate files failed to see the pattern in the development as effectively.  It is important for candidates to submit copies of the final products for moderation to allow the moderator see what has been produced.

Overall the session went well with an obvious improvement in standards across most units and some excellent work from a large number of candidates.  The detailed comments on the five units follow this introduction and there are several items in these that will point the way forward to further improving the quality of work produce. I urge you to read these carefully and take note of the advice contained within them.

# B061 ICT in Today's World

## General Comments

The question paper discriminated well across the ability range. Candidates had sufficient time to answer the questions but, while most candidates were able to access all of the questions, there were still a few candidates leaving some questions unanswered. This appeared to be due to lack of knowledge or understanding of the question rather than time constraints.

There were some good attempts at the questions requiring longer responses but centres are again reminded that candidates should have practice in answering those types of questions that require a discussion and are used to assess the quality of written communication.

Many candidates produced good responses, which were very well expressed, clearly structured and interesting answers to questions 6 and 10. It is, however, still disappointing to note that many candidate responses were superficial or badly expressed. Some of these responses were often no more than a collection of unrelated points and lacked any IT knowledge or its application. Centres are reminded that, if candidates are to succeed in this unit, the candidates must be taught the theoretical knowledge referred to in the unit specification.

Centres are also reminded that all areas of the specification can be tested in any examination series.

## Comments on Individual Questions

1(a)    While most candidates correctly identified the number of records shown, some candidates counted the number of columns or the total number of boxes or counted them incorrectly.

(b)(i)(ii)    These questions were not answered at all well. It is clear that, despite relational databases being specifically mentioned in the specification, candidates are not being made aware of the structure/features of such databases. What should have been a reasonably easy question to answer proved quite difficult with very few candidates gaining the full three marks.

(c)(i)    This question was not well answered with candidates failing to focus on features of web-authoring software but describing items or features that could be on a website that is designed for selling goods e.g. pictures, text, links. The question was about the features of the software used to create the website or pages.

(ii)    This question was well answered with most candidates responding with copy and paste along with save and insert or similar methods of placing the images on the web pages.

2    This question was well answered with most candidates scoring the full five marks. There were, however, some common errors such as confusing a monitor with computer monitoring or confusing a hard disk drive with an optical drive and mentioning the use of CD-ROMs.

3(a)    This question was well answered by most candidates.

(b)    This question was quite well answered with most candidates scoring the marks for the method; many, however, failed to score the remainder of the marks for the descriptions giving poor or vague descriptions of the methods.

4        Surprisingly, this question was poorly answered. The use of relative (and absolute referencing) is an important aspect of the use of spreadsheets. Many candidates described the term "cell reference" which was not required here.

5        While most candidates appeared to know about virtual reality and could give examples, the majority of candidates could not properly explain what it is and so failed to score the full three marks.

6        This question was marked as a level of response and many candidates scored high marks with good descriptions of the issues surrounding the disposal of old computers. However, there were a significant number of candidates who failed to score above the lowest level as their responses consisted of simple statements with no explanations, descriptions or expansion of their points.

7        Many candidates scored full marks but some candidates failed to distinguish between hardware and software and provided two examples of either hardware or of software.

8        Some candidates answered this question quite well but many did not appear to understand the use of a medical expert system or confused it with the use of ICT for monitoring of patients in a hospital bed.

9        Most candidates scored both marks on this question with only a few scoring no marks at all. A tiny minority of candidates managed to score just one mark by choosing the same programming software for both tasks.

10       This question was marked as a level of response and many candidates scored good marks with good discussions of the use of robotics.

         However, there were a significant number of candidates who failed to score above the lowest level as their responses consisted of simple statements with no explanations, descriptions or expansion of their points.

# B062 Practical Applications in ICT

**General Comments**

The entries covered all six tasks available for this series.

Where centres had made use of support available, such as the INSET and the 'Success in B062 Teacher's Guide', the work was generally marked accurately to the assessment criteria. However, there were other centres who did not really know how to apply the assessment criteria and, in these cases, the work submitted was often lacking appropriate detail and evidence for some of the sections.

Where centres had submitted the work electronically, either on CD or via the OCR Repository, it was much easier at moderation to see the software features used in the final system and to use this and the diary to determine the understanding a candidate showed of software features used. When candidates submit their work on paper, more screenshot evidence of the software features is required, such as printing clear evidence of formulas and functions used.

Some centres had instructed candidates to collate their work into a few appropriate documents, or even one complete document, containing evidence for all of the 'written' sections. This makes marking and moderating much easier than where candidates have many very short documents, not always named appropriately to find evidence. Candidates might also be advised to use the wording in the assessment criteria to name the different sections of the work, where possible - e.g. a title 'Investigating a need' can cover all the assessment criteria in the research and analysis, which might help them to focus on what the assessment criteria are and also make marking and moderation easier.

Where passwords are used by candidates to protect their systems, these should be clearly identified, preferably on the URS. The URS should also include specific reference to where evidence can be found, including page numbers of documents. Comments about how well a candidate has performed in a section should not be included on the URS.

Some centres are providing too much teacher guidance during the taking of the tasks, either in the form of structured practice tasks which are too similar to the live task or by providing feedback during the controlled assessment task taking. Controlled assessment must be done under controlled conditions and guidance or feedback from the teacher is not allowed. The use of templates is also prohibited.

**Comments on Individual Questions**

**Investigating a Need**

This section requires candidates to collect information and analyse what they find to help them design and develop their system. The most common problem, as noted in previous reports, was candidates carrying out superficial research and not spending enough time collecting relevant information on software features, data and data formats that would be appropriate to use in their final systems. Where candidates collected information about software features, it was not always used to inform decisions about the design of their systems. In some cases, it appeared that the candidates had been taught a few specific software features which they then used to develop their system regardless of the research they had collected about existing systems. Candidates need to understand that the work is one integrated piece of work and that the research and analysis should be part of their decision making and justification.

**Practical use of software tools**

There was not always enough evidence of candidates understanding why they had chosen one software feature for a particular purpose. This was often due to what appeared to be guided teaching prior to taking the task, where candidates had been taught how to perform a few advanced software features which they used but could not justify why. Where a teacher tries to guide candidates too closely as to what software features to use, etc., this often results in candidates scoring less well than they might have done if given the freedom to choose appropriate software features and say why they have chosen them. As noted in previous reports, a completed test plan alone is not evidence that the tests were carried out or of what the results were. Annotated screen shots or short screen videos are the best way for candidates to present this evidence.

**Practical use of data structure**

As in previous sessions, this section was generally the least well done by candidates. There should be a link back to the research stage, where candidates should have collected and analysed relevant examples of data and data formats. They should then use this data collected to populate their systems, in the correct formats, and justify this. The data will then be modelled by changing the data (and the rules for the highest marks) in the system, to see the effects this has. There should also be some attempt at either designing an initial system or prototyping it in the software, as a proposal of their intended system. This design should contain information about data types and software features, rather than being a superficial design of the appearance and formatting.

**Present the solution**

Most centres did submit a separate presentation for this section, as required and most candidates chose to use slideshow software to produce this presentation which is a straightforward way for all candidates to pick up marks here, regardless of marks achieved in the other sections. Where candidates had produced a presentation in which they tried to 'sell' their system to the end user, the higher marks awarded were justified. However, there were quite a few centres where candidates were still using this section to say how they produced their system, rather than presenting the finished system and saying what it does. There were also still a few centres where candidates did not produce a presentation to the end user. Where this happened, and the marks were awarded simply for the presentation of the whole piece of work, only the lower marks could be awarded.

**Evaluation**

As stated in previous reports, candidates who had kept a detailed diary of the development of their work tended to have covered parts of the evaluation in this, which meant they did not have so much to do at the end of the work. It is important that candidates have time at the end to evaluate the finished system and to look at its strengths and weaknesses; they should also be given time to give constructive feedback on each others' systems. Many candidates made statements about their own strengths and weaknesses whilst carrying out the task, when what is actually required is a discussion about the strengths and weaknesses of the final system they have produced.

# B063 ICT in Context

**General comments**

The full ability range was demonstrated in the answers provided. Most candidates were adequately prepared for the examination. Others would benefit from more in-depth study of the case study and greater research of the topics on the pre-release material.

A significant number of candidates required extra space for their answers, particularly for the level of response questions. Practice on this type of question can encourage students to focus on the salient points and produce more compact responses. The quality of some candidates' handwriting was also problematic in a number of cases. Centres must ensure that candidates use handwriting that is legible and there is a range of possibilities if candidates' handwriting is a potential hindrance to the examiner being able to understand the response. Accessibility to marks may be limited if responses to questions cannot be read.

**Q1**. Most candidates scored full marks for this question. A small number of candidates seemed to have little understanding of CAD/CAM which was a research point in the pre-release material.

**Q2a**. Most candidates were able to give software types. Examples of the software use were not always related to Aqua-Inflatables.

**Q2b**. Candidates explained why Aqua-Inflatables may want bespoke software. A small number of candidates mistook bespoke software for open source software.

**Q2c**. This question was generally answered well if Q2b was answered well.

**Q3a**. Most candidates were able to explain what cloud computing was, but examples that were given were not always related to Aqua-Inflatables. Some candidates gave examples from last year's scenario.

**Q3b**. Many candidates showed little understanding of thin client technology, despite it being a research point on the pre-release material.

**Q4**. As in previous years, many candidates provided poor responses to this question. Many candidates simply described advantages of including videos on a website, rather than of using embedded sources. Those candidates that understood what an embedded source was generally scored well on this question. Again, this was a research point on the pre-release material.

**Q5**. To score full marks on this question, candidates needed to explain why both a blog and a forum would be used. Most candidates answered this question well, giving at least one point about both.

**Q6**. It is pleasing to see that the quality of answer in this style of question has improved. Many candidates showed a greater depth of understanding of the topic and provided answers that allowed them to score highly. A small number of candidates though continue to write answers of a superficial nature or simply a list of unrelated points, not related to the scenario.

**Q7**. Most candidates scored well on this question. A small number of candidates did not spend enough time looking at the graphic before answering the question.

**Q8**. This question was not answered well. Many candidates lacked the necessary theoretical database knowledge despite distributed databases being a research task on the pre-release material.

**Q9**. Again, a lack of understanding of the purpose of legislation, coupled with not reading the question correctly, meant many candidates did not score well on this question. Many candidates gave answers to other legislation, or provided responses that did not answer the question.

**Q10**. This question was generally answered well. A small number of candidates did not provide responses that were relevant to sending documents as an email attachment.

**Q11**. Again, this style of question was better answered than in previous series, with many candidates providing responses that showed sufficient understanding. As with question 6, some answers were superficial in nature or simply a list of unrelated points that did not relate to the scenario.

# B064 Creative use of ICT

### General comments

This was the second session where this unit had a significant number of entries and in general, assessment was found to be a little lenient, especially where marks had been awarded within the upper quartile of the mark range. As stated in previous reports, this specification aims to mark positively rewarding the work produced and not penalising omissions, however, full marks should only be awarded for work which is the best one could possibly expect a learner to produce at GCSE level. It should be the exception rather than the norm. Advice on awarding marks for the work can be found within the "Success in B064" booklet available on the OCR website. The OCR coursework consultancy service can also be used to ask assessment interpretation questions, however due to the nature of controlled assessment live work which has been marked can't be commented upon.

It was pleasing to see the vast majority of centres had opted to submit work in a digital format, allowing the moderation team to use the products produced. If a paper route is chosen it is always useful to send final products to the moderator on a CD or memory stick along with the printed material as it is often difficult to appreciate the learners' work from screen shots alone. It is vital though when submitting work digitally that evidence is well presented and structured. It is recommended that the written element of the unit is compiled into a single document so that moderators don't have to open lots of different files to try and find different parts of evidence. Parts of the design specification produced during the analysis task certainly should be compiled into one single document. Designs produced during the design stage can be scanned in and combined into the final documentation – most modern photocopiers will scan to PDF. There are lots of free portable document creators available on the internet which can be used to turn word processed documents into a single file. When submitting digitally the media needs to be checked carefully for viruses. In at least one occasion this session the security of a moderator's computer was compromised from a rogue file.

Unfortunately this session some of the products failed to function correctly when the moderator tried to use them. It would be helpful if, before submission, centres check that the products still function as intended. Websites especially will often work on learners' areas but sometimes in the transfer process graphics can become omitted as links are absolute rather than relative or the files are in folders outside the working folder. Setting up a root folder in the learners' work area and ensuring that all related files are saved to that folder is considered good practice. Multimedia presentations can have problems of missing media when videos and sounds are linked rather than embedded – care also needs to be taken when transferring these. Where learners choose one of the briefs which require a game to be produced, the file format which the game will be exported to needs to be considered. Propriety formats, .sb and .gb8 for example, are not included on the acceptable file format list and should be compiled to an executable (.exe) file. Instructions which illustrate how to compile scratch project to an executable file can be found on their website.

Care needs to be taken when choosing a submission component code for this unit. Entry code B064/01 is for repository submission whilst B064/02 is for postal submission. Although we encourage electronic evidence rather than paper based for this unit sometimes, due to the complexity of websites and other products, entering students using B064/02 and posting the evidence on a CD can avoid hours of frustration trying to upload work to the OCR repository.

Unfortunately the number of clerical errors this session was higher than previous ones, which did hinder the moderation process. Whilst using the electronic unit recording sheets eliminates the possibility of arithmetic errors, as marks are automatically summed, care still needs to be taken to avoid errors when transferring marks to the mark sheets which are submitted to OCR.

When conducting this unit teachers need to familiarise themselves with the rules associated with controlled assessment. *Writing frames, templates, sentence starters* or *essay structures* cannot be given to learners **under any circumstances**. Most of the analysis section of this unit should be completed at a low level of control and learners can share ideas with one another whilst researching existing solutions to a similar problem to the one which they are trying to solve. Learners should then enter controlled conditions to write up the research and propose their own solution. In a couple of instances research work from other learners was included within a particular learners' work. The final piece of work needs to be solely a learners' own work and even though research is collaborative, work produced by another person should not be included. To show that group work has taken place learners should surmise the feelings of the group and quote / paraphrase within their research notes what others had to say. When completing the research it is important that the research links to the proposed solution for higher marks within this section. Too often learners would present their research, then a solution with no link between the two. When presenting the proposed solution learners should state how their decisions have been influenced by their research.

The design specifications produced are part of the analysis section and need to include a clear explanation of the solution and how it solves the problem, a list of tasks which need to be carried out to develop the solution with appropriate timings, consideration of hardware and software required to develop and run the solution and detailed user requirements including measureable (both quantitative and qualitative) success criteria. In some cases parts of the design specification were missing or not detailed enough for the award of band 3. In other cases the design specifications became interspersed with content from the design section which did lead to moderation problems.

The design section should be conducted under controlled conditions and requires learners to produce designs for their proposed solution and comment on how the designs meet the user requirements defined within the analysis task. It should be noted that both elements and screen layouts for the products should be designed in detail. Designs can be completed on paper or using vector drawing tools on a computer. The quality and detail of the designs will partly determine the mark awarded for this task along with the level of explanation of how the designs meet the user requirements. At the lower end brief designs will be included which another ICT competent person may struggle to follow. For the award of mark band 3 learners need to design fully all elements of their solution in enough detail so another ICT literate person could create their solution. Some of the designs produced by learners didn't include the necessary detail even though a mark in band 3 had been awarded. Mark band 3 for this criterion also requires learners to explain how the proposed solution meets the user requirements; this was frequently missing from the work seen. A simple way to demonstrate this is to list each of the user requirements after the designs and underneath each, explain how the designed solution meets the requirement. How the solution is going to be tested is also an essential part of the design process and learners should produce a test strategy as part of the design task. The inclusion of a test plan is good practice and is part of the test strategy however there needs to be some explanation of how this test plan is actually going to be used. Statements such as "I will use this test plan to test my website upon completion within two different browsers and on a smart phone" and "I will make a questionnaire and ask three teenagers to comment upon my interactive bus shelter" turns a test plan into a testing strategy.

The development of elements task should be carried out under controlled conditions and requires learners to show how the various components which make up the final product have been made. Elements refer to text objects, sounds, different types of graphic, video clips and animation. There needs to be evidence of making at least three different types of element for the award of mark band 3 for this task. It is likely that alternative software applications will be used to create the elements from the one used to produce the actual product. This specification was not designed to be a test of how competent learners are at producing write ups and the focus needs to be on the skills used, however these skills need to be overt. A straightforward way for learners to produce evidence for this task would be for them to produce a diary noting down how things have been made – with a few selected screen shots to explain things which they may be having

trouble describing with words. In some cases more evidence of developing elements for the solution should be included for high marks. Too frequently this session learners documented how the actual products had been made, it needs to be reiterated that this is not suitable evidence for this task – this task requires learners to show how elements had been made.

The development of the overall solution task should be carried out under controlled conditions and marks should be awarded for the functionality and quality of the product which the learners have produced. The best way to showcase these to the moderator is to submit the work either via the OCR repository or on CD. For mark band 3 a wide range of features need to be included and the products should be fully functional – missing graphics and hyperlinks within websites are not acceptable for the award of marks within band 3. The products need to be of a high quality for mark band 3 showing a wide range of features has been used. They should be aesthetically pleasing with a suitable colour scheme being chosen and graphics will be of excellent quality, well placed and scaled in proportion – pixelated graphics are not appropriate within products being award mark band 3. The range of features depends on the product being developed, for example if a multimedia product is being produced it is expected that learners include graphics, text, sound, video and other media, self-created templates, styles, timings and triggers, animation effects, navigational bars / buttons to create a non-linear route through the product, drag and drop / popups / other interactive features. Whilst, for a website, the use of graphics, text, hyperlinks, styles, self-created templates, rollovers, hotspots, drop down menus, web forms, animation and sound should be amongst other elements. For the award of high marks, for a game learners should have a functioning scoring system with lives if appropriate, multiple levels and the ability to interact with the game by answering questions, picking up items / treats or destroying enemies. Another requirement of this task is to comment upon the success in following the plans and any changes made. "Success in following plans" refers to how the learners followed their time plan, although many also state how they followed their designs as well which is not a bad thing. A good place to include these notes is within the evaluation section although to prevent it being omitted learners could complete it once the product has been completed.

The testing task should be carried out under controlled conditions and requires learners to follow the test strategy which they developed in the design task to check that their product works the way in which they intended. All of the mark bands within the testing section require some form of user testing and unfortunately some learners had not carried this out, which should lead to lower marks being awarded. User testing should be restricted to peers within the group as the work needs to remain in the centre, although arranging outside visitors (for example primary school children or adults) to come into the classroom during the controlled time to test products is acceptable. In some work seen there was a suggestion that work had been tested at home by parents or siblings which is not appropriate. Higher marks for testing should only be awarded when there is clear evidence that testing in different situations has been considered. Testing websites, games and multimedia products on different hardware, operating systems / browsers and screen resolutions should be considered and carried out as far as possible. A few old machines at the back of the class room loaded with different software provide an excellent opportunity for learners to test under different situations. If due to network restrictions learners are not able to test their products in different scenarios a detailed written statement describing how they would carry out such testing if the resources were available is acceptable.

The evaluation task should be carried out under controlled conditions and should critique the product made and the learners' performance when working within groups. For the award of mark band 3 learners are expected to produce a high quality evaluation which reflects upon what the solution does, its strengths and weaknesses, areas for improvement, how limitations found during testing have been dealt with and an evaluation of their and others contribution to group work. Learners should refer back to the original user requirements and success criteria and state how each has been met. Listing the requirements again within the evaluation and commenting on how it's been achieved (or not) is good practice. Some of the evaluations seen failed to include enough sufficient detail and a lower mark would have been more appropriate.

# B065 Coding a Solution

**General comments**

There was a small entry for this unit which contained some excellent work. The best responses were typically well-organised with a clear flow of ideas from analysis to evaluation.

Good solutions were well-researched and used the analysis of this research to provide a sound design for the final product.

Designs covered all aspects of the problem including data structures, screen layouts and, most importantly, detailed algorithms that clearly defined a working solution.

Development of the solution built upon these sound algorithms to show how the solutions was developed in an iterative fashion, testing and refining at each stage of the process based on a pre defined set of test data and strategy.

The quality of coding was generally very good with a range of programming languages being used, including python, java and app inventor. Final product testing was typically well structured and used with the success criteria to provide an effective evaluation. Many of the students were not afraid to try and break the code to explore the limitations of their solutions, something to be encouraged in all budding programmers.

The students / centres chose from the range of tasks available including a significant proportion tackling solutions for the Simon Sez text translator, the card matching game and AI tasks. It was also pleasing to see candidates crediting sources for segments of code used within their solutions, which they had found and modified for their own use. This approach is standard in the world of programming and shows effectively how the candidates have built these routines into their own code.

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