OCR
RECOGNISING ACHIEVEMENT

GCE

Computing

Advanced GCE **A2 7820**

Advanced Subsidiary GCE **AS 3820**

Report on the Units

June 2006

3820/7820/MS/R/06

Oxford Cambridge and RSA Examinations

OCR (Oxford, Cambridge and RSA Examinations) is a unitary awarding body, established by the University of Cambridge Local Examinations Syndicate and the RSA Examinations Board in January 1998. OCR provides a full range of GCSE, A- level, GNVQ, Key Skills and other qualifications for schools and colleges in the United Kingdom, including those previously provided by MEG and OCEAC. It is also responsible for developing new syllabuses to meet national requirements and the needs of students and teachers.

The mark schemes are published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

The reports on the Examinations provide 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 syllabus content, of the operation of the scheme of assessment and of the application of assessment criteria.

Mark schemes and Reports should be read in conjunction with the published question papers.

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

Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annersley
NOTTINGHAM
NG15 0DL

Telephone: 0870 870 6622
Facsimile: 0870 870 6621
E-mail: publications@ocr.org.uk

CONTENTS

Advanced GCE Computing (7820)

Advanced Subsidiary GCE Computing (3820)

REPORT ON THE UNITS

General Comments

All examinations were accessible to the majority of candidates and all candidates appeared to have sufficient time to complete them. The quality of written communication still gives examiners cause for concern and often examiners found it difficult to understand what the candidates were trying to communicate. Candidates must learn that the only way they will succeed in a computing environment is if they improve both their oral and written communication skills.

There appeared to be more very weak candidates who only achieved single figure marks and there were fewer who scored very high marks. This applied to all written examinations, including the structured tasks. One of the main faults was that candidates had the basic computing knowledge but showed little understanding. Also, they lacked the skills necessary to apply this basic knowledge. Questions that required answers based on a scenario were often very poorly answered. It appears that candidates have been taught to look for key words and then to write all they know about these key words. This gains few marks and candidates need to look at past papers together with their mark schemes in order to ascertain what examiners are expecting.

Good examples of showing this lack of understanding and of skills could be found in the answers to question 1 on 2507, question 2 on 2508, question 4 on 2509 and question 4 on 2511. In question 1 on 2507 candidates were unable to explain the need for including attributes and often included unnecessary and inappropriate attributes for the problem set. In the examples from 2508 and 2511 candidates knew the different methods of changeover (implementation) and could usually describe them. However, too often they chose the wrong method for the application and could not give appropriate reasons for their choices, even when these choices were correct. In question 4(b) on 2511 most candidates had little idea of the nature and size of an electricity billing system and therefore gave inappropriate hardware and software for this application.

In 2509 the candidates could only state that the difference between a stack and a queue is the former is LIFO and the latter is FIFO. They had no idea about the use of pointers nor were they able to suggest appropriate uses for these dynamic data structures.

Candidates need to be made aware of the uses of all computing concepts which should be taught in terms of their uses. For example, teaching data structures as abstract concepts means that candidates are unable to apply them in the solutions of real world problems.

Another area of concern is the inability of candidates to apply logic in the solution of problems. This shows up when they are asked to develop algorithms, even very short ones, and when asked to explain the purpose of an algorithm. This was also evidenced by the solutions to question 5(d) on 2509 where candidates could usually state whether or not the given strings were values but could not give clear, suitable reasons for their answers.

To sum up, candidates need to practise the application of logic and of basic knowledge to the solution of problems. They also need to improve their communication skills. These points are important as the new Specifications are likely to emphasise computer science elements of computing and to expand this area of computing while reducing the ICT content. In fact, there is likely to be much less overlap between computing and ICT.

Report on 2506

General Comments

First impressions were that this was a similar cohort to previous sessions and this was confirmed in the comments of other examiners. The paper was thought to have been of equivalent difficulty and there were few candidates who were unable to occupy their time profitably in some sections of the paper. There were some excellent scripts returned and credit must go to the candidates concerned and the guidance that they have had within their Centre.

It is nice to see evidence that past paper questions are being used to illustrate the specification content but there was also evidence that some candidates are learning the model answers and then trying to fit them into the paper even when they are not asked for in the questions. This was particularly noticeable in question 4 where a number of candidates decided to offer the three types of programming error for their answer. It is necessary for candidates to be discriminating in the application of their knowledge, not simply in the learning of it.

Once again, there was no evidence of time trouble for candidates, all seem to have been able to offer full answers to all the questions of which they were capable.

The standard of presentation continues to be high with all but a few candidates, but I do worry that some candidates are needlessly worrying about the length of some of their responses and there is beginning to be a tendency to try to write down everything that the candidate knows about a particular area of the specification rather than limit themselves to the question. Such a lack of discrimination is worrying and makes the examiner suspect that the candidate may know rather a lot but perhaps understands comparatively little.

There was evidence that candidates are beginning to use proprietary brand names again. This should be discouraged.

Questions

1 A well answered first question. The only part that caused a widespread problem was the idea of an ‘integrated’ package. The idea that applications could actually communicate with each other was not generally appreciated.

2 A standard question which, if the past papers were well used as alluded to in the general comments, should have caused no problems. However, due to a combination of poor exam technique and a difficulty suffered by many candidates to be able to express themselves, maximum marks were rarely awarded. Candidates really must consider the number of mark points and ensure that they say at least that many things for each part. It has been mentioned many times that use of bullet points is a sensible option for candidates as it allows them to concentrate on the computing rather than the ‘English’ of their response and it also makes it clear when they have presented enough evidence for the available marks. It was noticeable that, although most Centres are still encouraging their candidates to answer in bullet points where appropriate, there has been a slide back towards prose type answers and I am sure that this more than accounts for the disappointing responses here.

3 Generally well answered, though some were rather over adventurous in their suggestions as to the types of data that an estate agent would need to know. It was disappointing to see so many candidates unable to realise the importance of ‘whole’ number and there really ought not to be confusion about the meanings of ‘file’ and ‘field’ from candidates in a paper at this level.

4 As mentioned above, there were many candidates who decided to talk about the types of programming errors. This may well have been because of the question asking for '3' and the number of types of error is conveniently three, but the question does seem to be clear and the examiners expected the answer to have been within the grasp of most candidates. There were a large number of acceptable answers and they are printed in the published mark scheme, as are the accepted responses from all the questions.

5 Some very good answers here. However, many candidates omitted the idea of 'in current use' from the explanation of what RAM is used for. Equally, the components of the processor showed a definite discrimination between the more able and weaker candidates. A number of candidates wanted to suggest that the CPU was part of the processor, these were not the weakest candidates but ones that were showing that they had a bit of knowledge, but that the understanding was lacking.

6 Difficult to believe how few candidates were able to score full marks on part (a). This was intended to be one of the simplest questions on the paper and it turned out to be anything but. No explanation can be offered as this question has been asked many times before without causing the problems that it did this time.

The equating of large files with a need for high bit rate is a common misconception. The concept of 'time sensitivity' is poorly understood, not surprisingly because it is a difficult one.

7 Many candidates did not attempt answers here. This was surprising as this question was about three standard techniques for inputting data to computer systems. A candidate who purports to be working at this level should have little trouble with this question. A common answer for MICR was the use of magnetic information on a swipe card, while OCR was often referred to as being to do with cameras, though the PE's favourite was the candidate who decided that data that was in OCR format was edible!

8 Another standard question which should be better understood at this level. Most candidates could pick up marks on the ASCII code and most successfully did the binary conversion, but then the errors set in. Most candidates did not attempt the BCD or hexadecimal, or made a guess at what they were referring to, some so wide of the mark that it was difficult to see where the connections had been made. These are actually very simple concepts, the only difficult part of the question was the explanation in the last part which does require some use of logic to apply the understanding to the specific relationship needing to be considered.

9 There are only three standard looping techniques and they have specific differences from each other. To simply say that a while loop continues until a requirement is satisfied simply is not good enough as it applies equally to the other two constructs.

The small algorithm in part (b) was meant to be a question that was accessible to all candidates, though the reality was far from that. Whether this was because it was at the end of the paper or not was debatable because it was not that long a paper. Most candidates who answered this simply gave the answers '4' and '6', failing to give the first outputs. Equal in number were those candidates who simply wrote long explanations in one form or another trying to explain what all the lines of the algorithm were doing. candidates really need to be given practice with short pieces of pseudo-code like this so that they know what to expect in the paper.

10 This was meant to be a more difficult question aimed at the more able candidates and so it proved. It was a good discriminator, though those candidates who knew what a protocol was generally had no trouble in scoring full marks.

Report on 2507

General Comments

Many Centres continue to deal with the administrative side of this specification accurately and within the Board's deadlines. Others do not do so and the moderation process becomes very time-consuming for both moderator and staff at the Centres.

By the May 15 deadline, Centres should send to their moderator the appropriate copy of their MS1 mark sheet(s), together with the Centre Authentication Form and the Coursework Cover Sheets for all candidates. The moderator needs to see the breakdown of marks if a sample is to be requested. Where there are 11 or fewer candidates, all coursework should also be sent at this stage. Other Centres will generally retain their coursework until a sample is requested. The sample must then be sent promptly. However, if Centres feel it makes the process more efficient, those with fewer than 20 candidates may send the work of all their candidates at the same time as their paperwork. This saves the time and administration involved in requesting a sample.

Before sending any paperwork, Centres should make three clerical checks

- that marks have been correctly transferred from the coursework to the cover sheet;
- that these marks have been added correctly and transferred accurately to the summary grid on the front of the cover sheet;
- that the total mark has been transferred correctly to the MS1, with the appropriate lozenges shaded in.

There were far fewer Centres that made clerical errors this year. Some still do, however, and they delay the moderation process as well as causing further work for examination officers and teaching staff in Centres.

Candidates should not submit work in ring binders, nor in plastic wallets. Work should be page numbered, with each task and sub-task clearly identified, placed in the correct order (often it is not) and hole-punched for a single treasury tag in the top left corner. The work is then best placed in a clearly labelled envelope folder. All work should be identified with the candidate's name and the Centre and candidate numbers (a good use for headers and/or footers). The cover sheet is not the appropriate medium for this identification as it is separated from the work during moderation and is not returned to the Centre.

Annotation by markers remains the key to both good assessment and efficient and reliable moderation. In many cases Centres do ensure that their marking is clear and the work annotated to show the mark points given, but there are still some where all the moderator has to work with is the total mark for a sub-task and little or no marking shown on the coursework. Although an annotated copy of the mark scheme is helpful, it does not replace the need for markers to show clearly, on the candidate's work, where and why each mark has been awarded.

Centres are reminded that the task of the moderator is not to re-mark the candidate's work. It is to moderate the marker's award of marks, to reach consistency between Centres. Without sufficient information, it is impossible to do this successfully. With sufficient information, the more straightforward the moderation process, and the less likelihood there is that a Centre's marks will need to be changed.

This year work was returned by moderators to a number of Centres for clarification of the award of marks before it was possible for moderation to take place. This policy will come into full effect in the summer of 2007 when moderators will be advised to return work to Centres for further clarification, wherever the marking information provided is not sufficient to ensure safe and consistent standards between Centres.

Questions

Task 1 (Partial database)

This task gave most candidates an opportunity to show some computing skills. It was intended for the E/D candidates and a high proportion of the entry scored well, commonly with more than 65% of the marks.

Parts (a), (b) and (c) required tables to be set up. In each case the requirements were clear: identify the attributes, with their data types, and specify the key; give a reason why each attribute should be included in the table. Most candidates managed to identify appropriate attributes and give them sensible names and data types (numeric telephone numbers are much rarer now). Many, however, refused to accept the question requirement to give a reason; they provided no more than an often ineffectual description; worse, Centres awarded marks for these, despite a clear instruction to the contrary on the mark scheme. Indeed, it is not uncommon for there to be sufficient disparity of standards on just these questions to result in an overall adjustment to a Centre's marks.

Unnecessary personal information was often included in the Member table, without suitable justification. Perhaps this was an appropriate point to have introduced to students elements of the Data Protection Act.

Some Centres were concerned that their candidates had done a lot of research for the Film table, for which they could receive no credit. This overlooked the fact that the stem of the question had specified exactly what was to be included in this table and that the marks available showed that there were none to spare for additional data.

Part (d) required some data to be entered in the tables. Most candidates coped well enough with this, though a good number clearly did not read, or forgot, the advice to choose data suitable for producing sensible results in the later questions. A small number of candidates excluded from their data entry some of the attributes previously defined; doing so loses all the marks available for the data entered in that table.

Part (e) required the creation of interfaces and the production of reports. Reports without an input to determine what the report will show are worth no marks; an interface with an input was therefore essential to the answer. It is also important that a candidate understands and demonstrates what happens if an input is invalid; user input should not be implemented without validation being attempted. Many candidates failed to provide sensible titles for their reports; an appropriate title and a correct date should be standard practice.

In the screen listing, a scroll bar was sufficient to demonstrate control. Many candidates ignored the part of the question that restricted the output to films currently available for loan.

The mail merge in (f) would have brought more marks to some candidates had they bothered to include their standard letter, with its merge fields. Others would have been better advised not to set up their tables with data that required 15 or 20 letters to be printed. A surprising number of candidates did not know and had not researched the appropriate format for a business letter.

It should be remembered that database/spreadsheet questions on this paper are never intended to be fully working applications. They are effectively fragments, intended to test some relatively elementary aspects of the specification. Some candidates and staff clearly spent much time agonising over how the loan system alluded to in this Task would work in the real world. This is fine, provided the time is available, provided they understand that the work is never intended to go to full implementation, and provided they appreciate that full marks are available simply by doing what the questions ask.

Task 2 (Sort algorithm trace)

Many candidates scored full marks on this question. Many who did not made straightforward errors, perhaps through an unwillingness to check their results carefully. Some stopped as soon as they saw the array was sorted and did not evaluate further for *count* or *index*. Others included these values but omitted the final 0 for *sep*. Some did not show any of the negative values for *index*.

It is accepted that there was a discrepancy between the presentation asked for by the question and that presented by the mark scheme, although the algorithm of course still produced the same answers. No candidates lost marks because of this.

There were some candidates who simply failed to take any notice of the presentation requirements of the question, however, and these were penalised in varying degrees, often by their own idiosyncrasies.

Task 3 (Roman number calculator simulation)

This was intended to challenge the more able candidates and it did. Many designed some interesting interfaces. Others were limited in what they could achieve by the programming language they were using. Though clearly not all Centres agreed, it was not thought unreasonable to use a button interface as the basis of the mark scheme. The question did ask for a calculator simulation and all candidates will have experience of a calculator with buttons. All reasonable interpretations of the mark scheme were accepted, however, and no candidate would have been disadvantaged where they had made the best of the techniques available to them.

A significant number of candidates did not approach the sub-tasks in the order set or at least did not present their answers in this way. In some cases it was very difficult to identify the different sections, especially where the marker provided no help either. The candidates were set the task of writing two relatively straightforward functions first so that they did not get embroiled in too much detail before they had thought about the basics. It was also intended as a help to weaker candidates by providing a signpost to a reasonable solution. Future questions will be set in a similar way and candidates will be penalised where they do not present their solutions in the pattern required.

Some candidates still annotate their code very poorly, if at all, and the perceived improvement of last year ground to a halt. The standard required by the Board is that it should be possible to write comparable code given the annotation alone. Candidates need to take more care with the presentation of annotation; for many it is clearly thrown in as an afterthought. Had candidates originally designed any sort of algorithm before commencing programming, they would have the basis of their annotation already prepared. As in previous years, many candidates did not use meaningful names for variables and objects so that it was much more difficult for markers and moderators to follow their solutions. These features will attract more compulsory marks in future mark schemes.

Many candidates do not understand the importance of testing and the disciplined approach it requires. They also seem not to appreciate that a good test plan in part (e) of this Task could have earned them six marks, even if they had not completed (or even started) the program and were unable to implement the tests.

The question asked for a table; many interspersed the proposed tests with the actual testing. The question asked for at least six different tests; some could think of only two or three; those that had more than six often used several different versions of the same test. The question asked for the reason for each test; some candidates ignored this; others gave answers as ineffectual as those for attributes in the database task. The question asked for the proposed data to be stated; some gave none; some gave general statements (any number more than MMMM); others gave precise data and then used something else in the actual test. The question asked for the expected result; this means to state what is expected to be output; this is unlikely to be error message, but rather what the error message actually says. Some candidates included test data for parts (b) and (c) in part (e); this did not answer the question as set.

When the testing is carried out, candidates must show each stage of the test. This is particularly important where a second input, or the output, overwrites the original data. Error messages continue to be poor in quality and often provide only minimal help to a user.

It is appreciated that costs are involved and that the current specification does not restrict the programming languages used, but Centres would be advised to embark soon on the process of upgrading to a visual, object-oriented high level language, if they have not done so already.

Task 4 (Recursive function)

Many candidates included extraneous working with their answers to (a) and/or omitted the words 'The answer is ' from the output. They should have been penalised. The only output asked for is what would be obtained if the algorithm was run on a computer using a suitable language. If candidates wish to present their working, they may do so, but it should be shown separately from their answer. This kind of question has been set regularly in the past and Centres should be aware of what is expected.

Some Centres were concerned that the format of the mark scheme answer to (b) had changed from the boxes/arrows presentation used previously. The format used by the candidate has never been prescribed and answers presented in either form (or any other) that give the right answers will always receive credit. Many candidates failed to replace the variables with their actual values in all cases and the repeats of ENDIF … END Curiosity were often omitted.

The iterative function in (d) was often well done. Any iterative solution which worked was acceptable; its efficiency was not an issue; nor was its similarity or otherwise to the mark scheme example. Less successful candidates included their own recursive calls. Many did not output the result.

Report on 2508

General Comments

The overall performance of the candidates was similar to previous series. There was evidence to indicate performance varied from Centre to Centre, with some excellent work in some Centres producing better prepared candidates. The paper seemed to differentiate well across the range of candidates.

The layout of this question paper continues to help candidates. Reading questions carefully and paying attention to the mark allocation needs to be emphasised again. For example, many candidates in question 1(c) did not consider the phrase “design stage” in their answers.

Many Centres are improving in preparing their candidates for this module. Most sections of the specification are well understood by Centres but section 5.3.5 continues to cause concern as evidenced by the poor performance in question 6. Candidates often score low marks in questions relating to the content of this section. Candidates have a good sense of software application packages as evidenced by a lot of good answers to question 3.

Most Centres are using previous papers, mark schemes and examination reports in preparing candidates for this examination.

All candidates seemed to have ample time to complete this test. It was pleasing to see fewer blank spaces in answer booklets. Candidates should be discouraged from rewording the question or even parts of questions as their answer. For example, a MIS is not a “system to manage information”.

Questions

Question 1

In part (a), most candidates got a mark for an advantage and for a disadvantage but few got more than this. Some candidates need to make sure they use sufficient words to answer this type of question. For example “..analysts can see what is happening..” is vague for an advantage for observation, whereas “…analysts can see the process first hand….” is good for an advantage.

In part (b), Questionnaires was the common answer here with most candidates getting the advantage of efficient in terms of time but fewer were able to suggest a disadvantage. There were some answers that suggested candidates need to look at fact finding methods for future examinations, such as research on the Internet as a fact finding method.

Part (c) was very poorly done by the majority of candidates, with many referring to other stages in the system life cycle such as the feasibility study. Few scored more than 2 marks on this section. Candidates must read the question carefully to establish that the marks were only for the “design” stage.

Part(d) , most candidates were able to achieve 1 mark or more in corrective and adaptive maintenance, but less sure of perfective with a lot of general answers stating “…it increases the efficiency of the system…”. In some cases candidates just reworded the question stating “…to make the system perfect..”

Question 2

It was surprising to see a large number of candidates failing to attempt this question. Whilst those who attempted this question demonstrated their knowledge of changeover methods, but too often they selected the wrong method for each application given. The words used in the applications were designed to direct candidates such as "….on-line booking system…." should be implemented using direct changeover. In part(b) many candidates were confused with "phased" and "pilot" as methods of changeover. In both parts some candidates gave the wrong method but went on to describe the correct method and were given credit for their answers.

Question 3

It was pleasing to see many candidates scoring 6 or more marks in this question. Unlike previous years, candidates took advice from the instructions on the paper: "No marks will be awarded for using brand names of software packages." Part(a) and part(d) were very well answered particularly when the candidate was giving a reason for their choice of application package. In part(b) many candidates were able to suggest a spreadsheet but too often their reason was vague such as "..it can do calculations..". In part(c) many candidates were confused by referring to an ISP as their choice of software.

Question 4

Part(a) had few reasonable answers and was generally very poorly done by most candidates. Many candidates did not fully understand the requirements of the question missing the phrase "….designing a HCI..". Too often candidates stated and described features of a GUI. The most common factor was the "..ease of use.." but the reasons were often vague. The wording of this question caused many candidates to misunderstand what was required. These candidates gave features that would ensure that their factors could be achieved. This was accepted by the examiners on this occasion as can be seen in the published Mark Scheme.

In part(b) most candidates scored well scoring at least 3 marks. It was pleasing to see the advantages written in a meaningful way, such as "…fits user requirements exactly.".

Question 5

In part(a) and part(b) many answers were vague and poor. Data verification and data validation are two standard definitions and should be known at AS level. In some cases candidates made reference in both cases to checking data with no detailed reason. Some candidates even mixed up the definitions.

In part (c) many candidates were able to get all 4 marks, some even using a working example to show the stages required to calculate a check digit. Some candidates thought it was a trivial calculation by adding the individual digits and dividing by the number of digits available..

In part(d) the majority of the candidates scored one mark by identifying the process of scanning but few made any reference to ".. boxes in predefined areas…."

Question 6

Part (a) indicated that very little is known about Management Information Systems (MIS). Many candidates were only able to reword the term in their answer, such as "..a system used by management..". Only the better candidates could refer to decision making in their answers.

Part (b) was better answered with most candidates being able to access 1 mark. It was pleasing to see candidates correctly using the named components of an expert system.

Part (c) proved difficult for candidates to score in as answers tended to be vague and not focused on the benefits of an expert system, such as "… they are faster.." with no justification. Again part (d) was answered poorly , with only those candidates who scored in part (c) being able to score in part (d). A lot of answers referred to "over-reliance" but rarely anything else.

It was obvious that a lot of candidates have limited knowledge of expert systems.
Part (e) was well answered with many candidates achieving 3 out of 4 marks.

Question 7

It was pleasing to see the majority of candidates scoring well in part(a) demonstrating an awareness in the application of computers in banking. Although "Chip and Pin" was a popular correct answer some candidates need to be careful in their wording of answers such as "…being able to view bank statements.." is too vague whereas "..being able to view bank statements on-line…" is a good answer.

Part (b) indicated a good knowledge of health risks caused by the increased use of computer technology. Popular answers included RSI and eye/back problems with acceptable methods for reducing the risk.

Report on 2509

General Comments

As always, some candidates gave good answers and had obviously prepared carefully for the examination. There appeared to be an increase in the number of candidates who used the mark allocations successfully to write clear, concise answers. However, some appeared unable to understand or apply their knowledge, so tended to quote what they had learnt instead of answering the question given. A minority wrote far too much, including those who failed to use the additional pages provided and wrote into the following question or the examiner's area.

A few candidates were ill-prepared, but most showed knowledge of at least some topics. It was disappointing to see some careless answers where candidates could easily have gained more marks with a little more thought. Candidates are strongly advised to read and check their work before the end of an examination in order to rectify the more obvious mistakes or include more detail where necessary.

It is of some concern that the quality of answers appeared to be mainly Centre-based.

Questions

Q1 A significant number of candidates did not know the difference between memory and hard disk.

(a) Most candidates gained marks for (i). Disk threshing was frequently confused with disk defragmentation.

(b) Few candidates achieved full marks and a large number gained no marks at all. Again, answers about disk defragmentation were often seen. It was rare to see correct answers about protecting the operating system, allocation when paging or enabling memory to be shared between processes.

(c) A common misconception was that transparency allowed the user to see everything that was happening on the network.

(d) Few candidates understood job priorities. Many thought that when a single job remains, its priority must be increased before it can be processed.

Q2 **(a)** Many gained full marks, though a proportion of candidates could not name syntax analysis or code generation.

(b) Candidates gained marks here, though the symbol table and error diagnostics were rarely mentioned.

(c) Careless answers lost marks for many candidates: "code that can be executed" is not acceptable as an explanation of executable code. For the interpreter, many wrote about code being read or translated a line at a time without making it clear that each line is also run as soon as it is translated.

(d) There was a lack of understanding here. Many candidates gave a standard answer that it is easier to find errors using an interpreter. Clearly, in the case of intermediate code the errors must be corrected during compilation as the source code is not available to the interpreter.

Q3 **(a)** Most gained marks, though few mentioned that the memory data register is a buffer, used for temporary storage.

(b) Many candidates gave good answers here, though few stated that more than one interrupt can occur at the 'same' time.

(c) Only the more able candidates understood that a jump or loop was involved. A number of poorer candidates tried to write about a calculation involving the numbers 123 and 38.

(d) This was answered well by the majority.

Q4 **(a)** Almost everyone gained marks for FIFO and LIFO, though few mentioned pointers or made any further distinction. Many gained a mark for writing about a printer queue. Relatively few knew that a stack is used for return addresses when using subroutines or for storing contents of registers when an interrupt is serviced.

(b) Although many were able to answer this, higher marks could have been obtained with more careful labelling or better descriptions.

Q5 **(a)** Few candidates gained full marks here. Many thought that a low-level language meant writing directly in machine code.

(b) The types of addressing were not recognised, with many candidates clearly guessing answers. The purpose of the accumulator was not known: many thought it performed calculations.

(c) Although most gained some marks, it was rare to see good answers.

(d) Most answered this question well, with only a few failing to follow the instruction to give reasons.

Q6 **(a)** Some candidates incorrectly attempted to write an algorithm to create a new binary tree. The question asked for a "short algorithm" and allowed only 3 marks and 3 lines for the answer: only an outline algorithm was required and those who followed this instruction found it easy to gain full marks.

(b) This was generally answered well, though numerous candidates complicated part (ii) by ignoring the instruction to start from the original binary tree.

(c) Many candidates could not describe this properly, with relatively few remembering to store items below the one to be removed.

Q7 **(a)** This was answered carelessly. Many described the relationship instead of stating its degree. The majority named an attribute as a foreign key without stating in which entity it was the foreign key (as opposed to where it was a primary key). Few were able to explain the use of a foreign key accurately, giving only vague answers about linking things.

(b) Poor answers were given in (i), with the incorrect answer “many cleaners clean many rooms” appearing far too often. In the diagram, most candidates inserted the additional entity required and many also used the correct relationships. A few just copied the original diagram and made no attempt to change it.

(c) This was answered adequately by most.

(d) Some excellent answers were given by the better candidates. A common incorrect answer was that neither person would be allowed access.

Report on 2510

The majority of Centres entering candidates for this module have been offering OCR computing for some time and have a good grasp of what is required. This is reflected in the realistic marking by most Centres and the very small number of adjustments required to ensure standards were brought into line. Clear annotation of candidates' work to indicate where marks have been awarded was evident in those Centres whose marking was considered accurate. There was also clear evidence that those candidates who identify and consult on a regular basis with an end user achieve better marks in this unit and where marks were reduced during the moderation process one of the main factors was the lack of such an end user.

Database solutions remained the most common project choice, with Microsoft Access a popular choice but there were several Centres submitting coded solutions and some interesting work with Microsoft Excel as well as a small number of web based projects. Candidates must always justify such choices by considering in detail realistic alternative approaches to the problem. In far too many cases candidates had not given this aspect of the analysis sufficient thought and explanation and where candidates chose to use a programming language they frequently chose not to justify this choice and rarely considered alternative approaches.

Another element that Centres should encourage candidates to consider more carefully is the design. Many Centres provided detailed and accurate designs using suitable techniques, in a small but significant number of Centres the moderator was left to fill in the details of the design based upon minimal evidence. This is an important aspect of the work and good detailed design will make the system development significantly easier and provide insight into aspects of computing which may also be tested within the theory modules at A2.

If a coded solution is chosen then candidates should show a range of suitable techniques used in the design to explain how the code will be used to produce the solution including algorithms and program flow charts.

In the report on this module for January 2006 the following points were identified and are worth repeating.

It is vital that the system requirements come from the end user and that the end user is consulted at every key stage of the process. Candidates who wish to gain high marks must provide convincing evidence for this in their reports. The end user may not always require this solution but must be able and willing to participate in the process as if they did. The end user may be a teacher, though preferably not the subject teacher for this unit, or may be a focus group, for example when producing an educational programme or computer game the end user might be a group of students from the target users who will be consulted at various stages of the solution's development.

Students also need to convince the teacher and moderator that they are able to decide what is and what is not important in their report; the use of appendices asks these people to make their own judgement and the use of appendices is discouraged and often penalises the student. Students should be encouraged to select the evidence they wish to submit and include it at the appropriate point within the body of the project, moderators may not have the time to search for evidence to support a mark from material supplied in an appendix to the report. On a similar point the inclusion of application generated code, for example from Access, is completely pointless and merely serves to bulk out the project and convince the moderator that the student cannot decide what is or is not relevant. If a candidate has developed some coded solutions or included macros, then the inclusion of fully annotated code in the design section is appropriate. Un-annotated code will be ignored.

Reports on the Units

Given that it is appropriate and logical for candidates to include annotated code and other design components in the design section of their report the requirement for the technical guide to be a stand-alone document is to be withdrawn and candidates may refer to other sections of their report, from within the technical guidance without penalty.

The changing nature of the solutions seen also indicates a need for a more flexible approach to user and technical documentation. For web based solutions, the end user who commissioned the project may find the technical guide the most appropriate document, the ultimate 'end user' may not require a printed guide at all. In this case the inclusion of on screen help and guidance is important and creating a printed user guide for someone who will access the site via the web is not appropriate, but the candidate must provide printed evidence of the on-screen help within the report. It is common practice for applications of all types to have a selection of short documents covering getting started, installation of the solution, system requirements, trouble shooting etc rather than a single bulky guide; it is perfectly acceptable for students to reflect this in their work and documentation may not be two distinct documents. Teachers will need to identify clearly where credit has been awarded if this is the case.

Report on 2511

General Comments

The difficulty of the paper appeared to be appropriate and there was no evidence of candidates running out of time. However, there was a great deal of evidence that candidates do not read the scenario for a question. It is important that candidates use the scenario when answering the questions as this often restricts the number of appropriate answers.

There was also evidence that some Centres do not cover the whole of the Specification for this Module. Further, many candidates could not answer questions on topics from other Modules. It is important that candidates understand the synoptic nature of this Module.

Unfortunately, the quality of written communication has not improved and candidates penalise themselves by not explaining things clearly. Grammar and punctuation need to be improved if these candidates are to enter the world of computing where clear, accurate communication is essential.

Questions

1 Many candidates did not take note of the scenario that clearly states that there are only two people working in the business and that it is they who are employing a systems analyst. This should mean that there is only one way of collecting information. Also, it is Anita and Zach who will have to be interviewed not teachers and students. Questionnaires were a common wrong answer. Part (b) of this Question was better answered.

2 Parts (a) and (b) were very poorly answered. It was clear that many Centres do not spend much time on SSADM. Although a majority of the candidates answered Part (c) well, a surprisingly large number of candidates did very badly. This was a question that regularly appears on an AS paper and all the usual answers were acceptable.

3 The majority of candidates gained 3 marks for (a)(i) but (a)(ii) was very poorly answered. Many candidates found it difficult to describe succinctly the purpose of MDR and MAR in particular. Part (b) discriminated well across the candidature. In (c) candidates often repeated the question by stating 'Up-to-date documentation is documentation that is kept up-to-date.'.for which no marks were awarded. Quality control was not understood by the majority of candidates. Neither up-to-date documentation nor quality control have been used in previous sessions; this appears to have led to teachers ignoring them. It should be remembered that the whole of the Specification must be examined over four examination sessions.

Unfortunately, some candidates misread Part (d) and talked of making a program more understandable to a user rather than making the program code more understandable. These answers were accepted.

In Part (e) candidates referred to the features of a HCI, in particular a GUI, rather than the design features. Several examiners said that they did not feel that candidates had studied this topic.

4 In the first part of this Question, which was from the AS Specification, many candidates failed to understand the scenario and were unable to relate the reason for choosing a particular implementation to the application. In (b) many students scored half marks. However, some candidates thought that a PC with a word processor and spreadsheet were suitable for an electricity billing system!

5 Most candidates answered this question well, although a few failed to get the second mark in each case by failing to describe the point they were making.

6 Many candidates answered this question very well. However, it was clear that CPA had not been taught in some Centres.

7 Few candidates were familiar with a mobile phone network although most gained two marks by showing a connection between the phone and the mast giving the strongest signal (not necessarily the nearest).

Advanced GCE Computing (3870/7820)

June 2006 Assessment Series

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2506	Raw	90	71	62	53	44	36	0
	UMS	90	72	62	54	45	36	0
2507	Raw	120	95	82	69	57	45	0
	UMS	120	96	84	72	60	48	0
2508	Raw	90	58	51	44	37	31	0
	UMS	90	72	62	54	45	36	0
2509	Raw	90	58	51	44	37	31	0
	UMS	90	72	62	54	45	36	0
2510	Raw	120	98	87	76	65	54	0
	UMS	120	96	84	72	60	48	0
2511	Raw	90	53	47	41	36	31	0
	UMS	90	72	62	54	45	36	0

Specification Aggregation Results

Overall threshold marks in UMS (i.e. after conversion of raw marks to uniform marks)

	Maximum Mark	A	B	C	D	E	U
3820	300	240	210	180	150	120	0
7820	600	480	420	360	300	240	0

The cumulative percentage of candidates awarded each grade was as follows:

	A	B	C	D	E	U	Total Number of Candidates
3820	9.9	26.5	48.4	68.6	87.6	100.0	904
7820	11.3	32.8	58.9	81.7	94.9	100.0	767

For a description of how UMS marks are calculated see;
www.ocr.org.uk/OCR/WebSite/docroot/understand/ums.jsp

Statistics are correct at the time of publication

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

OCR Information Bureau

(General Qualifications)
Telephone: 01223 553998
Facsimile: 01223 552627
Email: helpdesk@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