OCR
RECOGNISING ACHIEVEMENT

GCE

Computing

Advanced GCE **A2 7820**

Advanced Subsidiary GCE **AS 3820**

Report on the Units

June 2008

3820/7820/MS/R/08

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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 syllabus 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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REPORT ON THE UNITS

Chief Examiner general comments

All papers were accessible in the time provided and there were some very good scripts. It was clear that many candidates, who knew the theory, were unable to apply it to a real situation. This was particularly true on Papers 2508 and 2511. It appears that candidates learn the basic theory for Paper 2506 very well but are then unable to apply this theory to any real world situations. The theory in the A2 modules appears to give candidates some trouble on 2509 and a great deal of difficulty on 2511.

However, it is with regret that it is necessary to report that the quality of English has again deteriorated. There were a number of scripts that were difficult to understand, as the quality of the handwriting made it difficult to decipher the answers. Candidates must be taught how to express their answers clearly, concisely and accurately.

2506 Introductory Computer Systems

General Comments

The paper worked well. All questions returned the full range of marks from 0 to maximum. There were few blank spaces in the areas assigned for responses. Question 1 proved to be surprisingly difficult and this may have depressed the marks slightly, but all other questions gained appropriate responses from the different levels of candidate.

The handwriting caused something of an issue on some papers. The papers are now being marked electronically. One of the tools which examiners are able to use is a magnifier which enables us to magnify the image on screen and this was used extensively during this session in order to make some of the writing more decipherable.

The ability of candidates to write intelligibly in English continues to cause concern and there was evidence of text language being used again. This problem was mentioned in this report some years ago and since then the problem seemed to have resolved itself. Please ensure that candidates are aware that such forms of language are not suitable in this context, particularly when there are marks which are awarded for the quality of communication.

There were some scripts which showed a thorough understanding of the requirements of the specification and those candidates deserve special congratulation. Not every candidate can achieve this level of understanding, but it is hoped that all candidates were able to achieve the level that their work warranted.

Individual questions:

Question 1

This was intended to be an easy starter question, and so it proved for many candidates. However, there was a large proportion who evidently were unaware of a menu-based interface being a particular type. Some ignored the question by giving generic advantages in part (a) rather than giving features, and many others decided that the paper obviously meant to ask about a GUI and gave three features of that instead. There is a closed list of types of interface in the specification and a candidate should be able to answer this question about any of them. Part (b) was better answered, though after the attempts for part (a) it has to be wondered whether they were simply scoring by luckily giving a generic answer which happened to match some of the points about a menu-based system. Each of the different types of interface has a particular exemplar application which fits the interface perfectly because that was what it was originally designed for.

Question 2

This question was well answered. A number of candidates made the question rather more difficult than was necessary, for instance by creating a linked list in part (c) but they still earn the marks because the basic concept of order was demonstrated.

Question 3

(a) Well answered.

(b) This was intended to be aimed at the most able candidates and so it proved. Most candidates were unable to go beyond the ‘the compiler will spot when the code breaks a syntax rule’ type of answer. The question was asking ‘how’ the translator spotted errors.

(c) Generally this was well answered, though many candidates used 'annotation' as one of their methods, despite this being ruled out by the form of the question.

Question 4

(a) Well answered, though many gave the reason that it is stored in ROM to be that it stays in ROM while it is switched off, while the true reason is that it will be there when it is switched on.

(b) This was well answered, though many candidates did not state that it was, for instance, the 'data being used at the time'. Without this corollary the response implies that all the data in the system is stored here.

(c) **(i)** was well answered, though **(ii)**, which requires a detailed understanding of how the processor works was not well answered.

Question 5

This question was well answered by many candidates with many of them scoring full marks. Areas of weakness were octal, which many confused with hexadecimal, and the explanation of the relationship between and octal and binary and the answer to the addition. Whether this was a result of the computing knowledge or of candidates not having the skills with English to be able to understand it, is another matter.

Question 6

It is so important that candidates take note of the number of marks available for each part of a question. The vast majority of candidates scored the one mark for each of input and output devices, as they should, but then failed to expand on the mark. Candidates should also be wary of reusing the question in the answer. To define a character set as a set of characters is not going to attract a mark.

Question 7

This question was a particularly good discriminator. Almost all candidates were able to score some marks in parts (b) and (c), though less able candidates were only scoring one of the available marks in each case. The extra marks were scored by many candidates though only the most able were able to answer part (a), though it was really just a different way of asking a tried and tested question.

Question 8

(a) The diagrams were often badly presented. Many candidates did not put enough detail on the diagrams, there were 3 marks for each, and some did not draw a diagram at all which may have disadvantaged them as so much of the explanation relies on the shape and this is so difficult to describe in words.

(b) Whichever device is chosen, it does not 'connect you to the internet'.

(c) Well answered, though, again a good discriminator with most being able to name an error checking method but gradually fewer being able to earn the successive marks. There were a group of candidates who suggested various validation techniques, demonstrating their lack of understanding of data transmission checking and there were others who described a check sum in terms of a check digit calculation. However, parity was not being described as each byte having to be odd or even any more.

(d) Poorly understood with most candidates explaining time slicing or something similar. The main point to make was that it was the extra volume of data going to a single point on the network which caused the trouble, not the extra machines. One server can support a large number of computers on a network, as long as they do not want to use network communications very often.

Question 9

(a) Candidates could either answer this or they couldn't. The most common answer was '2, 6'.

(b) Too many candidates ignored the question which stated that a Repeat loop should be used. An equal number attempted to put the word 'repeat' in but obviously had no idea what the structure of such a command entailed. Happily, still more scored full marks here.

2507 Computer Structured Practical Tasks

General comments

The performance of the candidates was similar to previous years and the presentation of their work continues to improve. The full range of marks was seen with some excellent scripts. A few candidates failed to produce work of the required standard.

All the tasks were done to a high standard by many of the candidates, even the weaker candidates gaining good marks on Tasks 1 and 2. Task 3 produced a full range of marks from 0 to the maximum of 32. Task 4 was well done by those who attempted it.

Comments on individual questions

Task 1 (Database)

This Task was similar to those set in previous years and candidates appear to have taken note of past mark schemes. The results were that candidates generally scored well on this Task. A few candidates failed to give satisfactory reasons for including the attributes. It is not satisfactory to say that the attribute 'phone' contains the phone number. Reasons are needed in case modifications or extensions are needed in the future. These may be done by a new developer who will want to know why attributes have been used and whether or not they are still needed. Without a reason for an attribute's inclusion it is not clear whether or not it can be deleted.

In parts (e) and (f) some candidates failed to group students on their names; this meant that students' names were repeated. Also, because some candidates sorted instead of grouped, if two or more students had the same surname, these students' results were interspersed with other students' results.

Task 2 (Algorithm trace)

This Task was very well done by nearly all the candidates. The functions PUSH and POP were clearly understood by most candidates. It was important to read the example on Page 6 to completely understand how these functions worked. This example showed that the implementation of the POP function actually removed the item from the top of the stack. This was done to make it easier to see what values were still in the stack rather than relying on overwriting when a new item was added to the stack. Candidates must learn to read and digest ALL the instructions and explanations given in a description of a Task. When a function is defined the user of that function must not presume how the function works but take notice of what is given, after all this is AS Computing.

Task 3 (Wari game program)

This Task was intended to discriminate between all Grades of candidates and it did. Some very weak candidates did very little, often scoring 0. Other candidates did very well and gained full marks.

Generally, parts (a) and (b) were well done but there were some errors. One glaring error was that the screen shot of the interface contained more than 48 marbles!
Some candidates failed to do the simple task in part (c).

Many candidates treated the small cups as command buttons in part (d) with those buttons that should not be used having their enabled property set to false; this ensured the user chose a valid cup. Unfortunately, many candidates failed to give these buttons meaningful names and left them as Command1, Command 2 and so on.

Those candidates who attempted part (d) usually did well. Command buttons were often used for input with those buttons that should not be used having their enabled property set to false.

Part (e) was attempted by fewer candidates and some of those who did produced screen shots showing the wrong number of marbles on the board.

Part (f) was aimed at the Grade A candidates with little guidance being given. Those who attempted it usually did very well. A few candidates failed to give evidence that their code worked. This evidence was asked for in previous parts but it was thought the A Grade candidates should understand the need for evidence of successful code, particularly as this evidence was asked for in earlier parts. In the real world, nobody is going to purchase software without evidence that it works.

2508 Computer Systems Development and Practical Applications

Overview

This examination paper worked well this year, allowing the majority of Candidates to demonstrate their knowledge and understanding in each question. It was pleasing to see the efforts made by most centres in preparing their Candidates for this examination. Apart from demonstrating their Computing knowledge, more Candidates are demonstrating better examination techniques such as reading the questions carefully, taking account of the marks allocated for each question and attempting to refer to the application in the stem of the question.

The examining team felt the spaces provided for the answers was more than adequate and there was sufficient time to complete the paper. The layout of the paper with structured questions greatly helps the Candidates. The continued use of generic software names rather than proprietary names means that the majority of Candidates are clearly reading the instructions on the front cover of the examination paper.

Although the majority of centres are using previous papers, mark schemes and examination reports, which can greatly assist Candidate performance, section 5.3.5 still continues to cause great concern. Candidates continue to demonstrate a lack of knowledge in the area of MIS, particularly in its uses. Too often Candidates treat a MIS as a database.

Question 1

In part(a), the majority of Candidates scored half marks. The advantages and disadvantages of interviews as a fact finding method are better known than questionnaires. Too often the answers in using questionnaires as a method of fact finding were vague such as “..easy to fill in.." as an advantage and “..difficult to complete..” as a disadvantage. The better Candidates tended to write clear and concise answers in part(a). In part(b) Candidates who got the method of fact finding correct were able to state an advantage and disadvantage. Answers such as “looking at the workplace” are not the same as “observation” when it comes to stating a method of fact finding. In Part(c) Candidates scored well demonstrating knowledge in describing changeover methods. Part(d) was disappointing as many Candidates were only able to reword the question such as describing “perfective maintenance” as “..perfecting the system..”. This area of the specification needs to be known. Too often in part(e), Candidates ignored the term "on-line” and described features of help instead.

Question 2

The focus in this question was “data capture” and not simply describing general features of the device. The majority of Candidates were able to score half marks in this question but too often answers did not focus on how the device is used in data capture. It was pleasing to see Candidates using terms such as, “..specially designed forms..” and “..using light to scan marks..” when describing OMR. Some Candidates confused OMR with OCR. Although there are some common features, the uses are totally different. Candidates who were able to describe OMR, suggested vague answers for its use such as “..used in examination papers..” rather than “..used in multiple choice examination papers..”. The descriptions of a Sensor were poor. Very few Candidates referred to concepts such as “..analogue-digital conversion..” or “..converting energy from one form to another..”. The majority of Candidates knew a suitable use for a sensor. The last part of the question was sometimes confused with MICR. Few Candidates referred to a Magnetic Stripe Reader in their answers or the idea of “..a small amount of data stored..”. The use of Magnetic Stripe Readers was well known.

Question 3

In part(a) most Candidates scored one mark as they were able to refer to “a human checking data for correctness” but descriptions about how this happened were vague. Descriptions of “double entry” or “visual checking” were often missing. Part(b) was well answered by the majority of Candidates, with the use of appropriate names and descriptions of validation techniques used for numeric data. Candidates found Part(c) the most difficult question with little or no evidence of any knowledge or understanding of either a “batch” or a “hash” total. Part(d) was well answered with many Candidates scoring full marks. It was pleasing to see clearly stated answers such as “..expensive, as they pay the full development costs..” as a disadvantage of choosing custom written software. Part(e) produced some very clear answers such as “..hands free allowing the user to do other tasks..” and also some very vague answers such as “ ..easy to use..”.

Question 4

Many Candidates scored well this question , demonstrating detailed knowledge of both “batch” and “real time “ processing. Candidates could also use the correct method of processing for each application going on to justify a valid reason for using the method stated. There was evidence to show that those Candidates who used past paper questions in this area of the specification scored full marks.

Question 5

The majority of Candidates scored well this question, demonstrating a good knowledge and understanding of user interfaces. There was an improvement in the understanding of command driven interfaces with many Candidates referring to “..the need to learn a large number of commands..” and “..the importance of getting the syntax correct..”. In part(b) the majority of Candidates correctly stated the three features of a GUI using the concept of Windows, icons, menus, pointers(WIMP)..

Question 6

Although many Candidates understood the purpose of a MIS in part(a), few could apply their knowledge to the uses of a MIS in a hospital. Candidates confused a MIS system with a database when describing the uses. Too often they focussed on simple queries to produce information rather than focus on information required to help managers making decisions at different levels within the hospital.. In part(b) Candidates were more often able to describe the use of an expert system in a hospital than describe the components of an experts system. Part(c) was a discriminating question, in that a maximum of three marks were awarded for knowing all the principles of the Data Protection Act. Candidates had to put the principles into the context of the hospital staff and patients on two different occasions to be awarded full marks. Only the better Candidates scored well in this question. Candidates must read the full question carefully if they want to access the full range of marks.

2509 Systems Software Mechanisms

General points:

Many candidates had prepared carefully for the examination. They, and their teachers, should be proud of the work presented to the examiners.

As reported frequently in the past, it was disappointing to see the work of those who seemed to know very little about the subject and had not learnt even the most basic terms. At this level, candidates who confuse terms such as “record”, “table” and “database” should be embarrassed by their lack of knowledge. Yet again, Centres are reminded to advise their candidates that correct use of technical terms is essential.

Also, despite many comments in previous reports to Centres, candidates did not read the questions properly and so lost numerous marks needlessly. A significant number of candidates wrote so much irrelevant detail that they ran out of space long before discussing anything that gained marks. This also meant that they did not use the time available wisely, so later made careless mistakes through rushing to finish their answers. Practice in examination technique is invaluable.

Comments on individual questions:

Question 1

(a) Many wrote about operating systems in general and ignored memory management.

(b) Most did not make it clear they were talking about disks – phrases used included “located in memory”. There was considerable confusion between main memory and backing store.

(c) Few gained good marks here. The most common misconception was that it referred to some form of on-line help or technical support service.

Question 2

(a) The majority answered quite well. A common error was that “everything is changed into tokens”.

(b) This was also answered quite well, though not many realised it was compiled code that is used by linkers.

(c) Most gained marks here. Some candidates wrote that it was too difficult for customers to compile the program instead of explaining that additional software is needed.

Question 3

(a) Many gained marks here, though some candidates just wrote everything they could remember about the fetch-execute cycle instead of selecting the relevant details.

(b) Numerous candidates gained few marks here. A few knew what went on to the stack, but many thought it was a whole program or even a number of programs.

(c) Again, this was a topic where poor knowledge of technical terms was evident. Some candidates clearly knew the principle involved, but wrote about programs or tasks being fetched, decoded and executed when, hopefully, they meant instructions.

Question 4

(a) Some candidates gained full marks here, but the majority gave poor answers. It should have been an easy question, but many clearly did not understand the principle of keeping data in place and changing only the pointers. Candidates are expected to know basic algorithms.

(b) Few gave good answers, with the majority trying to add a data item to a linked list – another example of failing to read the instructions.

Question 5

Most did well in this question, though the standard seemed Centre-based with a few candidates knowing little about the notation required.

Question 6

(a) This was an easy start to the question, which most were able to answer correctly.

(b) A few candidates were unable to answer this. Many lost marks by careless English. For example, it is pointless to say that "SupplierCode is a foreign key" without stating the name of the table to which the statement refers.

(c) A small number of candidates inserted another table. Many thought it was a many-many relationship.

(d) Some gave the same answer, slightly reworded, twice. Few were able to give two different reasons.

(e) Again, many lost marks by not reading the question. Some wrote about the customer using the Product table, others discussed a salesperson using the Supplier table.

Question 7

(a) This was answered badly by a number of candidates who had not bothered to learn the terms. The majority gained good marks, though few were able to describe encapsulation well.

(b) Although the majority gained full marks here, it was surprising to find a significant number of candidates who did not look at the examples.

Question 8

(a) Most candidates answered this correctly. Although the question stated it was an unsigned integer, a minority ignored this and used sign and magnitude.

(b) Very few candidates gained full marks, and many gained no marks at all. Some tried to use pure binary throughout, ignoring the information given. Despite the example given in (iii), many either compared the value given with 11111111 or used the original digits divided differently. It was clear that few understood this topic.

2510 Computing Project

The specification has been available for several years now and the majority of centres have identified strategies that will maximise the student performance for this unit. The projects produced by students for this session followed the usual pattern with the vast majority being created within ACCESS, though a few centres submitted projects with a coded element, usually successfully. The vast majority of centres also have a clear idea of what is required and apply the marking criteria reasonably accurately and consequently there were few adjustments to centres marks. Where adjustments had to be applied to centres to bring them into line with the agreed standard these were generally quite small.

It was pleasing to see improvements to the implementation sections with fewer candidates simply reproducing the theory and many more discussing the specific issues around implementation and many more documenting the process of implementing their solution in the target environment. Evaluation of the solution is another area where the quality of work has improved significantly over recent sessions, with much more specific comments and evidence than was evident in early sessions for this component. Centres have also been very realistic about applying the marking criteria and have

Where centres have had their marks adjusted down it can often be traced back to poor end user involvement not being accounted for in the allocation of marks by the centre. Another area where moderators found marking to be generous was the award of full marks for user guides when there was no evidence of on screen help or for technical guides with little or no information to enable adaptive maintenance. While this rarely triggered any adjustment by itself, if combined with generosity in other areas, then marking became close to, or just outside, the tolerance limits.

While the vast majority of centres supplied excellent notes explaining the allocation of marks, some centres still make no comment on why marks have been allocated. If it is not obvious to the moderator why marks have been awarded or if marks are awarded for evidence not in the correct section of the report, then this evidence may be missed. While there is no requirement to annotate projects it is best practice to indicate to the moderator using brief notes how the marks have been allocated to the work.

One disappointing feature in this session was lapses in administration. Several centres failed to complete the ccs160 forms which then had to be requested from the centre; without these documents OCR cannot release examination results for this unit. These forms can be downloaded from the OCR website. There were also more arithmetic and transcription errors than normal.

2511 Integrated Information Systems

General Comments

As has been mentioned in previous reports, candidates still show a poor understanding of the use of English to communicate their answers. Many candidates were unable to express their answers clearly or succinctly and a small minority appeared neither to read nor write English effectively.

Although there were few scripts gaining very high marks, the full mark range was seen by the examiners. Unfortunately there were many candidates who were not well prepared for this examination which led to some very low marks.

All candidates appeared to have plenty of time to complete the examination and most candidates provided answers to all of the questions.

Comments on Individual Questions:

Question No.	
1(a)	This was generally well answered, although some candidates gave vague answers such as 'Printers and VDUs' for hardware.
1(b)	Generally very well answered with nearly all candidates gaining 6 to 8 marks. However, some candidates gave a mouse as an input device!
1(c)	This was less well answered. A large number of candidates did not understand the difference between a linked list data structure and a representation of a linked list. This resulted in arrays being given in the answer. An array is one way of representing a list but it is not a linked list data structure. Many candidates were handicapped by their poor grasp of the English language. This led to very confused answers. Few candidates pointed out that the linked list and the master file were in the same order of primary key.
2(a)	All sections were well answered.
2(b)	This was either well answered or very poorly answered. Many candidates did not seem to have been taught this topic.
2(c)	Nearly all candidates understood the two forms of transmission but could not relate them to hubs and switches.
2(d)	In spite of the question stating that the router is going to be used to access the World Wide Web, many candidates gave this as part of their answer! Few candidates understood how a router routes messages.
2(e)	This question was very poorly answered. Most candidates described the purpose of each layer in the OSI model rather than why a protocol is layered.
3(a)	Most candidates understood that a flat file is a single table but little else. A relational database was better described although, again, poor English let down many candidates.
3(b)	Although the question states the relationship between style (of shoe) and supplier, a large number of candidates showed a relationship between supplier and shoe. The definitions of tables were usually well done.
3(c)	Generally very well answered.
3(d)	Many candidates stated why the manager should be able to access the personnel file but the assistant should not. The question clearly states that it refers to the database already mentioned.

4	The response times in both examples were well understood and most candidates got both right. Implications on hardware and software were not understood; perhaps because this part of the Specification has not been addressed before.
5	Many candidates gained high marks for this question with Gantt Charts and CPA diagrams appearing in equal frequencies. However, many candidates placed b, c, d and e in parallel. Data cannot be entered until the tables have been created.
6	This proved to be a very good discriminator with some weak answers as well as some very good answers. The main fault was that too many candidates thought that the sensors decided whether or not the plane was too high/low or on/off course. Further, they thought that the sensors told the actuators what to do. Candidates need to understand that any control problem involves input (sensors), processing (the computer and software) and output (actuators).

Grade Thresholds

Advanced GCE Computing (3820/7820)
June 2008 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	A	B	C	D	E	U
2506	Raw	90	68	60	52	44	36	0
	UMS	90	72	62	54	45	36	0
2507	Raw	120	102	91	80	69	58	0
	UMS	120	96	84	72	60	48	0
2508	Raw	90	65	57	50	43	36	0
	UMS	90	72	62	54	45	36	0
2509	Raw	90	71	62	53	45	37	0
	UMS	90	72	62	54	45	36	0
2510	Raw	120	100	88	76	65	54	0
	UMS	120	96	84	72	60	48	0
2511	Raw	90	62	56	50	44	39	0
	UMS	90	72	62	54	45	36	0

Specification Aggregation Results

Overall threshold marks in UMS (ie 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	10.2	27.7	50.3	70.9	85.2	100	854
7820	13.1	36.3	59.4	82.1	96.4	100	623

46 candidates aggregated this series

For a description of how UMS marks are calculated see:
http://www.ocr.org.uk/learners/ums_results.html

Statistics are correct at the time of publication.

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