

**GCE 2003**  
*June Series*



Report on the Examination

# **Information and Communication Technology**

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- Advanced Subsidiary
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Advanced Subsidiary - (5521)  
Advanced - (6521)

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*Dr Michael Cresswell, Director General.*

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# Information and Communication Technology

## AS Units

### Unit 1 Information: Nature, Role and Context

#### General Comments

This year saw again a large number of entries for this paper. Some candidates demonstrated a clear understanding of the subject matter and some excellent scripts were seen. It is encouraging to see an increase in the number of candidates who have a good knowledge of the subject as centres become more familiar with the requirements of the examination. Some candidates did not seem to have the level of “subject specific” knowledge necessary to answer questions at this level and, therefore, did not achieve such good marks. Some candidates clearly suffer from poor English and this does disadvantage them in a paper of this nature as they struggle to explain the concepts involved. A noticeable feature of answers this year was the increasing use of abbreviations such as “pro” for “professional” and “hw” for “hardware”. Such abbreviations are not acceptable and candidates should be discouraged from the use of abbreviations and other “text messaging” short hand phrases. Once again, some candidates failed to give examples which were relevant to ICT (thus gaining no marks) or they failed to display knowledge about ICT above what might be expected of the average “person in the street”. This was particularly true in the answers seen to Question 9. As has been mentioned in previous Reports, there are candidates who are losing marks because of their failure to read, or perhaps understand the language of, the questions. This was particularly evidenced in Questions 1, 6 and 7. Poor examination technique is still losing candidates marks.

#### Question 1

Only a minority of candidates succeeded in gaining full marks for this question. The vast majority of candidates overlooked the fact that the question related to information and not data. Although the question did not stipulate ICT examples, some were given. These were very often trivial and did nothing more than to restate the question. Candidates must note that, on an ICT question paper, examples must be related to ICT. Many candidates gave an example and then failed to define the term, or simply restated the term.

#### Question 2

There was an excellent response to this question with a high percentage of candidates gaining full marks. Generally the candidates who answered incorrectly gave answers to part (b) that were related to information (rather than data), gave actions rather than data or failed to read the question properly and referred input and output.

#### Question 3

This question was worded so as to try to establish whether candidates actually understood the meaning of the skills and where they were important within the context of an IT professional’s job. This question generated the full spread of marks with many candidates gaining at least three out of the six marks available. Part (c) proved to be difficult for the majority of candidates, despite their responding well to parts (a) and (b). Explanations which simply restated the question were common, as was a failure to relate the skill to any kind of ICT context. In some cases, candidates were not clear as to what *is* an IT professional’s job and what *is not*.

### **Question 4**

There were some very pleasing answers to this question; it is an area which showed a definite improvement in candidates' knowledge of the business use of ICT, as opposed to solely personal use of ICT. Many candidates gained at least six out of the 10 marks available. In answer to part (a), weaker candidates generally focussed on the visual textual qualities of the name and the graphical impact of the web page itself. It was pleasing to see candidates really thinking about the practical considerations of setting up websites, although there was a lack of understanding of the need for uniqueness and of the principles of copyright, as well as the actual registration process for names.

### **Question 5**

This question generated very sound responses and a significant number of candidates managed to get all five marks available for the question. Even the weaker candidates performed well in parts (b) and (c). In part (a), some candidates displayed a complete misunderstanding of "input data" in relation to an EPOS system, referring instead to data that would have been part of the "setting up" of a stock system of any sort. In answer to part (b), some candidates made good use of the examples given in the question. The inclusion of these EPOS features was deliberate on the part of the Principal Examiner as the intention was to ascertain candidates' understanding of fundamental ICT knowledge. In part (c), some candidates gave very good answers which clearly showed that they understood the principle of "knowledge being used to interpret the information" provided in the sales report, whilst others either did not understand the concepts involved or did not have a clear knowledge of the prime purpose of an EPOS system.

### **Question 6**

This question generated a range of marks, but very few candidates managed to gain full marks. Generally, the first mark was gained in each part for stating a relevant feature, but the second mark proved difficult, mainly because of a failure to read and interpret the question correctly. The operative word in the question was "how" not "what" and many candidates were quite content to state a health and safety problem without going on to explain *how* the feature helped to prevent that problem. The Principal Examiner was again seeking to test understanding and knowledge, and candidates who failed to achieve good marks gave answers that were vague, such as, "comfortable chairs are needed to prevent back problems." Part (c) elicited the poorest answers of the three parts to the question, with some candidates totally missing the fact that software can incorporate features that prevent health problems, writing instead about the importance of testing or speed of processing.

### **Question 7**

In this question, the Principal Examiner's aim was to assess candidates' understanding of what are threats to ICT systems and how these are increased by the use of laptop computers – an increasingly important issue. This question generated the full spread of marks with only the best candidates gaining the full marks. Most candidates could correctly identify four threats to ICT systems and so gained up to four marks. However, they then struggled to relate these threats specifically to laptop usage. Some of the weaker candidates misinterpreted the question completely and proceeded to describe the ways in which increasing laptop usage could result in the under utilisation of ICT systems and even their replacement.

### **Question 8**

Very few candidates scored the full nine marks for this question. Despite the poor response at the top end of the range, the majority of candidates did succeed in gaining at least five marks on this question. In general, the response to part (a) was much better than those to parts (b) or (c). Only a small number of candidates fully understood the question and gave the expected answers. Similarly, only a small number of candidates could show that they really understood the purpose and detail of the legislation involved. Gaining two out of the three marks available in each part was common; the third mark proved elusive. This was mainly due to an inability to give a good explanation of the purpose of

the legislation. The example or expansion mark was often gained on its own. For example, in answer to part (a), candidates knew the principles by rote but didn't really understand why the legislation was needed or the idea that it covered personal data about "something". In their answers to part (b) a worrying number of candidates showed little knowledge of the Misuse Act, referring instead to problems of viewing pornographic images. Knowledge of Software Copyright and Licensing would seem to generally be weakest, with few candidates relating this to ICT, and again confusing trademark and copyright issues.

### **Question 9**

A very similar question to this had appeared on a past paper and as a result some candidates were well prepared. This question did enable candidates to show their overall knowledge of the usage of ICT within organisations, and some candidates performed very well and a full spread of marks was seen. A high proportion of candidates gained four out of the eight marks available. Marks were lost for a variety of reasons; these included the following.

- Failure to identify a specific ICT example. Vague responses were common, for example, "lists of patients / records of criminals can be stored, bookings can be recorded...."
- Repetition of a valid ICT example in more than one part (e.g. database of criminal records, database of patient's records, database of bookings) despite the fact that candidates were told in the question not to repeat their answers.
- Inability to explain how ICT usage actually benefits the organisation. Common answers included: "so police can catch criminals", "so bookings can be made", "so the correct medication can be given," etc.
- Monitoring and control examples used, the most common being: robotic surgery, heart monitors, pacemakers.
- The use of trade names which does not gain credit.

Examiners took into account the fact that candidates would not necessarily have detailed knowledge of the actual organisations mentioned, but examiners were seeking to reward clear examples that showed specific ICT usage and the benefit that it would give to the organisation – in other words: why the organisation would use ICT.

## **Unit 2 Information: Management and Manipulation**

### **General Comments**

This was the sixth paper of the current specification and it was pleasing to note that candidates were providing answers using full sentences and set in the context of the scenarios described in the questions.

However, a significant number of candidates did not attempt to answer the last question on the question paper, Question 9. There were many scripts with the answer to this question missing. This can only be explained by the poor examination technique shown by some of the candidates sitting this examination.

Question 9 was on the last page of the question paper and it was clearly signposted with the words “**TURN OVER FOR THE NEXT QUESTION**” in bold type on the previous page. The end of an question paper is always indicated by the phrase “**END OF QUESTIONS**” in bold type. At the start of the examination, candidates should consider the number of questions and the marks available for each question so as to enable them to manage their time effectively. (60 marks are always available in ICT 2.)

Question 9 carried thirteen marks in total and candidates would have been expected to take between fifteen and twenty minutes answering the question. Questions towards the end of a question paper are usually worth more marks than those at the beginning of a paper. Therefore, the candidates who did not answer this question would probably be disappointed in the marks that they achieved.

It was pleasing to note that fewer candidates answered questions using references to brand names rather than the general terminology required, but some candidates still included brand names as part of an answer e.g. “Windows” instead of operating system was a common unacceptable answer. Centres are reminded that the phrase “*the use of brand names will not gain credit*” will not appear on individual questions as in previous examination papers, but just on the front of the question paper. Candidates should be reminded about this before attempting any examination for the GCE in ICT.

### ***Question 1***

This was a straightforward question where one-word answers gained credit. However, this question was either answered well or very poorly with many candidates unable to identify types of encoding for images. Bitmapped, compressed bitmapped, vector were expected answers. However, weaker candidates provided specific examples of file types e.g. BMP, GIF JPEG. These were also accepted as correct answers.

### ***Question 2***

Many candidates correctly identified the use of a modem and a telephone line but only better candidates identified the use of the modem to convert signals from one form to another, and the role of the telephone line in the transfer of data. Whilst candidates are not expected to discuss the technicalities of modem use, they are expected to be able to outline the role that a modem plays in data communications.

### ***Question 3***

Again, this was a straightforward question where the use of one-word answers was accepted, but many candidates appeared to be trying to answer similar questions posed on previous question papers.

Reasonably answered, most candidates correctly identified batch processing.

Better candidates identified real-time processing. Pseudo real-time processing was not given credit, as controlling a chemical process is time critical.

Few candidates correctly identified the transaction processing required for a multiple use booking system but many candidates cited pseudo real-time processing, which was accepted as a correct answer.

Very few candidates identified the interactive processing that would be required for designing a kitchen, as changes would need to be made until the final design was accepted.

#### **Question 4**

System Software proved to be a difficult topic for many candidates. Many candidates - who incorrectly discussed applications software such as word-processors and spreadsheets - were not able to distinguish between types of software which perform tasks that are required because a computer is used, from software that does a job that could have been done in another way without a computer. However, candidates who had studied the use of operating systems and utility programs found it easy to score good marks on this question by listing some functions of an operating system e.g. memory management, resource allocation, peripheral control etc. and/or naming utility programs and describing their use e.g. virus checker, compiler.

#### **Question 5**

For part (a), most candidates could describe two methods of keeping the records in a doctor's surgery secure, but many candidates needed to be more precise in their description of how the records were being protected. For example, a firewall prevents unauthorised external access, a keyboard lock prevents access to the computer system, use of permitted access levels allows only some members of staff to change the data stored.

For part (b), many candidates could clearly distinguish between security and privacy. However, others lost marks by giving very similar, vague descriptions that failed to distinguish between the application of safeguards to prevent data from accidental or malicious alteration for security, and deciding who should be authorised to view certain pieces of data for privacy.

#### **Question 6**

Few candidates could clearly distinguish between peer-to-peer and client-server local area networks. Candidates did not seem to understand the underlying principles of operation of the two types of network: peer-to-peer networks where all computers have equal status and can operate as a client or a server, and client-server networks with dedicated servers providing central resources and services for the clients on the network.

#### **Question 7**

It was clear from the poor answers to this question that some candidates were not well prepared to discuss the use of any interfaces other than a standard graphical user interface on a personal computer.

For part (a), the essential feature of any menu driven interface is that a list of selections is offered from which the user is to choose. Those candidates who gained some marks usually described an example e.g. menus used with an automated teller machine (ATM).

In part (b), few candidates correctly identified that a command line interface required the user to type a syntactically correct command in response to a brief on-screen prompt. Those who could, usually provided excellent examples of operating system requests e.g. format a:

#### **Question 8**

This question asked for **advanced** features of a word-processing package that would be useful to the author of an ICT textbook and for **advanced** features of a spreadsheet that would be useful to an accountant preparing a financial report. It was pleasing to note that nearly all candidates' responses clearly referred to the described scenarios. However, the question asked for **advanced** features, not standard features in general every day use.



For part (a), candidates needed to identify and describe features that were required because a book was being prepared e.g. the use of automatic contents tables, indexing, headers and footers not the standard use of functions such as the spellchecker or formatting of text.

In part (b), candidates needed to identify and describe features that were required because a financial report was being prepared e.g. the use of pivot tables, “What if”/modelling, rather than the standard use of simple formulae such as sum or average.

### **Question 9**

This question tested the candidates’ knowledge of databases, suitable output format and ordering, and the advantages of e-mail. The candidates who answered this question generally scored high marks on parts (a) and (b), but found part (c) more difficult.

For part (a), most candidates could identify three items of information required for each individual product. However, some candidates wrongly chose information that applied to the whole order rather than each product e.g. company address, date of order.

In part (b), most candidates sketched a report that contained the relevant details for the fax and better candidates clearly justified each item that was included.

Candidates needed to be careful in part (c) that the advantage described related to the use of e-mail over the use of fax. Those candidates who scored marks described the consistency of a clear report or the advantages of automation. Responses such as “a fax could have poor quality due to interference during transmission of data” or “poor quality of printout from fax machine at the suppliers” or “the suppliers computer does not have to be on-line as an e-mail is stored and forwarded later” gained credit.

## **Unit 3 The Use of Generic Application Software for Task Solution**

### **General Comments**

The projects were, on the whole appropriate, in this session. The vast majority seen were spreadsheet or database orientated with some use of word-processing packages. Often software types (e.g. HTML) were limited but centres are reminded that the use of such software is acceptable. However, centres are also reminded that they should consider carefully the whether the packages that they intend to employ do have the features required for this level of examination e.g. that databases do facilitate relational tables. Also, it must be remembered that the main thrust of ICT3 coursework is a task-based solution, but the solution must also be realistic in its scope and titles. For example, in the case of a project based on a payroll, it would not be truly useable in the working environment unless all the correct NI and PAYE procedures are followed.

It is pleasing to note that generally the standard of centre assessment had improved in this session with more centres embracing the advice given at meetings and in AQA’s documentation. However, there are yet still some centres which do not appear to demonstrate a clear understanding of the standards required for AS level.

Administrative procedures are often well attended to, but centres should be aware that commenting fully on the Candidate Record Forms would aid the moderation process for a centre. Securely tagging work without the use of plastic wallets or ring binders is also very important.

Supervisors are again reminded that marks can only be awarded if supported by evidence i.e. in the documentation available in the hard copy projects submitted to the Moderator.

### ***Specification***

A number of centres are clearly using ICT 3 as a training tool for ICT6 e.g. making use of data flow diagrams. Overall these have in fact been well done and as a training tool for ICT6, is good practice. However, extensive work of this nature is not credited as such within the published marking criteria except where a candidate demonstrates the input, processing and output needs of the solution. The extensive interviews and questionnaires carried out with end users is commendable, along with the consideration of software and hardware, and user's ICT skills. However, these do not really add to the credit that can be awarded in the specification section for this module. Much greater emphasis in giving full details on the end user's requirements and the input, processing and output needs would help candidates more.

Design work must be capable of implementation by a third party if a high mark is to be awarded in the specification section. At times candidates attempted only the visual aspects of design. This was particularly true of database work where critical components (such as queries and report designs) were neglected. Many more centres have addressed a weakness previously commented upon in showing the design of macros and also annotating the coded solution to explain clearly how those macros work. The design work has also shown when those macros are to be activated.

Good evidence has also been seen in the testing of the "before" and "after" situation of using the macros. It is noticeable, however, that there is much greater reliance by centres on the use of macro coding. Some centres relied rather too heavily on this single feature to the detriment of demonstrating other software facilities. Centres are reminded that candidates should be able to demonstrate a wide range of the features available within the generic software packages selected.

### ***Implementation***

Candidates must provide a commentary of the implementation work with evidence of the software features and formulae used. This is essential as commentary adds to the evidence derived from the testing and/or user guide sections to allow the moderator to judge accurately the quality of the implementation effort.

### ***Testing***

It was clear that centres had responded to previously issued advice and the quality of the testing design and execution was overall much stronger by most centres this year. Testing was focussed more on the proposed functionality of the solution and greater attention was given to the test data to be applied. There was still the tendency for some candidates to concentrate on trivial testing of buttons or numerous validation tests of every field/cell rather than demonstrating the overall effectiveness of their solutions. It was made clear at the centres' Standardisation Meetings in the autumn of 2002 that *a sample* of tests should be done, rather than excessive testing. When testing the output of queries it is expected that data sets will be provided and it should be made clear which records match the criteria given so that the outcome can be properly evaluated.

Evidence of testing must be backed up with annotated full printouts or screen shots (large enough to be legible to the Moderator!) cross-referenced to the original plan. Candidates must detail the corrective action they have carried out with screen dump evidence to support their statements. Centres are reminded that planning for testing should be done before implementation and the test

plans applied as the solution is developed. This should provide adequate scope for all candidates to show corrective action within their reports.

### ***User Documentation***

User documentation is improving and many centres are assessing this section more accurately. A few centres are still awarding full marks, even when there are clear omissions e.g. common problems are not being clearly identified.

It was pleasing to note that user documentation which dealt with the customisation of a generic package but which failed to explain how the user would operate the customised solution were less in evidence than in previous sessions.

### ***Evaluation***

Evaluations are usually well assessed at the centre. However some candidates still tend to evaluate their own performance, rather than the standard of the solution they have produced. Candidates still seem unsure of the general criteria that are to be applied to assess the viability of the solution they have developed.

## **Unit 4 Information Systems within Organisations**

### **General Comments**

The aim of this unit is to focus on the use of information systems within organisations. The majority of candidates were being assessed on their knowledge and understanding of this topic for the first time after two years of study. The overall level of responses to questions demonstrated candidates' good understanding of the subject matter, bringing together knowledge gained in the AS and in other modules.

The standard of communication was generally good although some candidates' presentation, spelling and handwriting made it difficult for examiners to interpret their scripts.

There were many questions in which candidates demonstrated some shortcomings in examination technique or where the specification had not been used for topic revision. In particular, poor technique in interpreting questions was especially noticeable on some of the "describe" questions where candidates had learnt by rote the answer from previous *similar* questions, but then failed to answer the specific question set on this question paper. Past papers and mark schemes are intended to provide a guide to the style and types of questions; candidates should use these resources in this context.

Candidates who had prepared well for the examination performed very well on Questions 1 and 6(a). In contrast, some candidates were unable to define some of the basic ICT terms as, for example, in Questions 2 and 3.

### ***Question 1***

Candidates who interpreted this question correctly as asking for "Management of Change" factors scored well. However, many offered factors related to the successful introduction of a new information system (writing about types of changeover) and rarely gained more than one mark. The command word was "State" and so a short sentence for each part question was enough to gain the mark.

### **Question 2**

Most candidates scored well on part (a) and were able to gain both marks available. However, given the quality of answers given it seemed that there were some candidates who had not heard of “Management Information Systems” at all.

Part (b) asked candidates to show the deeper understanding of the use of a MIS. Good candidates stated that, “an MIS exists so that managers at different levels within an organisation can use the information produced by the MIS to enable them to make effective decisions.” Candidates at A2 level are expected to be able to differentiate clearly between the “what” and the “why” so credit was not given to candidates who confused these two separate parts of the question.

### **Question 3**

Most candidates gained a mark for a suitable example, but a surprisingly high number failed to describe “informal” information as “naturally arising” or “follows no set flow/procedures”. Some candidates offered the definition of “formal” information and then said informal was the opposite! This is not answering the question.

### **Question 4**

For part (a), candidates had to know about the stages in the life cycle of a project (an area which candidates could have been expected to cover in the course of their studies for ICT A level). There was some confusion about the terms that candidates might have drawn upon; acceptable definitions are given below.

- “clear timescale” relates to deadline dates and targets and consequent ease of monitoring against a plan;
- “agreed deliverables” relates to content (of documents, of the system e.g. screens, functionality, reports etc) rather than time;
- “approval to proceed” is undertaken at every stage or milestone where the project sponsor (e.g. a user or business manager) reads the document or looks at work done so far, or reads reports on progress and then signs off that stage to show they are happy, before the project moves to the next life cycle stage.

Part (b) was generally not as well answered as only the better candidates were able to show an understanding of how projects are run in the industry. A typically good response would include the following points:

“Projects in industry are run by small, managed, balanced teams working on parts of a project simultaneously in order to make testing more manageable, control more effective and to allow a shorter elapsed timescale than if one team were doing all task in a linear fashion.”

Vague statements about “the best man or team for the task” did not gain marks unless, by example, it became ICT related. The focus in such answers was on using teams to make projects successful, not on characteristics of teams.

### **Question 5**

The code of practice topic in this question was, more than most, often answered without reference to ICT, but the topic is present in the specification only in relation to ICT professionalism.

In part (a), many candidates appeared to have the impression that a Code of Practice is put in place purely as “a stick with which to beat the employee.” Most candidates gained one mark for writing

that a code is “a set of rules or guidelines”, but few gained the further two marks on offer for an expansion such as “it embodied the standards and quality of work expected of an employee to ensure a high level of professionalism in the ICT industry.”

For part (b), many candidates had already given an example of an element in part (a) and so were not sure how to answer part (b). Elements needed to be conceptually expressed, such as “responsibilities for use of company hardware/software/data/internet at work” and so on, which gained a mark and then two further benefit marks.

Some candidates expressed their ideas more directly as, for example, “an employee must...” or “an employee must not...”; as this was not an element, then the two benefit marks could not be gained.

Candidates appeared to find it very difficult to describe benefits to the company for including certain elements in its code of practice. Typical acceptable answers would have been:

- responsibilities for using the Internet where the benefit to the company is that it knows that each employee should be using the Internet only for work-related matters, keeping them productive at all times;
- responsibilities for use of data, where the benefit to the company is that company data is being used only by authorised employees and in compliance with any data protection legislation that covers it.

### ***Question 6***

Both parts of this question were intended to be accessible to candidates of a range of abilities and, indeed, candidates from across the ability range scored very well. The majority of candidates scored at least half marks, with many scoring many more.

Part (a), in which candidates had to identify three categories of users of information systems and the levels at which they were at, should have been familiar to many candidates. The categories of user generally given were: higher management, middle management and workers. The three levels cited were: strategic, tactical and operational. Job titles in the correct category for level given were acceptable; the term “manager” on its own gained no credit.

Part (b) was a standard question. Most candidates gained four marks for the characteristics, although there were some such as “brief”, which did not. However, this was one of those questions where candidates found it difficult to describe, some offering weak explanations or examples of what would happen if the said characteristic was not present.

Typical acceptable answers would have been as follows.

- Accurate: the information is based on data that has been validated and verified to ensure its correctness before processing.
- Up-to-date: i.e. the latest possible version of data (whether it be that changing in real-time, hourly, daily, weekly, monthly, annually etc.) has been processed to form this information.
- The information has come through the correct channel of communication, using the formal routes following the set procedures.
- The information is in the right degree of detail i.e. in summary form, semi-totaled or very detailed, depending on the level of use.

### **Question 7**

This question was designed so that in each part the Principal Examiner was looking for ways of enforcing and controlling legislation, rather than how the organisation implements the legislation. Many candidates did not gain the marks available, especially in part (c), because they concentrated on implementation.

Part (a) was usually answered well with the security of data being a theme that runs through the whole ICT specification. Candidates were able to offer security issues, levels of access and monitoring of data access. Part (b) was answered well by many candidates who kept in mind that it was software misuse i.e. licences and copyright, rather than computer misuse, which was the topic under consideration. There were many ways to gain the marks in part (c) and typical answers were:

- appoint a Health and Safety Officer to ensure that H&S legislation is enforced;
- make regular inspections of work stations against H&S criteria;
- make regular inspections of work stations against ergonomic criteria;
- introduce staff training to ensure they know about H&S rules when working with computers and VDUs;
- use posters, memos, meetings etc. to remind staff of good H&S practices.

### **Question 8**

The stem of this question was quite detailed in explaining that the display system in this medical centre is for the patients, and that there is based on only one PC. Many candidates failed to follow through with this information and therefore failed to gain some of the marks available.

The focus of part (a) of the question was about getting the clinic/surgery times data to the receptionist so any paper-based, file on a disk or e-mailed file method was enough for the first mark. The second mark was for describing a step in the procedure, either to pass/send it to the receptionist in a set way, or by a set time, for putting onto the display system. Data input methods such as OMR, OCR and Swipe cards were not credited, as being unrealistic in the context given.

In part (b) most candidates gave two or three valid methods of training for the context. However, there was then a tendency to state an advantage and/or a disadvantage rather than give a description of the method. For example, acceptable descriptions would have been either, "Receptionists could be sent on a training course where they would learn to use the system/package in a classroom with an expert teacher to answer questions," or, "Receptionists could use computer-based training where they would follow on-screen step-by-step instructions on how to use different functions of the software and undertake on-screen exercises and tests to see how much they have learnt. The CBT package might not let them move on until they have satisfactorily mastered each stage."

Part (c) was where most candidates could think of a suitable urgent situation, but then failed to describe a proper safeguard for this particular aspect of the system. Passwords and user identities were not acceptable as it would be expected that these were in place already to gain access to the system. The Principal Examiner was seeking a description of a safeguard procedure, such as:

- a nominated person from each area is allowed to send an urgent message for display;
- procedures are in place which all staff know how to use;
- there is an automated log off, so no-one can gain unauthorised access to the receptionist's PC.

### **Question 9**

Many candidates produced well-structured essays which both answered the question and demonstrated good essay writing technique. The proportion of candidates who scored ten or more

marks was pleasing, with many candidates scoring much higher marks. Plans were evident in many cases, showing good analysis of the question.

The question was based on regulation of the Internet and most candidates responded with the wider than corporate issues that were needed for gaining marks. Some candidates concentrated on legislative issues which were not relevant outside the UK and Europe. Some candidates concentrated on regulations at company level, thus gaining only some of the available marks.

All parts of the question were answered by the majority of candidates. Reasons for regulations were explored well, such as hacking, copyright issues, and data privacy issues. Issues in devising the regulations were brought up and analysed, such as different laws or cultures in different countries, who has the authority to devise the regulations, and how agreement would be reached. The multitude of problems in enforcing regulations were offered, such as scale of the Internet; the ability to trace offenders and the fact that there will always be fraudsters.

Most candidates concluded well, saying that although regulation sounds a good idea, it is unlikely that it would ever work.

Examples used generally also gained marks, although some were included for inclusion's sake – a list of businesses trading on the internet would not gain credit, which was only given to examples offered to illustrate a valid reason, issue or problem point being made.

The Quality Of Written Communication mark was given mostly as two or three out of four. Very poor spelling and use of language, or a response using non-continuous prose, e.g. the use of bullet points or headed paragraphs, gained only one mark. However, there was a pleasing rise in the quality of many essays. Candidates did seem to enjoy writing the essay and a few wrote some skilfully argued prose to gain all four marks.

## **Unit 5 Information: Policy, Strategy and Systems**

### **General Comments**

Generally, the standard of response to this paper was consistent with the standards of previous years. Candidates' responses clearly illustrated that centres are addressing the specification and there seems to be little confusion regarding the content.

The biggest difficulty for candidates appeared to be examination technique. There were several examples of responses where candidates had either not heeded the context of the question, did not answer within an ICT context or used points given in the question directly in answers.

### ***Question 1***

This question was generally well attempted, with candidates able to gain some marks, although few gained full marks. Popular misconceptions included equating alpha-testing with acceptance testing, and that alpha-testing is performed for bespoke software, whilst beta-testing is reserved for software destined for the general public. Many candidates did not state that alpha-testing requires the use of a restricted test data set; often it was stated that the end user would provide test data.

### ***Question 2***

Part (a) of this question was generally well answered, with most candidates able to identify compatibility and training issues. Better candidates were able to expand on these, and three or more marks were not uncommon for this part of the question.

Part (b) of this question showed that there is a lot of misunderstanding between an Information Technology Management Policy, a Code of Conduct, and a Code of Practice. Several responses referred to issues that were to do with employee actions, e.g. security of passwords, correct use of e-mail etc.. Only the better candidates were able to give points which directly related to the hardware and software issues for an organisation, e.g. standardisation of platform across an organisation or the idea of standard file formats for data exchange.

### ***Question 3***

The majority of candidates attempted this question successfully. Many candidates gained high marks for both parts through good application of the context to the question. Weaker candidates could only give very generic expansions and so missed out on higher marks.

### ***Question 4***

Many responses to this question failed to gain merit as they either referred to network applications that were more oriented to Local Area Networks (LANs) than Wide Area Networks (WANs) as stated in the question, or quoted branded software without saying what kind of software it was (usually this referred to software of a collaborative nature). Weaker candidates were able to give applications for use over a WAN such as e-mail, but could not say why such applications would be useful to a company. Better candidates were able to gain more than half the marks available for this question.

A number of candidates responded to this question by either giving a detailed description of how the communication over a WAN is facilitated, e.g. types of communication lines and line speeds, or by talking about issues such as security. Such responses gained no credit.

### ***Question 5***

There were very few good answers to part (a). The vast majority of candidates responded by describing the weak points of booking tickets by post, by telephone and by computer, rather than discussing the weak points of the system that needed to be addressed for disaster recovery, e.g. the safety/recording of the postal applications between being received by the company and being entered onto the computer system.

Part (b) gave candidates more opportunity to recover marks missed in part (a). Better candidates were able to give issues for backup strategies not already given in the question, and so gain three or four marks. Weaker candidates gave descriptions relating to how often the backup should be taken, or what the backup should be stored on. Both of these were given in the question and so gained no credit.

### ***Question 6***

Responses to this question showed that there is a great deal of misunderstanding about Human/Computer interfaces. The majority of candidates did not describe command-line or menu-driven interfaces and seemed to think that these exist only as a subset of a graphical interface. Often responses to all parts of this question contained references to brand name software and so could not gain credit. Where candidates gained marks, it was usually by being able to give an application where the interface type was appropriate, although this was rarely accompanied by good reasoning as to why



such interfaces were indeed appropriate. One popular misconception was that a command line interface is for use by programmers creating software.

### ***Question 7***

In response to part (a)(i), most candidates were able to give adequate reasons as to why evaluation criteria are necessary before comparing software packages. Part (a)(ii) elicited what might be regarded as typical for this question: many candidates could give criteria and reasonable definitions, but only the very strongest candidates could go on to apply these within the context of the question. There is still a tendency amongst some of the weaker candidates to rely on “cost” as a criterion (which gained no marks) rather than the more appropriate “cost-benefit” type of answer. Candidates still need to be show that factors such as “cost” or “speed” are comparative and therefore need to write more than these words in order to gain credit.

The latter parts of this question tended to get reasonable responses, with most candidates able to get some of the marks available.

### ***Question 8***

Generally, parts (a) and (c) of this question were well answered. Many candidates were able to write sensibly about how websites need to be accessible to the largest audience possible. Candidates were also able to identify many requirements for connecting to the Internet and so gain access to the website.

Responses to part (b) were variable in standard. Better candidates were able to write sensibly about security measures to do with online transactions and the security of the data these generate. Responses in general indicated that candidates are aware that firewalls exist, but are not clear on the function or positioning of these within this context.

Responses to part (d) generally showed a lack of awareness, particularly of the addressing mechanisms used to support the World Wide Web. There were many candidates who stated that all web addresses must start with “www” and that all addresses end with an indication of country of origin, e.g. “.jp” for Japan. There is a general confusion between what an addressing mechanism is (e.g. using URLs to map from a “memorable” character string to a specific network address) and conventions used in addressing (e.g. the suffix “.org” referring to a non-profit organisation).

### ***Question 9***

The answers to this question illustrated some of the best written communication in response to this type of question ever seen. Candidates took the writing of a letter very seriously and so were able to structure their responses well. It should be pointed out, however, that several candidates gave addresses and telephone numbers that would appear to be their own private details, a practice that should be discouraged.

In terms of content, candidates were able to identify three roles of a database administrator, and better candidates were able to expand in general terms on what these roles entail. There is still a misconception amongst weaker candidates that a database administrator will actually enter the data and ensure that the data held is correct. There was also a number of candidates who spoke of “system” and so it was not clear whether the candidates understood that a network administrator and a database administrator have different roles to play within an organisation.

Most candidates gained credit by discussing how a client/server system could benefit in the context given, and better candidates were able to discuss the advantages of centralised storage and management for such a system. Several candidates discussed the benefits of networks generally, rather than the benefits of client/server solutions specifically.

Candidate responses were very weak in the area of the role of a relational database management system (RDBMS). A large number of answers discussed normalisation at length, with reference to how normalisation is carried out and why normalisation is used, although this was not asked in this question. Very few responses actually discussed the role of the RDBMS in any great detail.

## **Unit 6 The Use of Information Systems for Problem Solving**

### **General Comments**

The vast majority of work seen in this session was based on the development of a solution in Microsoft Access. In the main, the nature of the problems was sound with candidates attempting solutions that were dynamic in nature and which provided clear opportunities to demonstrate the processing of data.

Generally the standard of presentation was good, as was centres' attention to the administration processes. Reports were generally well ordered and structured following the specification carefully. Good organization, use of illustrations and the style of written commentary are pre-requisites of a good report, as is the ability to be concise and describe the development of the project clearly from analysis through to its implementation and testing.

The standard of centre internal standardization was generally satisfactory, although some centres still need to consider carefully the material supplied by AQA at the Standardisation Meetings which are intended to support the assessment process before completing the Candidate Record Forms.

### ***Analysis***

The analysis section is a significant area of the project report and, when a centre does overmark a candidate's work, it most often occurs in this section. Critically, the analysis must provide adequate information from which to complete the design phase. Thus, when a database solution is envisaged, there must be an analysis of the data in the system which may be represented in a number of ways, e.g. a data dictionary, but it must be adequately documented as this will be the starting point for the normalization process within the design. A common issue is the allocation of high marks for data dynamics when the only evidence that has been provided is a lone data flow diagram. Such diagrams should be accompanied by a description that can fully explain the processes shown in the diagrams. Ultimately, the analysis has to lead to a clearly defined specification, which should include relevant assessment criteria. The use of questionnaires is obviously a valid tool of investigation, but the candidate must reflect on these questionnaires and draw valid conclusions from them.

### ***Design***

The design work seen in this session showed that a number of centres had continued to embrace the advice given at the given at the Standardisation Meetings for centres held in the autumn of 2002.

Faults with design plans include the over attention to interfaces (typically the menus and forms in Access) at the expense of processing tasks (e.g. query design). Report design was not always thoroughly completed and too often macro designs were neglected when the candidate included these in the implementation.

Pleasingly, many candidates presented their designs as a series of sub-tasks. Less pleasing was the fact that many candidates had not always included evidence to indicate the order or timing of these plans.

Candidates planning for testing need to consider the assessment criteria which is founded on whether the solution is ultimately useable for the intended purpose. Tests must address the main functionality of the solution. If one of the main objectives was to re-order stock automatically then this should be the main thrust of the testing, rather than a series of small tests to input values into fields or check validation methods. Data sets are necessary when testing the output of queries. In the above example, we need a list of stock to which the process will be applied and which items from this list are the expected output.

### ***Implementation***

If a clear set of sub-tasks is presented in the design section, the sub-task will facilitate cross-referencing to evidence of each task being implemented. At times, the evidence provided carried too much description of how to use the software, rather than detailing the work done by the candidate. For example, if a wizard was used to generate a report, then often that which was documented and screen dumped was every wizard driven dialogue box. This is not necessary; evidence to show how the candidate has produced the end result, entered design mode and tailored the solution is what is required.

When database solutions are used, candidates are expected to develop relational databases and make use of those relationships in queries, forms and reports.

### ***Testing***

Certain aspects of testing were encouraging and there was more focus on providing data sets and trying to provoke failure. Test plans were generally presented neatly, often in tabular form. However there was still a lot of “button” testing and test plans which lacked data.

Many centres tried to address end user testing. However, evidence was limited and was offered as little more than a letter/note or a questionnaire commenting on the end product.

The end user has to work through the system. This has to be evidenced and analysed. Successful candidates would have had an end user test plan detailing a set of operations for the user to undertake, or the user would work through the user guide or parts of it. This form of involvement provides real comment upon which the candidate can reflect during their evaluation.

### ***User Guide***

User guides were generally well attempted with many candidates presenting instructions for using their system. Increasingly, this is a stand-alone document often presented in booklet format. Guides that incorrectly show how to use the generic package seem to have largely disappeared. Many candidates used the “FAQ” approach successfully in the troubleshooting section of their user guide. However, candidates do need to be reminded that installation, backup and troubleshooting are all necessary for high marks to be awarded in this section.

***Evaluation***

Evaluation work should be documented against a clear set of measurable criteria which ideally should be negotiated with the end user from the start of the project and so returned to at the end. The absence of a real end-user, the formulation of weak assessment criteria and lack of involvement of the end-user in the testing process will detrimentally affect the work done in this section.

## Mark Ranges and Award of Grades

Unit/Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
Unit 1 - Information: Nature, Role and Context	60	60	28.1	8.2
Unit 2 - Information: Management and Manipulation	60	60	21.2	8.2
Unit 3 - The Use of Generic Application Software for Task Solution	60	60	28.4	11.5

For units which contain only one component, scaled marks are the same as raw marks.

### Unit 1 - Information: Nature, Role and Context (22872 candidates)

Grade	Max. mark	A	B	C	D	E
Scaled Boundary Mark	60	43	38	34	30	26
Uniform Boundary Mark	90	72	63	54	45	36

### Unit 2 - Information: Management and Manipulation (26607 candidates)

Grade	Max. mark	A	B	C	D	E
Scaled Boundary Mark	60	35	31	27	23	19
Uniform Boundary Mark	90	72	63	54	45	36

### Unit 3 - The Use of Generic Application Software for Task Solution (24191 candidates)

Grade	Max. mark	A	B	C	D	E
Scaled Boundary Mark	60	42	36	30	24	18
Uniform Boundary Mark	120	96	84	72	60	48

## Advanced Subsidiary award

Provisional statistics for the award (20560 candidates)

	A	B	C	D	E
Cumulative %	4.73	14.91	33.68	58.01	80.69

Unit/Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
Unit 4- Information Systems within Organisations	90	90	32.3	9.9
Unit 5 - Information: Policy, Strategy and Systems	90	90	33.3	10.5
Unit 6 - The Use of Information Systems for Problem Solving	90	90	42.2	15.7

For units which contain only one component, scaled marks are the same as raw marks.

### Unit 4 – Information Systems within Organisations (12155 candidates)

Grade	Max. mark	A	B	C	D	E
Scaled Boundary Mark	90	50	45	41	37	33
Uniform Boundary Mark	90	72	63	54	45	36

### Unit 5 – Information: Policy, Strategy and Systems (14154 candidates)

Grade	Max. mark	A	B	C	D	E
Scaled Boundary Mark	90	47	42	37	32	28
Uniform Boundary Mark	90	72	63	54	45	36

### Unit 6- The Use of Information Systems for Problem Solving (13258 candidates)

Grade	Max. mark	A	B	C	D	E
Scaled Boundary Mark	90	59	50	42	34	26
Uniform Boundary Mark	120	96	84	72	60	48

## Advanced award

Provisional statistics for the award (11908 candidates)

	A	B	C	D	E
Cumulative %	6.35	21.82	46.88	74.36	93.45

## Definitions

**Boundary Mark:** the minimum (scaled) mark required by a candidate to qualify for a given grade.

**Mean Mark:** is the sum of all candidates' marks divided by the number of candidates. In order to compare mean marks for different components, the mean mark (scaled) should be expressed as a percentage of the maximum mark (scaled).

**Standard Deviation:** a measure of the spread of candidates' marks. In most components, approximately two-thirds of all candidates lie in a range of plus or minus one standard deviation from the mean, and approximately 95% of all candidates lie in a range of plus or minus two standard deviations from the mean. In order to compare the standard deviations for different components, the standard deviation (scaled) should be expressed as a percentage of the maximum mark (scaled).

**Uniform Mark:** a score on a standard scale which indicates a candidate's performance. The lowest uniform mark for grade A is always 80% of the maximum uniform mark for the unit, similarly grade B is 70%, grade C is 60%, grade D is 50% and grade E is 40%. A candidate's total scaled mark for each unit is converted to a uniform mark and the uniform marks for the units which count towards the AS or A-level qualification are added in order to determine the candidate's overall grade.