# GCE 2003
## *January Series*

AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

# Report on the Examination

# Information and Communication Technology

■ Advanced Subsidiary

■ Advanced

# CONTENTS

## AS Units

## A2 Units

# Information and Communication Technology

## AS Units

## Unit 1 Information: Nature, Role and Context

## General Comments

One of the most noticeable problems with scripts seen at this sitting was the generally poor standard of English and presentation. There were a lot of candidates who were disadvantaged by the fact that they did not read, or were unable to understand the questions. Most candidates attempted all of the questions, but they answered on the general "topic" area rather than actually answering the questions as set. Candidates should be encouraged to be familiar with the style of questions and the responses required in order to be thoroughly prepared for the examination.

There have now been five sittings of the examination on the new specification, which should provide candidates with a wide range of questions to practice on. It is always unfortunate when candidates disadvantage themselves in an examination, not by their lack of subject knowledge, but by the fact that they have not answered the actual question.

Candidates also need to practice writing in longhand rather than always typing up their work as, while examinations are still answered in longhand, this needs to be legible – in an increasing number of scripts examiners are having difficulty in actually reading the answers.

Candidates should also be encouraged to read the rubric on the question paper and answer book carefully. For example, it is clearly stated that credit will not be given for the use of brand names, that candidates are expected to number each question and part question, and rule lines at the end of each question. They are also expected to enter the question numbers in the order attempted on to the front of the answer book.

Whilst there are some very able candidates taking the examination, others do not have the depth of understanding of the subject to be able to gain good marks. There were a lot of very generalised answers that made little reference to ICT. Good candidates should be showing a depth of understanding and breadth of knowledge of the subject of ICT, rather than a series of learnt facts.

Candidates were often failing to give examples, even where these were explicitly asked for in the question, or were failing to relate their answers to the scenario given in the question.

There were frequent cases of answers that were superficial and showed a lack of understanding of specific issues – Question 9 showed this very clearly where answers showed little knowledge of what the Internet is and what is needed for the sending of messages electronically.

### *Question 1*

Similar questions to this have been set previously and the standard of answers this time was generally better, although there were candidates who wrote very vague or muddled answers and others who tried to give simple definitions of "input, process and output" or the words "information, communications and technology". Other poor answers simply repeated the question or failed to mention anything specific to the subject and did not mention the use of computers. This question should have provided most candidates with the opportunity to gain full marks.

AQA

### *Question 2*

Again, a standard question that addressed the basic issue of what the differences are between data and information. Some candidates wrongly described information as the "processing" of data and others defined data as being "information out of context". Candidates lost marks by using poor examples such as single values and simple labelling that did not refer to ICT usage of the terms at all, for example, data is 250 whilst information is £250. This problem has been highlighted in previous papers but still seems to be a major problem for many candidates.

### *Question 3*

Many candidates failed to appreciate exactly what the issues were that this question was addressing. The Examiners were not asking for reasons why customers had not made appointments, but why the records belonging to those that hadn't made appointments should be deleted from the database. Good answers referred to the implications for the opticians of keeping the records with regard to Data Protection legislation, and also to the efficiency of processing when the database contained redundant data.

Poorer candidates' answers discussed how people may have moved or died, failing to consider the ICT context.

### *Question 4*

This was another example of a question where candidates did not get high marks because they did relate their answers to the context of the question. There was a tendency to put down only any personal qualities of which they could think. Some candidates referred to the need for good communication skills to be able to, "talk to other employees," – with no reference to the fact that the job was on a help desk. Some candidates referred to the need for team working skills as the job is for a position within a help desk team – in other words, they used the question. Candidates are still using skills such as "initiative" which have been previously specified as not being acceptable.

### *Question 5*

Some candidates showed good knowledge of the usage and issues involved in using the Internet for research. Others had only a very superficial knowledge of the functions of URLs, browsers and search engines. In part (b), candidates often gave answers which showed they understood that the question related to the quality of data - such as the information might be inaccurate or out of date - but then failed to follow this up by explaining why in the context of the question. Answers that referred to the problem of viruses were not acceptable as the question was about the quality of the information itself, not about issues of using the Internet in general.

### *Question 6*

Some candidates misread this question and described measures that could be taken to protect the ICT systems from employees. Others did not take note of the fact that the company was already protected against hackers, viruses and worms and wrote about employees accessing data when they were unauthorised to do so or employees introducing viruses. The question was addressing the issues of malpractice and good candidates recognised this fact and scored full marks.

### *Question 7*

There are candidates who seem to find Data Protection legislation a mystery and do not understand the basic terms and issues involved. This was a question where candidates could easily gain full marks, although even some of the better candidates still failed to show that they realise that the data subjects are "living, identifiable" people and describe them as being "things". The description of the term Information Commissioner was the worst answered part of the question. Many of the candidates

thought the registrar was a register. The question demonstrated that many candidates know the eight principles of the Data Protection Act, but then find it very difficult to apply this knowledge to the context of the question.

## *Question 8*

This question clearly showed the difficulties that candidates get into when they do not read the question properly.

For part (a) there were many candidates who simply read the term "Health and Safety" and described what the employers should provide for their employees.  These answers did not gain marks. The question was about what the employees themselves should do: they must use wrist rests when they are provided, ensure that they actually take breaks, and so on.  This was also a question where answers were vague and badly written, making it hard for markers to assess the candidates' understanding of the fact that it doesn't matter what a company provides unless the employees have been told explicitly to use the facilities provided and follow guidelines.  This is an example of where the often poor standard of English impeded candidates from demonstrating to the Examiner that they knew the answer to the question.

Part (b) was better answered, with a lot of concentration on the regular updating or protection of passwords.

## *Question 9*

This question required candidates to think and differentiated very clearly the candidates who understood the subject from those who did not. It is disappointing that candidates who are meant to be following a specialised course exhibit little more than a very superficial general knowledge of the use of the technology involved.

There were a lot of very vague answers about using "the Internet" or **"faxing"** with no clue given as to how this was actually going to happen – the fact that equipment and software of some sort were needed and, that as the businessman was away from both home and office, he would have to get access to these. Several candidates gave answers that specifically said what could be done from home.

## *Question 10*

Generally a well answered question although some candidates failed to really appreciate what an on-line course would entail.  Candidates generally lost marks where they failed to explain points fully, thus gaining the first but not the second mark.  Other candidates simply repeated for the second point what they had already said for the first point, but wrote it in a slightly different way. There were also some interesting answers to part (c) on the advantages for course providers – some concerned with teachers not having to deal with disruptive candidates and getting more free time! Many candidates did not differentiate between course providers (the college) and course deliverers (the teachers); this was maybe another example of the need for the clear use of English.

AQA

# Unit 2 Information: Management and Manipulation

## General Comments

This was the fifth paper of the new specification and it was pleasing to note that nearly all candidates attempted to answer every question on the paper and most responses were of a satisfactory standard. There were very few scripts with questions not attempted.  Most candidates are now providing answers using full sentences and the decline in the single word answers, that are not appropriate at Advanced Subsidiary level, has continued.  In future examinations, questions where single word answers are allowed will have this clearly stated in the question.

Candidates who used the correct technical terms and related these to the context of the question scored high marks for their answers.  However, some candidates used responses that would have provided answers to questions from previous papers rather than providing facts and examples appropriate to the question posed.  Candidates should be advised to read the whole of each question very carefully before answering it.  Some of the responses to questions did not relate to the question set.

Candidates continue to answer questions using only references to brand names rather than the general terminology required e.g. "Internet Explorer" instead of web browser was a very common unacceptable answer.  It was stated clearly on the questions that ***"the use of brand names will not gain credit".***  Perhaps candidates need to be reminded about this before attempting the examination.

## Question 1

This question was generally well answered with the majority of candidates identifying two ways of entering text into a document.  The most popular correct responses identified the need to select characters by using a keyboard or a touch screen, and the selection of text that had already been stored by copying from another file. Candidates stating other methods often needed to be more precise in their responses.  Citing the use of a scanner by itself was insufficient, candidates needed to mention the use of Optical Character Recognition (OCR) software as well. The use of speech recognition software was another acceptable solution but many candidates were too imprecise and just mentioned the use of a microphone or "talking to the computer", these types of responses were too vague to gain marks.

## Question 2

This was a straightforward question where the use of one-word answers was allowed.  However many candidates insisted on using brand names rather than the generic name for the appropriate type of software required and lost marks.

(a) Poorly answered; few candidates correctly identified an Operating System or file management program.
(b) Well answered; - e.g. word-processing software.
(c) Many candidates gave the incorrect response "Internet Explorer" rather than web browser.
(d) Most candidates identified the need for Database Management software but many candidates just stated "a database", which refers to the data stored rather than the software used to manipulate it. This response was credited on this occasion but more precise answers will be looked for in future.
(e) Well answered; e.g. spreadsheet software.

## Question 3

Generally well answered but candidates did not always gain full marks.

Answers sometimes lacked sufficient detail for two distinct points. Candidates stated the software needed but then did not go on to state why it was required. However, candidates who identified the use of a peripheral driver also usually correctly identified its role.

A few candidates did not read the question carefully enough and described problems with changing the map. A common incorrect response was "zoom", which does not change the image only the user's view of the image.

## Question 4

Candidates usually provided good responses to this question with many scoring full marks. A few candidates confused the descriptions of a length check that checks for number of characters entered, with that of a range check that checks if the data entered lies between two fixed values. Weaker candidates could only describe the type of check and did not give the validation check a name.

## Question 5

Most candidates drew clear diagrams of two different topologies and correctly labelled them, thus gaining full marks. However, the standard of the diagrams varied considerably. In future, candidates should clearly label their diagrams and provide a key to any symbols used. Some candidates could not name the topologies correctly and a common wrong answer was to name a bus or ring topology as peer-to-peer and a star topology as client server. Peer-to-peer and client server describe the manner of provision of the network services.

In part (b), many candidates described the general advantages of networks rather than those related to specific topologies. Better candidates described specific advantages e.g. bus networks are easier to install as less cabling is required.

A few centres expressed concern about the inclusion of topology in this question. Topology is one of the required elements of a network and the term was explained in the question. In a sample of scripts and centres, candidates performed better in this question than they did overall.

## Question 6

Many candidates did not read this question carefully enough and described an advantage of choosing a desktop personal computer and then restated this as a disadvantage of choosing a laptop computer. It was clearly stated in the question that the advantages and disadvantages must be different. Common misconceptions were that laptop computers could not be used with both mains and battery power; desktop personal computers have "a larger memory" or "a bigger hard drive". Modern laptop computers can have the same size of memory or hard drive as a desktop but a desktop usually has more space available to add extra hard drives.

## Question 7

Many candidates, who were well prepared by their centres gave excellent answers to this question, but a worrying number of candidates provided vague responses that gained little credit. An example of one way an interface can be designed to give an effective dialogue is given below.

One feature of a graphical user interface is an icon, which is a small pictorial representation of an application that can be selected by a pointer. Using an icon allows a user to easily select the appropriate application without knowing its exact name or the command required to launch it.

Examples of commonly used icons are an envelope for an e-mail collection program, a picture of a printer to print from a word-processing program etc.

*Question 8*

Many candidates did not provide answers that directly related to the scenario described in the question. The question related to the flight information system; not flight booking or aircraft control. Too many candidates answered the question "write all you know about backup" and could only gain half marks. Better candidates considered recovery procedures as well as backup procedures and described these procedures in relation to the flight information system. For example, testing that the recovery plan works by checking that the backed up flight information data has been saved correctly. This could be done by installing it on a test system, or switching to the mirror system, and then checking that it matched the real flight information.

*Question 9*

This question tested the candidates' knowledge of databases including the advantages of using a database instead of two flat files and the ability to select appropriate database structures without recourse to the rigor of normalisation.

(a) Most candidates could identify some problems with using two flat files. The problem of redundant data was identified and described with correctly identified examples by nearly all candidates. Fewer candidates identified and described the problem of inconsistent data. However the terms redundancy and inconsistency were not always present, especially the latter.

(b) Most candidates could identify some improvements that would occur when the two files were converted to a single database. Common correct responses identified the removal of forename, surname and department from the existing training file and the retention of the staff number in that data structure. Better candidates identified the need for a training code to identify the training course, the inclusion of a third training table and the conversion of the staff number to a foreign key.

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

## General Comments

The majority of coursework seen in this series was either spreadsheet or database orientated. Some sound work, appropriate for the specification, was seen which contained clear documentation that offered an accurate explanation of how the solution was developed. Many projects related to a task-based problem that was suitable for this unit although some work focussed on producing a system and so offered too much scope for the candidate to produce an efficient and operable solution. Whilst extending able candidates is to be encouraged, care does need to be taken when supervising a candidate's project choice to ensure that it is consistent with the specification and can be completed within the time limitations of an AS course.

Overall, centres were realistic and accurate in their assessments of candidates' work.

A specific issue arising from this series included candidates who were offering only partial solutions which lacked essential functionality e.g. library systems that did not show evidence of the loan process, or where loans could be completed but no facility existed to return items.

## *Specification*

Requirements were often detailed, but this was not always the case with the input, processing and output needs. Some candidates were often unable to identify these clearly in a detailed enough manner to facilitate a design. On occasion, designs were assessed as being possible by a third party, yet were clearly incomplete. A prime example of this was the lack of macro designs. Spreadsheet projects have in some cases involved complex macros on which the operational functionality of the project depends. When designs for macros are not present, then the design is not adequate for a third party to implement. While giving candidates access to more of the higher level features in software packages is to be encouraged, and this includes macros, extremely complex macros which begin to demand programming design skills are not within the spirit of this specification.

## *User Testing*

Testing is still an issue that needs to be addressed. Some candidates completely omitted a test plan, whilst others offered only event driven tests that failed to refer to actual test data. A common fault was to see many tests for validation or input of individual fields, but no testing of the actual functionality of the project task. For example, in a library system can a book be loaned out? And the same book be returned? Candidates testing project features which query a data set are reminded that they do need to include the data sets in their plans and show which items are expected to be retrieved.

Testing itself was not always fully evidenced and a small number of candidates offered no hard-copy evidence at all in support of testing. Corrective action was often only briefly attempted. It was the intention that candidates would test their solutions in line with the strategy and that errors detected would be documented and corrected as the solution was developed.

## *Evaluation*

Evaluations often rightly considered specific criteria particular to the solution e.g. the time taken to perform a transaction, but many failed to consider a relevant range of criteria for the overall success or failure of an IT based solution. Some evaluations were still, incorrectly, based on the candidates' performance and time management skills.

## *User Documentation*

A good attempt was often made at producing user documentation, although some were constrained by the limited scope of the solutions developed and common problems likely to be experienced by the user were not fully anticipated.

# A2 Units

# Unit 4 Information Systems within Organisations

## General Comments

This paper was the first January offering of the new specification and was designed to enable candidates to show the advanced knowledge and understanding of ICT that they had gained, with a focus on issues of Information Systems within Organisations. Many candidates were in fact taking this unit for the first time after only 18 months of study. However, there were still many who demonstrated a good overall understanding of the subject matter, bringing in knowledge gained at the AS level and showing a satisfactory holistic knowledge.

The standard of communication was generally good, although some candidates' presentation and handwriting made it hard for examiners to mark their scripts; spelling and grammar were sometimes hard to interpret.

There were many questions in which candidates demonstrated some shortcomings in examination technique or where the specification appeared not to have been used for topic revision e.g. in Questions 1, 3(a), 6 and 8(b) which were well referenced to the specification. Further evidence of poor examination technique was shown where candidates wrote out the questions unnecessarily and then failed to complete the paper. In a few cases, there was evidence of candidates putting down everything they knew to answer the question – up to 12 separate answers for Question 3(a), for instance. Centres are reminded that past papers and mark schemes are available for use with candidates.

There were some non-ICT related answers given, mostly for Question 7, where many candidates appeared not to have knowledge of that part of the specification at all.

### Question 1

Candidates who were clearly well prepared for the examination performed very well in Questions 1 and 4(b) as the idea of the (three) levels of information referred to in these questions (Strategic, Tactical and Operational) is used throughout the specification and is at the core of this module. The key word in Question 1 was "State" and candidates generally gained all three marks, or nothing. More than two-thirds of candidates got all three marks. One or two candidates confused other crucial words and so offered "organisational" for "operational", or "statistical" for "strategic". In this question, all that was required was the three terms without a long explanation of who uses that level of information.

### Question 2

This question was similar to Question 8(a) of June 2002. It asked for differences between a Data Processing System and a Management Information System.

Many candidates understood that a Data Processing System deals with precise or low level data capture used at a repetitive transactional level and that a management information system converts data gathered from internal and external sources into information in order to aid in decision-making. Only the better candidates could then give an example system that truly illustrated the differences.

A typically good response for the examples stated:

*"...that the **Point-of-Sale system** in a supermarket, processes transactions to produce a till total, and adjusts the stock levels, but the **Sales Information system** organises that stock information to produce reports that can be analysed by managers to see which are the best-selling product in order to formulate a marketing strategy."*

Candidates did not appear to know the names of any widely used systems, instead offering a description of method.

### Question 3

Part (a) was a question straight from the specification. Generally most candidates scored over half of the marks available, and a good proportion gained full marks.

Part (b) was asking candidates to think beyond the factors in part (a). Very few could put themselves in the place of staff members and think of the problems that might occur. Most candidates offered one problem and then repeated it.

The better candidates offered answers such as:

*"They might have problems using the system properly, because they haven't been trained (or they don't have the skills)."*
*"Staff may lose their jobs because the new system does what used to be a manual task."*
*"The changes were forced upon staff, so they feel resentment/have attitude problems."*
*"Staff may have different working conditions forced upon them, for example, they may have to relocate to keep their job/may have to work shifts in the future."*

### Question 4

Most candidates gained both marks in part (a). However, those that didn't had misinterpreted the question and offered "other" users in other establishments who might want to use the package, rather than "different" meaning "discrete". The users were given in the stem of the question. An occasional "accountant" crept in – an unlikely person to want to use this particular package. There were many answers similar to, "The owner and the six instructors," – that is seven users. This time it was ignored, but, "The owner and one of the instructors", would have been more accurate.

The candidates who performed well in Question 1 tended to perform well in Question 4(b). The candidates who realised they were being asked about levels of information, scored well. For each of the two users of the package, there was one mark for stating the level of information required, one for describing what that was (i.e. planning for the future/long-term decisions, short-term planning, day-to-day activities), and a third mark for a valid example in the context given.

### Question 5

Many candidates scored very well on this question, some, however, confused user training with user support, and others had trouble giving an example of where the method given would be used. There were many lengthy, and unnecessary, descriptions of the method named, and some candidates offered three ways of the same method (e.g. a one-day course, a two-day course, a week-long course).

Many candidates failed to understand that organisations which require their staff to learn how to use software for work purposes will provide the time and the method – this is what the question was asking. Many candidates wrote everything they knew about a method, including disadvantages. The question did not ask for disadvantages and to include them just wasted the candidate's time as no marks were awarded for this information.

AQA

Typical answers from the better candidates were as follows:

*"An external course for a group of new starters so that they can learn undisturbed and get help and advice from an expert."*
*"Computer-based training available in the office, to be used by staff as they need to learn a package, so that everybody gets the same, standard training experience (or that they can learn at their own pace, or that they can repeat sections of, if required)."*

### Question 6

The majority of the answers to this question - about ICT teams - were disappointing, with very few candidates able to give four characteristics and describe them fully in an ICT context. Many responses gave the characteristics of individual IT professionals rather than teams. The characteristics being sought were those written explicitly in the ICT4 specification.

Typical acceptable answers would have been:

*"An appropriate/good team leader, who has the ability to control and motivate a team of IT professionals."*
*"A good balance of team member skills, from business analysis, through systems designing, to technical systems programming, so that all aspects of development are covered."*
*"Good communication skills for dealing with Business Managers or end users of the system."*

### Question 7

This was generally a very poorly answered question, with many candidates failing to give a solution that was placed in an organisational context. Many candidates failed to go beyond the basic concepts of malpractice and crime, concentrating instead on the legislation, and others offering platitudes such as, "do unto others as you would be done by," and the (often unexplained) "Golden Rule" or "Slippery Slope", none of which, even when expanded, has anything specifically to do with ICT.

The social issues area was not about the social life of the IT professional, but about the effects of introducing ICT into an organisation. Discussion of de-skilling, job changes and redundancy were credited, as were changing working conditions e.g. teleworking or shifts/extended hours or weekend working as a result of a newly introduced ICT system – think call centre systems.

The moral issues covered what is right and wrong, in an ICT sense. Hence, adherence to legislation e.g. the Computer Misuse Act, is an issue; using unlicensed software, making sure personal data is secure/kept private, ensuring a safe working environment for ICT users/workers are others.

Ethical issues cover such aspects as whether the ICT professional should use data, which they are authorised to see, for personal gain (for example, insider trading) or disclose it to a third party. Ethical issues also cover the fact that there should be a code of conduct/code of practice for all users of the system.

### Question 8

As a whole, this question was answered well, with many candidates getting at least half of the marks over the three parts of the question. Most candidates scored one or two marks for part (a) but very few indeed gained all three.

A good response for part (a) would be:

*"A risk analysis is where all elements of a system are identified, then a value - to the business - is put on each of those elements. Potential threats to each element are identified and the likelihood of that*

*threat occurring is assessed. This is normally done in a quantitative way that comes up with a scale for the management to study and use for decision making."*

Part (b) was the best-answered part of the question. Threats were straightforward, and most candidates also got the counter-measure mark. However, poor examination technique meant that many candidates did not realise that they then had to go on to describe the counter-measure (not describe the threat, which most had did).

Part (c) asked for the criteria for choosing a disaster recovery plan. There were more correct answers this time than in June 2002, showing that some centres had used that paper and the Report on the Examination as a guide for teaching and revision. However, there was still a significant number of candidates who did not read the question properly and gave AS level answers as to contents of the plan.

## Question 9

Many candidates produced well-structured essays that answered the question and demonstrated good writing technique. However, the proportion of candidates who scored ten or more marks was disappointing. Scores over 15 were very rare. Plans were evident in many cases, occasionally to the candidate's advantage if they had obviously run out of time, where the odd mark could be picked up from the plan.

The question was based around selling on-line over the Internet, and the problems with keeping payments and personal data secure. The mechanics (i.e. the ICT aspects) were under consideration in this question. Many candidates failed to grasp this basic fact and were either not thinking holistically, seeming to think customers would fill in an order form on-line then just pop down to the shop to pay if they had no credit card (they seemed to forget that Internet could mean global). Many candidates got stuck in the detail, worrying about rotting vegetables or delivery routes.

Methods of data capture offered were nearly all physical, although shops that have MICR readers must be few and far between. Some candidates suggested that customers might have swipe card machines attached to their home PCs and others thought that the company would print out the electronically filled-in order form just so they could pass it through an OMR reader. What was required here was either that credit card/bank details would be filled in on-line and then transmitted to the company, or, for those customers who didn't have a credit card or did not want to pay that way, the same form could be filled in and printed off, then sent with a cheque to the company.

For the control and audit aspects, most candidates went some length to describe audit trails and why one was needed – this is not specifically required for on-line ordering systems, although it might be required for all transactional systems if the company need to keep track of transactions. Again, in this context, it was the customers payment data that was under consideration, so aspects like the use of credit checking agencies or specialist payment service providers, such as Paypal, could be considered. The security of transmission, using SSL, and site security were also valid points, as were pre-registration and a validation/combination use of codes, passwords and email addresses – anything, in fact, to ensure the safety of all the customer's data, personal and financial.

Management information needs could be at any of the three levels, with a description of purpose; they may also need to know where the customers are (in order to decide where to open new warehouses/delivery centres), how often they buy (for stock predictions), and for general customer information (in order, for example, to target groups with special offers etc).

Information generated could cover particular market research or advertising, and demand and supply issues such as using seasonal trends to decide stock levels.

The quality of written communication mark was given mostly as two or three out of four. There was a marked downturn in the standard of spelling and grammatical ability, even from high-scoring candidates. Really bad spelling and poor use of language, or a response using non-continuous prose, e.g. use of bullet points or headed paragraphs, gained only one mark.

# Unit 5 Information: Policy, Strategy and Systems

## General Comments

Overall, the standard of response this year was comparable to June 2002.

In line with last Summer, responses to the continuous prose question, Question 10, were, on the whole, thought out and accompanied by some sort of plan and tended to indicate a reasonable ability to put together a flowing argument. There were several examples from the rest of the paper, however, which show that candidate's limited vocabulary is stopping them from gaining higher marks. It was also disappointing to note the number of candidates who did not make use of the stem in order to frame their answers in the required context. Candidates were providing rehearsed answers (sometimes straight from previous mark schemes) without considering their validity to the context given.

### Question 1

Most candidates were able to gain marks on this question, usually on part (a). There is generally a reasonable understanding of a relational database management system. Several candidates stated how to normalise, but could not say why a relational database should be normalised. It is important that candidates know not only the techniques used for database design, but also the concepts and the rationale behind these.

### Question 2

It was common for candidates to give a list of evaluation criteria in response to this question, rather than to write why an evaluation report is produced. Those who related back to the specification, and thus referred to "methodology used to evaluate", "recommendation of a solution", and "justification of recommendation" could gain high marks.

### Question 3

There were several responses that referred to standards of behaviour, or office etiquette, rather than responses based within ICT. Those who recognised that the question was referring the *de facto* and formal standards tended to gain full marks. It should be pointed out that several candidates made reference to brand names as expansions in this answer; such answers do not gain credit.

### Question 4

Most candidates gained 1 or 2 marks for part (a). There was also an indication in responses to part (b) which suggested that the understanding of the use, advantages and limitations of emulation are being better understood. Weaker candidates still seem to confuse emulation with filtering.

*Question 5*

Part (a) was a problem for many candidates as they could not give "procedures" for discouraging breaches of security, only "actions". There were many limited responses mentioning the use of passwords, firewalls and so on, with very few referring to procedures that could feasibly help to form a code of practice. At this level much more needs to be included in order to gain high marks.

Part (b) seemed also to have caused several problems: candidates did not relate back to the stem, and so gave answers of a financial accounting nature, rather than of a *network* accounting nature. It is essential that candidates always bear in mind the stem for the question, and the content of the A level specification.

*Question 6*

This question was well understood and candidates could gain credit usually for at least two factors, although responses that only gained 2 or 3 marks tended to be limited. Stronger candidates were able to expand on mere factors, and marks of 7 or 8 were not unusual for this question.

*Question 7*

Candidates usually managed to gain some credit in part (a) of this question, and many could see how problems arise from tight deadlines.

Part (b) caused some problems, as it was clear that some candidates had not looked at the issues of using teams for software production. It should be remembered that approximately 20% of the marks available in both ICT4 and ICT5 relate to synopticity, and so questions can be drawn from any part of the specification. Those candidates who had knowledge of this area could provide good responses.

Candidates provided mixed responses to part (c), with many failing to gain any credit as in their answers they discussed the software company finding and fixing bugs, but failed to mention providing the colleges in the question with up-dated software!

*Question 8*

Responses to part (a) tended to be very generic in nature, with few answers referring to the context given. These responses showed that even fairly weak candidates have some good knowledge about Human/Computer Interfaces, but few are able to apply this to given contexts.

Part (b)(ii) was often answered by candidates with reference to how using bar codes can help to manage stock, whereas the question was how the use of the input device – the bar code scanner/ reader – would advantage the company.

*Question 9*

Responses in general to parts (a) and (b) of this question were quite mixed; some candidates ignored the reference to training in the stem and wrote about using the Internet/ Internet technologies to support the company, whilst others wrote quite well about how Internet technologies can be used in training to benefit both company and employee.

Part (c) again highlighted those candidates that understand the difference between interaction and interface. There are still too many responses to this type of question about features of the interface, rather than about how the end used gives input and receives output in a friendly, meaningful manner and how the computer system will support them.

AQA

***Question 10***

Again this year candidates are showing that they are much more prepared for this essay style of question. Arguments used are often flowing and coherent, if not always relevant. This notwithstanding, there was a larger percentage of candidates who ran out of time and did not attempt the question, or presented only plans and/or lists.

In terms of content, the majority of candidates provided answers that were within the scope of the question. Those who failed to understand the question tended to given responses which dealt with the evaluation of software, rather than the evaluation of methods of providing the solution.

Most candidates could list three or four ways of providing a solution, but weaker candidates could do little more than that, and so struggled to get marks for this area. Stronger candidates provided expansion, and so gained higher marks.

In terms of discussing advantages and disadvantages of particular methods of providing solutions, most candidates could write something of worth and so managed to gain credit here.

As mentioned previously, most candidates' responses relating to evaluation criteria discussed how to evaluate the solution itself, rather than the method of providing the solution. It is essential that candidates learn the difference between the two different areas for evaluation, and appreciate the need for both.

# Unit 6 The Use of Information Systems for Problem Solving

## General Comments

There were few entries seen for this unit in this session and the majority of work was implemented in Microsoft Office using Access.

Centres are reminded that, while a task based solution is expected for Unit ICT3, the key issue for ICT6 is,
"… to produce an information system for a real end-user." Genuine interaction between the candidate and the end-user is an essential requirement for this unit and has a critical effect on the assessment. Centres are reminded that this is essential within the testing section if a high mark is to be considered. To this end neither the candidate nor the supervisor may act as the end-user for this project.

Work for this unit is expected to reflect a realistic situation where data is expected to change over time. Some candidates' work seen continues, inappropriately, to be focussed on "one-off" solutions that either solved a single problem with no need for reusability, trivialised solutions so they could not be operated over time or implemented a large number of small tasks within a single organisation none of which were really appropriate for ICT6 alone but did not interact so as to provide a sound basis for this unit.

# 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 | 28.2 | 7.8 |
| Unit 2 - Information: Management and Manipulation | 60 | 60 | 26.5 | 8.3 |
| Unit 3 - The Use of Generic Application Software for Task Solution | 60 | 60 | 28.0 | 9.9 |

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

## Unit 1 - Information: Nature, Role and Context (14286 candidates)

| Grade | Max. mark | A | B | C | D | E |
|---|---|---|---|---|---|---|
| Scaled Boundary Mark | 60 | 40 | 35 | 30 | 26 | 22 |
| Uniform Boundary Mark | 90 | 72 | 63 | 54 | 45 | 36 |

## Unit 2 - Information: Management and Manipulation (6882 candidates)

| Grade | Max. mark | A | B | C | D | E |
|---|---|---|---|---|---|---|
| Scaled Boundary Mark | 60 | 38 | 33 | 29 | 25 | 21 |
| Uniform Boundary Mark | 90 | 72 | 63 | 54 | 45 | 36 |

## Unit 3 - The Use of Generic Application Software for Task Solution (1510 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 (1354 candidates)

|  | A | B | C | D | E |
|---|---|---|---|---|---|
| Cumulative % | 8.8 | 23.2 | 45.3 | 69.5 | 87.2 |

| Unit/Component | Maximum Mark (Raw) | Maximum Mark (Scaled) | Mean Mark (Scaled) | Standard Deviation (Scaled) |
|---|---|---|---|---|
| Unit 4- Information Systems within Organisations | 90 | 90 | 38.0 | 11.2 |
| Unit 5 - Information: Policy, Strategy and Systems | 90 | 90 | 29.9 | 11.0 |
| Unit 6 - The Use of Information Systems for Problem Solving | 90 | 90 | 47.0 | 10.0 |

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

# Unit 4 – Information Systems within Organisations (4439 candidates)

| Grade | Max. mark | A | B | C | D | E |
|---|---|---|---|---|---|---|
| Scaled Boundary Mark | 90 | 53 | 47 | 42 | 37 | 32 |
| Uniform Boundary Mark | 90 | 72 | 63 | 54 | 45 | 36 |

# Unit 5 – Information: Policy, Strategy and Systems (1282 candidates)

| Grade | Max. mark | A | B | C | D | E |
|---|---|---|---|---|---|---|
| Scaled Boundary Mark | 90 | 44 | 39 | 34 | 30 | 26 |
| Uniform Boundary Mark | 90 | 72 | 63 | 54 | 45 | 36 |

## Unit 6 - The Use of Information Systems for Problem Solving (122 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 (125 candidates)

|  | A | B | C | D | E |
|---|---|---|---|---|---|
| Cumulative % | 4.0 | 20.8 | 46.4 | 71.2 | 92.0 |

## 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.