

# GCE 2004

## *June Series*



## Report on the Examination

# Information and Communication Technology

- Unit 1 (ICT 1) Information: Nature, Role and Context
- Unit 2 (ICT 2) Information: Management and Manipulation
- Unit 3 (ICT 3) Coursework: The use of Generic application Software for Task Solution
- Unit 4 (ICT 4) Information Systems within Organisations
- Unit 5 (ICT 5) Information: Policy, Strategy and Systems
- Unit 6 (ICT 6) Coursework: Use of Information Systems for Problem Solving

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# *Information and Communication Technology*

## **General Comments**

In this June series of the examination, there was evidence of an improvement in the standard of preparation of candidates for the written papers. Candidates appear to be making use of the wider range of books and materials that are now available for the AQA specification. The coursework units, ICT 3 and ICT 6, also provided evidence of improved performance with far fewer candidates failing to produce evidence of completing all of the necessary sections of coursework and far more showing a better understanding of the requirements of the two units. Notwithstanding the improvement in marks brought about by improved performances, great efforts were made by examiners in the June examination to improve the standard deviation of marks; efforts to improve the SD will continue in future series of the examination.

It should be noted that some candidates lost marks in the written papers because of a failure to address the question as it was put in the question paper. Sometimes candidates wrote responses which were verbatim extracts from mark schemes from previous years without taking on board that the question this year was similar to but slightly different from its previous appearance. Mark schemes should be used carefully as they are intended to *aid* examiners in their marking and are frequently written in an abbreviated form which does not illustrate fully what candidates are expected to write in their answers; the mark schemes might feature only the concepts/general content that the question is seeking to elicit from candidates.

Some candidates also showed an improvement in examination technique, but there were others who failed to gain marks because of a lack of it. An example of this was in ICT 1 where the last question was on the back page of the examination paper and some candidates failed to turn over and answer it. It should be noted that instructions on the papers clearly state when candidates should turn over and when the end of questions is reached. The failure to answer the last question can have a large impact on the total marks a candidate achieves because (frequently) the last question has more marks allocated to it than any other question on the paper.

Another point of examination technique that does not seem to be followed by all candidates is that candidates should read the whole of a multi-part question very carefully before attempting to answer any sub-part of it. Failure to read the whole question can sometimes mean that candidates use answers in an earlier sub-part which might be more appropriate and useful to them in a later sub-part.

Another example of poor examination technique is the continued use of brand names of specific software packages. Candidates should respond to questions with reference to generic types of software. It is clearly stated on the front of all GCE ICT question papers that, “*the use of brand names will not gain credit.*” Candidates need to be reminded to read the front of the question paper before beginning to read the questions themselves.

Answers should normally be written using full sentences and most candidates did this, limiting one word answers only to where the question stated that it was acceptable so to do.

Candidates do need to ensure that they use ICT-related examples in their answers as sometimes marks were lost because of a failure to do this. The use of examples can also often help candidates to explain concepts, even when they are not specifically asked for in the question.

It is expected that candidates will be able to demonstrate a wider knowledge than the average “person in the street” of the use of ICT, the tools and techniques available, and their implications for commerce, industry and society. Candidates should also be able to use correct technical terminology. However, some candidates still use inaccurate terminology in their responses and lose marks as a consequence.

This was the eighth series of the AS modules and it was therefore pleasing to note that nearly all candidates attempted to answer every question on the AS papers. This was not always the case with the A2 papers (for which June 2004 was the sixth series) particularly on ICT 5. It should be noted that candidates are expected to have studied the whole of the subject content in the specification. However, there was evidence that this was not the case in ICT 4 and 5 as some candidates did not seem to have covered all topics.

The standard of some candidates’ English is affecting their attainment because it is difficult for them to communicate their knowledge in a manner which the examiner can understand. For example, there were some scripts where examiners had difficulty interpreting the candidates’ responses. Additionally, the standard of some candidates’ handwriting made it impossible for examiners to read their answers, and thus to award marks.

## AS Units

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

#### *Question 1*

This question was answered well by many candidates, particularly parts (a) and (b) although some candidates referred to the “Data Misuse Act” in part (c), rather than the “Computer Misuse Act”. Similarly, some candidates referred to “employee protection”, rather than Health and Safety legislation in part (d).

#### *Question 2*

This question was intended to relate to candidates’ project work and therefore candidates were expected to be able to suggest realistic ICT tasks. However, in many cases tasks were simple Data Processing tasks - such as printing a document - or not even ICT tasks (for example, traffic lights and greenhouse control systems). A task also needs to be an action, not just a document, a system or a spreadsheet.

Credit was given where candidates gave examples in parts (b), (c) and (d) that were not necessarily related to the task given in answer to part (a). For part (c), many candidates did not explain the process in relation to “a task that involves processing data into information” as was stated in the question. Even when they did, relatively few candidates achieved the full two marks available for processing, as they showed little understanding of what is meant by processing in an ICT context.

Despite these slip ups, candidates generally achieved good marks for this question.

**Question 3**

Only the more able candidates scored well on this question. Many candidates thought that the difference between malpractice and crime involved whether it related to unintentional or intentional unauthorised access, or whether it was simply a deliberate or accidental action.

**Question 4**

Part (a) was answered well by many candidates as they understood the problems an undated report could cause for the Sales Manager.

Part (b)(i) was also answered quite well but, in some cases, not fully enough to gain 2 marks. Some candidates did not refer to the fact that up-to-date data needed to be *current* data.

Part (b)(ii) was generally answered poorly as many candidates related their answers to the lack of date scales on the graph and not specifically to the age of the data used in the graph. Also some candidates referred to trends in graphs themselves, rather than showing that they understood that poor data would produce poor information.

A general issue in this question was the incorrect assumption that if data is up-to-date it is therefore accurate.

**Question 5**

Part (a) was answered well but in part (b) some candidates related their answers to how the data would be viewed or sent to them, rather than ways in which they could request to view their data as the question required. Few candidates showed clear understanding that some form of identification is necessary in order to be able to gain access to personal data.

**Question 6**

In general this question was well answered. Candidates were specifically asked how the organisation could use the Internet to *communicate* with their customers and suppliers. Many candidates knew the different methods that could be used - for example e-mail, the organisation's own website, pop ups on other websites - and in many cases were able to expand in order to explain how the method would enable communication. Candidates who failed to gain good marks did so because they did not explain how the methods could be used to enable communication.

**Question 7**

Candidates were asked to describe the personal skills needed when producing user documentation. However, some candidates specified the user skills needed by ICT personnel in general, rather than ones that were applicable in the context of the question. Other candidates identified suitable skills, but did not describe how they would be used in producing user documentation. This was a question where candidates who had simply learnt answers from past mark schemes and repeated them definitely failed to gain good marks.

**Question 8**

Generally this question was poorly answered, despite there being an example of what was required given in the question.

Many candidates found it difficult to understand that a function involves an action. Only the best candidates identified functions and then explained how the function could be used to prevent a health

problem. Some candidates identified functions and then just gave the health risk without any explanation of how the function prevented a health problem. Many candidates just gave features such as large fonts or non-contrasting colours. The emphasis of the question was on functions a software developer could provide, rather than simple characteristics of the software.

One worrying trait of some answers was that candidates were confusing what can be achieved through software and hardware. For example some candidates were suggesting that the brightness of a screen could be altered using software.

### ***Question 9***

It is noticeable that candidates only ever seem to think in terms of the advantages provided by the use of ICT, rather than the fact that there are disadvantages to, and limitations of, its use. As a consequence some candidates appeared to find this question difficult.

As this question required the students to apply their knowledge, this question differentiated well between candidates who understood the subject and those who tended to learn answers to previous years' questions.

Many candidates gave answers that related to the non-availability of a device such as a printer or a piece of software or e-mail facilities; these were not creditable answers. Some candidates again showed a misunderstanding of the difference between hardware and software. There was also a considerable amount of misuse of subject specific terminology.

Most marks were gained on parts (a) and (d) with very few candidates gaining any marks of part (c). Good answers to (c) related to the problems of transferring large amounts of data across networks or download speeds on Internet links.

In part (d) candidates tended to write about the consequences of having inappropriate data control mechanisms, but did not say what the mechanism itself was, thus gaining only one of the two available marks.

### ***Question 10***

Quite a few candidates did not answer the question, in spite of the instruction on the paper telling them so to do.

Many answers were simply statements on how ICT can/could be used, rather than a statement of the advantages and disadvantages of using it. For advantages, the examiner was looking for the appreciation by candidates that ICT can provide "more efficient" ways of doing things or that it allows something new and beneficial to be achieved. In terms of disadvantages, the examiner was looking for how the use of ICT can make some things worse, or how ICT allows undesirable things to happen which would not happen if ICT was not used.

Some statements were so short that they failed to gain credit as the marker was unsure as to what the candidate was describing and whether it was relevant to ICT or not.

The question clearly stated that the advantages and disadvantages should be different for each area but some candidates failed to read the question properly, resulting in the repetition of points in answer to several parts of the question.

The answers given elicited a full range of marks with good candidates being able to score highly.



## Unit 2 Information: Management and Manipulation

### Question 1

This question was generally well answered with the majority of candidates identifying two types of processing. It was, however, disappointing to note that a small minority of candidates could not provide an answer to a very basic question on the “Manipulation and/or Processing Section” of this module. A common incorrect response that did not gain credit was to quote word-processing as a type of processing.

### Question 2

This question was very well answered with many candidates obtaining full marks. It was very pleasing to see the full responses to this question with candidates clearly relating their answers to the scenario set by the question. On this occasion, candidates stating that they had used “Word Art” to ensure that the headings stood out were reluctantly allowed credit, even though this refers to a feature available in Microsoft Word. A better response would have quoted the automatic application of a pre-defined heading style.

### Question 3

In this question candidates were asked for a backup procedure that a student could use for ICT project work, so in order to gain full marks different elements of a suitable procedure should have been described by candidates. The elements of a backup procedure for this situation should have included the availability of another copy, the regular basis for taking the copy, the use of a removable medium to store the copy, storage of the copy in a safe place and testing that the backed-up copy worked. Candidates describing any of the four elements would have gained full marks for this question. An example of a good response in the context of the question could be:

*“The student took an extra copy of her ICT project files and stored them on a memory stick every time that she had made changes to her work. She then opened the files that had just been copied to the memory stick in order to check that they were correct and useable.”*

Many candidates only considered the medium used and did not include references to the other required elements of the procedure.

### Question 4

Candidates who had read this question carefully realised that the validation checks should relate to a date being entered into an ICT system, not just the generic validation of data and, as a consequence, could score full marks. Only four out of the six marks were available for candidates who did not give date related examples.

Nearly all candidates could name two suitable validation checks but only the best candidates went on to provide a good description of the check and then a suitable example of the validation check used with a date. A good description added useful information about the purpose of the check. For example, “a range check is used to make sure that the value entered lies between two given boundaries,” adds more information than, “a range check checks that the value entered is in the right range.”

### Question 5

Good candidates easily gained full marks for this question. This type of question has appeared on previous years’ question papers, so it was disappointing to see that some candidates had decided that

different types of test data had been asked for or that the question had asked for the difference between data, information and knowledge. These examples of poor examination technique meant that a few candidates gave responses that were completely off topic and could gain no credit.

### **Question 6**

This is a standard question on an ICT 2 question paper, but many candidates provided very weak answers to this question showing very little understanding of the “Organisation of Data for Effective Retrieval” section of the module. Again, candidates who answered this question in the context of the merger of the payroll and departmental staff flat files to form one relational database, usually provided better descriptions of the advantages of a relational database. An example of a good response in the context of the question could be as follows.

*“The use of a relational database allowed redundant data to be removed from the new system, for example the names of members of staff would no longer be duplicated. As the names of the members of staff are now held in one place then the consistency of the data is improved because there can be no differences in spelling, and any corrections only need to be done once. As the payroll details and departmental staff details are now held in related tables, reports can be produced that link the two sets of information e.g. the monthly staff costs for a department.”*

### **Question 7**

The candidates who had taken time to consider the scenario posed by the question gained high marks. Handwritten scripts were converted into text documents by the use of OCR software. These documents were then sent in an electronic format to be marked by examiners. Weaker candidates assumed that, “the computer marked the scripts.”

- (a) Candidates needed to describe advantages to the examiner so care needed to be taken with answers to ensure that an advantage was given, not just a statement of fact. An example of a suitable response is, “examiners would no longer receive scripts that have been poorly handwritten so all the scripts received could now be easily read.”
- (b) Candidates needed to describe a disadvantage to the Examination Board, not the examiner. An example of a suitable response is, “The OCR system for script conversion would be expensive for the Examination Board to set up as new scanning equipment and OCR software would have to be purchased.”

### **Question 8**

- (a) This was a standard theory question on the functions of an operating system. The candidates who understood this topic gained full marks.
- (c) Candidates who provided answers about the use of the integrated package gained good marks on this part of the question. However, some candidates appeared not to have read the question carefully and provided responses concerned with the installation or purchase of an integrated package; they gained no marks for such responses.

### **Question 9**

Candidates generally scored good marks overall on this question.

In part (a) most candidates could draw the topology of a star network and better candidates clearly labelled the diagram and/or showed the direction of the data flows. Candidates needed to read the whole question before attempting to answer any of the parts as stating a general advantage of

networking would not gain credit here; the advantage had to relate to the star topology of the network. An example of a suitable response is, “problems with one communications link do not affect the other communications links as each computer is directly connected to the server.”

In part (b), most candidates could identify an advantage, but then did not gain the extra mark for a clear description. For example, “The designers are not kept waiting because of network activity,” gained one mark but, “The designers are not kept waiting because of network activity as loading picture files from the network can take some time since they contain large amounts of data,” would gain two marks.

Part (c) was generally well answered.

In part (d)(i) candidates needed to consider both the role of the user name and the role of the password. An example of a suitable response is, “The user name gives the user access to their own work area and the password helps to prevent unauthorised access by others to that area.”

For part (d)(ii), nearly all candidates provided good references to the example screen but only the better candidates explained why items on the desktop screen provided an effective interface. An example of a suitable response is, “The use of icons ensured that the users were only offered correct choices and thus prevented errors.”

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

### General Comments

The majority of coursework seen in this session were either spreadsheet or database implementations. Pleasing however was the fact that there has been a significant growth in the number of other types of work submitted, most notably browser-based projects. These have tended to utilise Macromedia’s Dreamweaver or Microsoft Frontpage with some additional software e.g. Flash or Fireworks. In general there was an overall improvement in the quality of the work seen as centres seem now to have a clearer understanding of the assessment objectives.

The problems selected were generally suitable for the requirements of the specification, which demands only a task-based solution. Some centres had encouraged their candidates to attempt systems at this stage and also to incorporate work from the ICT 6 specification. While candidates are not penalised for this extra work they may not necessarily gain credit for it and the additional complexity can place additional and unnecessary burdens on the candidate. The resulting solutions were generally appropriate with candidates striving to generate a workable solution in the software selected. A few candidates are selecting problems which make it very difficult to achieve a realistic solution (for example, payroll and wages problems). Candidates should be reminded that the solution must operate in the real working environment so tax and National Insurance must be handled in a realistic manner.

Overall, the presentation of candidates’ reports has improved with many using page numbering and contents lists. Greater use is being made of word processing tools to incorporate well laid out cropped images which clearly communicate the software features used. Ultimately this improves the quality of the documentation and means that all the evidence provided by the candidate can be more easily and accurately evaluated.

### *Specification*

While attempting to include the input, processing and output needs, candidates were still not clear as to what is required for the Specification criteria, referring simply to “keyboard input” and “screen

output". This meant that they failed to consider the input, processing and output needs in sufficient detail, particularly with reference to the user requirements stated.

Some sound design work was seen, but problems existed where there was insufficient evidence to support a third party implementation. Some candidates had produced designs for the appearance of the websites or the spreadsheets or forms but the formulae or query designs were incomplete or missing. The use of implemented screen shots as part of the design is not good practice and candidates are expected to produce the design in advance of progressing to the implementation phase of the solution. Full third party implementation is only feasible if all aspects of the solution are designed in detail, including the macro coding. It was good to see that some candidates who had tackled websites had produced asset<sup>1</sup> listings and showed on their layouts which assets are placed on each page.

It is critical that candidates test the major aspects of the work. For example, if the purpose of the project is to produce a stock value report then this function needs to be checked for the correct output and the data on which it should act should be clearly defined. Some candidates spent far too much time testing issues such as validation at the expense of the critical tasks the project was intended to deliver.

It was good to see a greater range of tests this year, but candidates should be advised that it is not necessary to test exhaustively each field/cell, but to include only a *sample test* of each *type* and explain that they have done so in the testing strategy. Candidates need to establish a range of test data that will clearly test the solutions with normal, extreme and erroneous data in differing ways whilst avoiding repetitive testing.

### ***Implementation***

There were some excellent solutions with a wide range of software features used so that a full range of marks was awarded in this section of the marking criteria. However, there was also a number of implementations seen which lacked the appropriate exploitation of the functionality of the software used and did not ultimately achieve an appropriate solution.

In this section, it is expected that candidates will provide a commentary which details all the software features used by the candidates and with clear, hardcopy/screenshot evidence. It is only necessary to include one sample of each type of feature, rather than to show repeatedly the same feature many times.

Evidence for the quality of the implementation will be taken from the testing section, but it is critical for the candidate to provide documentary evidence to prove that he/she has met the assessment objectives. There must be clear proof to establish that the solution described has been built and to show what skills and techniques were deployed. For example, spreadsheet solutions must include printouts of the formulae used where the cell references can be clearly identified and checked where necessary.

### ***Testing***

It is critical that the fundamental purpose of the project is fully tested and that hard copy evidence of this is included in the documentation submitted to the Moderator. Candidates should be reminded that annotated screenshots or printouts are required to prove that solutions function as claimed. In some coursework the images were over cropped and were too small to read.

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<sup>1</sup> An "asset" is any element or object on a web page e.g. graphics, marquees, hover buttons.

It is expected that testing should take place as the solution is developed and that candidates should show the problems that occurred, the steps they took to solve these problems and any subsequent re-testing to show success. Demonstrating proper corrective action is still too often ignored or too simplistic.

### ***Evaluation***

Many candidates now give clear objectives for their solutions as part of the end user requirements and then they go on to assess how well their solution functions. This certainly helps candidates to produce well-designed evaluations.

### ***User Documentation***

User documentation is often a very good source of evidence for how the solution is expected to work. The focus for this work should be on the main task the solution delivers and to explain it in a form suitable for the prospective end-users.

Whilst some candidates tended to give an overview, rather than to detail exactly how the solution was intended to function, many candidates produced sound, good quality user documentation which demonstrated normal use of the end product with some candidates providing forms of on-line help.

One common error made by candidates was to show how to make the solution, rather than how to use or maintain the solution. For example, for websites it is essential that the focus in the coursework is on how to upload the sites and how to maintain the site with updates, or how to handle the data collected by the site, rather than how to alter the fundamental design of the individual pages.

## A2 Units

### Unit 4 Information Systems within Organisations

#### *Question 1*

Three characteristics of good information were requested in the question and the vast majority of candidates could give three valid characteristics. However, an example of each characteristic was also requested and few candidates could manage valid examples, mostly offering examples at data level or, more disappointingly, non-ICT related examples. Some examples did not illustrate the characteristic in question.

The examples required would illustrate the kind of information being used by/useful to a manager in an organisation, most likely for decision-making. For example, as an example of timely/at the right time, a sales manager would need weekly sales figures on a Thursday morning to give him time to prepare for a Friday Board Meeting. If these figures were late, he would not have enough time to prepare his report.

#### *Question 2*

Some candidates knew the difference between formal information flow and informal information flow and could also give good examples of each type of flow. Unfortunately, some candidates simply offered definitions of formal and informal information, rather than information *flows* and failed to give examples. An example of formal information flow would be that minutes of a weekly progress meeting are prepared by the designated minute-taker and then distributed to all attendees within a certain time period, as well as a copy being kept on file for future reference. An example of informal information flow is when someone hears a rumour about organisational change and passes this on, by word of mouth or e-mail, around the company until many people have heard the rumour but no-one knows the information officially.

#### *Question 3*

This question was very well answered by the vast majority of the candidates, with most gaining all three marks. However, there were still some candidates giving non-ICT answers, despite the question asking specifically about an IT code of practice.

#### *Question 4*

Part (a) covered the management of change which candidates would have recognised if they had seen past papers; only a minority of candidates gained all the available marks. Many candidates gained one or two marks for mentioning re-training or staff attitude/motivation points.

Part (b) was generally a fairly well answered question, although some candidates offered personal characteristics as answers, rather than characteristics of ICT teams. It was recognised that good communication within the team is necessary for an effective team and so this was credited as an alternative to good external communication skills.

#### *Question 5*

In part (a), some candidates realised that, for the stock control system, the items of data held in an audit trail would be at transactional level. Thus an response along the lines of, "Product stock code

and quantity being sold would be recorded, so that the ups and downs of the stock level can be traced,” would gain three marks. The stock level or product description or price would not be held.

Similarly, for part (b), good answers would have been the identity of the user (user-name or user-ID); which machine they were connected to (terminal ID); when (date and time) or for how long (log-on & log-off times); what software/files they accessed would be valid data items (used for tracking (either for tracing illegal activities or for accounting purposes or for software license monitoring)). Passwords were not acceptable data items as they are not held on an audit log.

Examiners were fairly lenient in awarding marks for descriptions of data items because it covered a previously relatively little examined area of the specification (e.g. “who was logged on” or “user” for “user-ID”). However, date without time or time without date would be useless for tracking activity in any audit system and so candidates had to include both to gain credit.

### ***Question 6***

Part (a) was generally badly answered, with many candidates listing various procedures for preventing misuse, such as those that would appear in a code of practice, rather than factors that needed to be covered. Some candidates’ answers did cover the factors that organisations should consider in their policy (such as preventing misuse, detecting misuse, investigating misuse) and so gained higher marks. These factors are listed in the specification.

Part (b) was intended to examine training aspects of a security policy, but the majority of candidates responded with methods of disseminating the information about a new policy so the mark scheme was adjusted to accept dissemination methods as well. Most candidates thus scored highly on this part of this question, especially those who kept in mind that it was a requirement to get information on the new policy out to all staff as soon as possible.

Part (c) was slightly less well answered with a few candidates offering unrealistic methods by which a member of staff might be made aware of the security policy of an organisation. However, most candidates gained some of the marks available, recognising that most new staff go through some form of induction at a new job.

### ***Question 7***

Part (a) was well answered, with most candidates gaining all the marks. One or two candidates got the three levels mixed up and others did not know the three levels of Operational, Tactical and Strategic, despite this being a basic concept inherent in the ICT 4 module.

Part (b) gave candidates an opportunity to apply their knowledge of the different levels in an organisation to the different users of an information system. The supermarket scenario was familiar to candidates and the vast majority scored very well on this section as they were able to describe accurate content for their outputs and accurate uses for the information. When candidates did lose marks it was because they had trouble naming an “output”, such as a list or a report, confused the stock-checker’s operational role with the Department Manager’s tactical role, or did not understand the strategic role of the Company Executive Officer.

Three marks were available for part (c). Apart from some candidates who did not attempt this part of the question, most candidates scored at least some of these marks, with many gaining all three. Candidates generally correctly realised that they were merely describing the differences in usage between the operational level and the strategic level information users in a conceptual way.

### Question 8

Part (a) of the question asked for four principles of the *current* Data Protection Act. Many candidates were well schooled in these and could offer three or four to gain good marks. Many also offered, “data must be up-to-date,” which is not on the current legislation. Many candidates misquoted, “adequate, relevant and not excessive,” (one mark) as, “accurate, relevant and not excessive” (two marks!). There was a small minority who did not appear to have any knowledge of the legislation, despite it being an important topic at AS level.

Part (b) was well answered.

### Question 9

The essay topic covered the underlying principle of this module: Information Systems in Organisations. Many candidates produced well-structured, high-scoring essays, gaining maximum marks in at least one of the three areas listed and many candidates scored maximum marks for content (16 out of 20). However, there was a minority who produced pages of statements that were totally unsupported by any facts and could not, therefore, gain credit.

In response to the “role and relevance” section of the question, candidates gained up to four marks for giving a standard definition of a Management Information System and some further marks were gained for giving good examples of information systems at work at various levels within an organisation. However, some candidates simply offered titles such as “Decision Support Systems”, “Executive Information Systems” (or worse, “DSS” and “EIS”, without expansion) and without saying what these were or who would use them. Better candidates explained a series of information systems in a particular organisation (many used supermarkets as the scenario was possibly fresh in their minds from Question 7) and how they interlinked.

The Development Life Cycle got a variety of responses: some candidates glossed over this section completely, or referred to upgrading of machinery or platform, rather than information system; some candidates merely listed stages on the waterfall life cycle with little expansion. One mark was awarded for a list, or one mark for each stage with a basic description and an extra mark for a full expansion. For most, this was the best-answered section, candidates showed that they fully understood the process that they had undertaken for their own projects.

In response to the third section, “factors that lead to success or failure”, candidates again gained marks for the majority of marks, although some presented the factors as a list and did not expand on the basic factor. Other candidates offered first a success factor, and then the same factor as a failure. For example, “A good analysis where there is enough time to find out all requirements will help the system succeed,” is the same response as, “One factor that will cause the failure of an information system is having an inadequate analysis as the user’s requirements will not be met.” In this instance the mark would not be given twice.

The quality of written communication was disappointing this time. Even apparently good candidates gave bulleted lists. A bulleted list is *not* continuous prose. Many candidates did not structure their essays well, but those who did gained good marks for the “quality of written communication”. The latter type of candidates wrote essays which had a good introduction, were paragraphed correctly, were well constructed in flowing sentences, with clearly explained statements and a concluding paragraph.



## Unit 5 Information: Policy, Strategy and Systems

### *Question 1*

This was the first time that an entity-relationship diagram had been used in the examination for this specification. The vast majority of candidates were able to gain at least two marks. The better candidates gave more complete answers, explaining that one actor can appear in many films and that one film can have many actors for full marks.

### *Question 2*

This question did not produce a high standard of response. The majority of candidates described what a Uniform Resource Locator (URL) is, rather than explaining why URLs are used. Typical responses gained a single mark for identifying that an URL provides a unique address for a website. There were many instances of candidates simply rewording the question, and this should be discouraged. In a significant number of cases it was obvious that candidates did not understand the full term “Uniform Resource Locator”, and many candidates incorrectly identified this as either some form of search engine or as a security measure.

### *Question 3*

In part (a), weaker candidates answered the question with a discussion of why testing is important, rather than why test plans are important, as asked in the question. Candidates who were able to relate their project work to this question were able to gain high marks. Good responses dealt with such things as the need for a logical, thorough approach.

Parts (b) and (c) were very similar to questions asked previously about alpha- and beta-testing and candidates performed better on these parts of the question. There are still some candidates who refer to alpha-testing as acceptance testing (gaining no credit) and also writing about alpha-testing as a process involving the end user. The idea of using a small set of end users in the final testing process is clearly well understood.

### *Question 4*

Overall, this question differentiated well in terms of candidates’ abilities. Nearly all candidates could name an appropriate situation for the use of a menu, although there were a small number of candidates who used trade names, and so could not gain credit. Typical answers included “Automatic Teller Machines” and “mp3 players”.

For part (b) the more able candidates related their answers to either the mobile phone or their chosen situation. Less able candidates could mention some reasons for using menus, but tended to start discussing the more familiar Graphical User Interfaces and so were not able to reach the higher marks. Good answers referred to ease of access to required functions and less reliance on complex input and output devices. Typical wrong answers tended to focus on the idea of shortcuts for experts and an over reliance on graphical output.

### *Question 5*

For part (a), many candidates gave a variation on the question as a response and so were unable to gain marks. It would seem that the importance of a meeting between all interested parties is not well understood. A number of candidates also responded by stating that the systems developer was telling the managers what the solution was, rather than finding out what the solution needed to do. Candidates gained credit for discussing the need for the developer to find out the needs of the

company through the managers, and the need to keep the managers involved in the process of deciding on a new system.

Part (b) was better answered, with weaker candidates able to give criteria, and better candidates able to provide criteria and relate these to the context. There were several examples of candidates giving criteria which related to the successful provision of the solution, e.g. meeting time scales, and so gaining no credit. Other acceptable answers related to the requirements of the solution, e.g. the ability to access data from old systems. Further examples of acceptable responses are well detailed in section 14.2 of the 2004 specification.

### ***Question 6***

There was a wide variety of responses which were acceptable to this question, and consequently most candidates were able to do reasonably well when answering this question. This was also a question where weaker candidates could show some knowledge, and stronger candidates were able to provide more complete responses.

Part (a) was typically answered by the discussion of the difficulty of adapting “off-the-shelf” software packages to very specific tasks, and the fact that this method of gaining software is cheaper compared to other methods.

Part (b) caused problems for several candidates and most responded in a way which dealt with licensing software, rather than with leasing the licenses. Typical answers that gained marks in this area contrasted short term and long term financial benefits. Answers which failed to gain credit tended to concentrate on the lack of control over distribution, leading to piracy.

Answers to parts (c) and (d) tended to concentrate on the ability of those creating the solution;. It seems to be a generally held view that external software consultants are more skilled, whilst “in-house” development will understand the problem better. Both points of view were able to gain credit. Weaker candidates tended to reverse the arguments from one part of the question to the next, and so gained credit in one part only.

### ***Question 7***

For this question, many candidates made reference to environmental factors that affect computer usage, e.g. the need for correct lighting, seating, monitor positioning etc., and so were not able to gain credit. These are, of course, valuable areas for consideration, however the area of the specification dealing with Human Computer Interaction deals only with the psychological factors affecting the way in which people interact with computers, which includes how input to and output from the computer system can be most effectively achieved.

Where candidates were able to give creditworthy responses, weaker candidates concentrated on one area – typically to do with the user themselves. The better candidates were able to look at several different areas to do with Human Computer Interaction and so were able to gain high marks. Most candidates were able to give examples to go along with their descriptions, with better candidates giving complete descriptions and so gaining higher marks. Responses included reference to user ability (be that physical ability or IT literacy), good use of colour and helpful error reporting and user support through help systems.

### ***Question 8***

Part (a) of this question was well understood by candidates. Weaker candidates could usually identify some relevant factors relating to backup strategies. Stronger candidates could identify and expand within context upon at least three factors.

Part (b) generated various responses in which candidates discussed audit controls, network monitoring software, and “printer credit” systems. Most candidates could gain at least one mark for this question. It would seem that many candidates are familiar with the scenario of controlling printer output and as such could respond with some confidence. Weaker candidates tended to gain a single mark, whilst the better candidates scored two or three marks.

### ***Question 9***

Every candidate that gave a considered response to this question was able to gain some marks. Better candidates were able to address each of the three bullet points and so gain credit across the entire question.

Many candidates were able to identify some resource requirements for such a system - usually the human resource - and often this was the system or database administrator. Some candidates also identified the separate need for hardware and software resources. A number of candidates failed to gain credit in this area by concentrating on the time and cost aspects.

There were some very good comparisons between both distributed and client-server approaches to the problem, but a significant number of candidates confused the two in their answers. Several candidates were able to discuss the need for data integrity and data consistency. This did lead some candidates off into a discussion of normalisation, which did not gain any further marks.

In terms of system support, weaker candidates tended to concentrate on a single area of the discussion, typically the method of changeover, the approach to backing up such a system, or security issues. All of these were within the question and the mark scheme, but concentrating on just one area did severely limit the marks available to these candidates.

The Quality of Written Communication was good, with most candidates able to gain three out of the four available marks.

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

### **General Comments**

Centres continued to build on their previous experience with this module and as a result they often facilitated the production of high standards of work from their candidates - mainly implemented in Microsoft Office using Access - that were usually accurately and consistently marked. Additionally, far fewer candidates were seen to be handing in projects where sections were missing from the reports.

However, candidates should be reminded that work for this module is expected to reflect a realistic situation where data will change over time. Some candidates are still producing “one-off” solutions which either solve a single problem with no need for reusability, or they trivialise the solution so that it cannot be operated over time. Genuine interaction between the candidate and the end-user is an essential requirement for this module as it has a critical effect on the assessment, particularly within the testing section. The candidate may not act as the end-user for this project (see page 32 of the 2004 specification).

## ***Analysis***

The purpose of this section is to explain fully to a third party the precise operation of the current system, the constraints upon it, and any additional requirements of the end users for a new system, so that the design effort could be initiated by a third party. All too often candidates did not have an adequate understanding of the problem they are solving and this then led to a simplistic or inappropriate solution. It is expected that candidates make appropriate and sensible use of appropriate systems analysis tools and techniques. Some form of data analysis is essential and, without doubt, a data dictionary or equivalent is expected to summarise that analysis.

High marks were sometimes erroneously given for superficial attempts at the analysis. For example, the inclusion of a data flow diagram without other essential written descriptive work is unlikely to ensure that the information flows and data dynamics have been fully identified. Without a full understanding of the problem and how the system currently operates the candidate will be limited in the solution they are able to develop and how well that solution solves the problem set. To achieve high marks a comprehensive document containing a high degree of detail is necessary.

## ***Design***

Centres are reminded that to allocate high marks for this section a competent third party must be able to implement a solution from the design work presented and an effective and full testing plan must be present in this section of the documentation.

Good design work featured:

- attempts at normalisation when a database solution was selected;
- good form and report designs with adequate detail about the underlying queries for a third party to implement;
- clear documentation of the processing methods that would be applied to the data e.g. the use of action queries such as update or append.

A common fault, often also seen in module ICT 3, is to find macros documented in the implementation but often completely omitted from the design work.

It is the intention in this phase of coursework, as it is with ICT 3, that a test strategy and plan(s) are produced before the implementation. The candidate must have a clear idea of the desired result, the criteria for success and the nature and scope of the data for which to test. The focus for testing must be on whether the solution developed can achieve the main functions of the system. At times candidates' test plans focussed on trivial aspects (often repeating themselves) at the expense of the main testing issues. Candidates should also address at this stage how the user will be involved in the testing phase.

## ***Implementation***

High marks can be awarded here for a solution that is a full and effective solution to the problem posed. Given the nature of the problems as open ended and dynamic we should expect to see here solutions that fully exploit the software. In particular, when database management software is used, candidates should be making full and effective use of the appropriate software functions which manipulate the data in the system, rather than simple use of the storage and visual presentation aspects.

Candidates should be reminded to include sufficient technical documentation within this section to support the marks awarded.

### ***Testing***

Certainly the approach to testing has continued to improve with good attempts being made at presenting the results and cross-referencing the evidence. However, more widespread use of data sets is needed as it is especially difficult to test a select query if, for example, the data to be searched is not known. Samples of testing are only required for repetitive situations.

The specification states that end-user involvement must be “clearly evidenced and (reflect) full participation” to attain the highest mark range. Too often high marks are still being allocated on the basis of a simple letter stating that the end-user has seen the system. To gain access to the highest marks it is expected that end-user acceptance testing will be planned for, carried out and fully documented.

### ***User Guides***

As stated for ICT 3, the user guides are often a very good source of evidence for how the solution is expected to work and the focus for this work should be on the main tasks the solution delivers. It should also explain the tasks in a form suitable for the prospective end-users. We have continued to see good quality user guides which demonstrate well the normal use of the system, but as ICT 6 systems deal with problems where there is dynamic change to data, clearly the guides should deal with this issue, including items such as archiving, where necessary.

### ***Evaluation***

While any information system will have general criteria that can be applied (e.g. how robust is the solution?) the candidate must make these criteria specific to the problem in hand. The candidate should be able to identify suitable performance indicators, both qualitative and quantitative, within their analysis, against which to assess their solution’s performance, and refer to evidence within their report as part of their discussion. For example, if a candidate had set an objective relating to accuracy of processed data, then it is necessary to state what degree of accuracy is required. In discussion of whether criterion has been met, the candidate should offer reference to proof, which should be available within the testing section of the report. The end-user acceptance testing can be a rich source for supporting evidence for the candidate’s evaluation work.

### ***Report***

The final report should be clearly delineated, be paginated and have a table of contents. It is pleasing to note that presentation standards continue to improve.

Overall, it should be possible for a third party to follow the progress of the solution through its stages, clearly seeing the development of the project. Clear and suitably sized illustrations should be used when appropriate. Candidates should be reminded of the need for accurate spelling and grammar if they are to communicate effectively with the Moderator.

# 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	28.8	8.0
Unit 2 - Information: Management and Manipulation	60	60	27.3	8.9
Unit 3 - The Use of Generic Application Software for Task Solution	60	60	30.4	11.2

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

## Unit 1 - Information: Nature, Role and Context (19831 candidates)

Grade	Max. mark	A	B	C	D	E
Scaled Boundary Mark	60	44	39	35	31	27
Uniform Boundary Mark	90	72	63	54	45	36

## Unit 2 - Information: Management and Manipulation (24178 candidates)

Grade	Max. mark	A	B	C	D	E
Scaled Boundary Mark	60	42	38	34	30	26
Uniform Boundary Mark	90	72	63	54	45	36

## Unit 3 - The Use of Generic Application Software for Task Solution (22046 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 (19710 candidates)

	A	B	C	D	E
Cumulative %	4.3	15.2	33.6	57.2	79.2

Unit/Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
Unit 4- Information Systems within Organisations	90	90	47.3	13.0
Unit 5 - Information: Policy, Strategy and Systems	90	90	38.8	11.8
Unit 6 - The Use of Information Systems for Problem Solving	90	90	42.5	15.0

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

### Unit 4 – Information Systems within Organisations (8955 candidates)

Grade	Max. mark	A	B	C	D	E
Scaled Boundary Mark	90	65	58	52	46	40
Uniform Boundary Mark	90	72	63	54	45	36

### Unit 5 – Information: Policy, Strategy and Systems (11281 candidates)

Grade	Max. mark	A	B	C	D	E
Scaled Boundary Mark	90	57	51	45	39	34
Uniform Boundary Mark	90	72	63	54	45	36

## Unit 6 - The Use of Information Systems for Problem Solving (12337 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 (12753 candidates)

	A	B	C	D	E
Cumulative %	6.8	23.3	48.9	75.7	93.3

### Definitions

**Boundary Mark:** the minimum 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.

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