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ASSESSMENT and QUALIFICATIONS ALLIANCE

## General Certificate of Education

# Information and Communication Technology 6521

*ICT 4 Information Systems within Organisations*

# Mark Scheme

## *2006 examination – June series*

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

**GENERAL GUIDANCE NOTES FOR EXAMINERS**

## Overall guidelines

**1.** All examples accepted should be clearly related to the subject area and should not be "generalised" examples.

**2.** Attention should be paid to ensure that marks are not awarded for simple restating of the question or the stem, often involving the exact same terms.

**3.** The answers should be providing evidence of more than "man in the street" knowledge of ICT.

**4.** It should be remembered that scripts could be seen after they are marked and so consistency of approach and correct mechanics of marking are essential.

**5.** Rules on positioning of ticks and marks are to aid in checking and remarking of scripts.

**6.** Do not expect the candidate to use the exact wording given in the mark scheme. If you are in doubt as to the correctness of an answer given by the candidate, consult your Team Leader.

**7.** The answers given in the mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.

**8.** One-word answers, where acceptable, will be indicated on the question paper.

**9.** Where a mark is only available if there is a previous correct response, i.e. a dependent mark, then this will be indicated on the mark scheme.

**10.** The meaning of ICT-specific words and phrases are as defined by *A Glossary of Computing Terms* (current edition) by the British Computer Society.

## Specific marking guidelines

**11.** The basic rule is one mark, one tick. The tick is to be positioned at the point where the mark is gained in the answer and definitely **not** in the margin.

**12.** The only figures in the margin should be sub-totals for parts of questions and a final ringed total for a whole question.

**13.** Where questions are divided into parts a, b, c and so on, and a mark is indicated for each on the paper, a mark should be positioned at the end of the appropriate response in the margin.

**14.** There should in effect be a mark in the margin at every point there is one on the question paper and a number of ringed totals, which relates directly to the number of questions on the paper.

**15.** Where a question has only one part, the total for that question should be written once and then again and circled. This allows for easy checking that totalling and transcription of marks is correct.

**16.** All zero values should be crossed through.

**17.** All blank spaces should be crossed through with a vertical line through the text space – not in the margin.

**18.** All writing must be marked as read, either by the presence of ticks or by striking through the script with a vertical line.

**19.** All blank pages must be crossed through.

**20.** Where candidates have added to their answers later in the script, the total mark should be indicated as including x from Page y. The total mark should be in the position where the answer starts.

**21.** The use of the following symbols/signs is acceptable:

a. BOD – where the benefit of the doubt is given for the point the candidate is making. This is generally where poor writing or English is an issue. Its widespread use should be avoided.

b. Underlining of subject specific terminology, which is misused or incorrect e.g. encoding rather than encryption, information rather than data.

c. Underlining can also be used to highlight clearly incorrect statements or the use of a generalised phrase such as quicker, user friendly and so on.

d. An omission sign ^ should be used where the candidate has given insufficient information to gain a mark. This is particularly useful when a teacher or student looks at scripts against a mark scheme.

e. It may be appropriate to indicate where the same point has been covered more than once by an arrow or where a point has been covered in several lines of prose by the use of brackets.

f. The use of letters associated with ticks **may** be used to indicate different areas being marked in a question, particularly to indicate the different bullet points in an essay. THIS WILL BE OUTLINED AT STANDARDISATION.

**22. NO** other symbols or comments should be used.

**23.** Markers are responsible for checking

a. The transposition of marks to the front sheet

b. That all work has been marked on each script

c. That all marks for individual questions are totalled correctly

d. That the script total is transferred to the box at the top right of the script.

e. That they **clearly** initial the script, under the total at the top right, so it is possible for the Principal Examiner to identify each markers work.

# Unit 4: Information Systems within Organisations

**Examiners: the answers given in this mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.**

| | | | |
|---|---|---|---|
| **1** | *13.8* | *Give **three** reasons why projects are often sub-divided into tasks and allocated to teams.* | *(3 marks)* |
| | | any 3 x 1<br>• can be broken into more manageable sub-projects (1)<br>• has smaller managed (1) teams<br>• able to have a balance of skills in the team/allocating ICT task to correct ICT team (1)<br>• makes the project easier to control (1)<br>• makes testing more manageable (1)<br>• able to run non-dependant sub-projects simultaneously (1) | |

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| **2** | *13.5* | *Introducing new information systems may result in changes to the organisational structure. This will need careful management.*<br><br>*State **four** other aspects of change that may need managing.* | *(4 marks)* |
| | | any 4x1<br><br>• staff re-skilling/training<br>• staff attitude<br>• employment pattern<br>• employment conditions<br>• internal procedures | |

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| **3** | *13.6* | *Many organisations employ a Health and Safety Officer to enforce health and safety legislation for all users of their ICT systems.*<br><br>*Give **five** ways that this officer could help to ensure that health and safety legislation is being enforced.* | *(5 marks)* |
| | | Any 5 x 1<br>• by checking that ergonomic workstations are in place for all IT users<br>• and monitoring that chairs etc are in good condition<br>• by <u>regularly</u> checking the safety of IT equipment<br>• by encouraging regular self-assessment by IT users to ensure compliance/ having a mechanism for problem or fault reporting<br>• by making available training for safe VDU usage and other H&S topics<br>• by having H&S training at induction<br>• by providing training in safe lifting of laptops/other equipment<br>• by maintaining H&S board (with posters/notices etc)<br>• by reminding users about their rights e.g. free eye checks for regular IT users/ regular short breaks | |

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| **4** | *13.3*<br><br>*(a)*<br><br>*(b)* | *Information flows within an organisation by both formal and informal mechanisms.*<br><br>*What is meant by formal information flow? Give an example of a formal information flow mechanism.*<br><br>*What is meant by informal information flow? Give an example of an informal information flow mechanism.* | <br><br>*(3 marks)*<br><br>*(2 marks)* |
| | (a)<br><br><br><br><br><br>(b) | • A system with fully documented procedures/agreed procedures/planned procedures/structured procedures (1)<br>• Stating stages of flow/control/exception handling/distribution (1)<br>• Such as Business letter, memorandum, formal (agenda'd/regular) meeting, meeting minutes, email, SMS messages (1)<br>• **<u>NOT</u>** plain (unqualified) /letter or meeting<br><br>• Information that **naturally arises/not structured/ad-hoc** (1)<br>• Such as a phone call, personal conversation, during a meeting or by observation, e-mail, bulletin board, special interest group, texting (1)<br>• **<u>NOT</u>** memo<br><br>**NB.** Do not give positive/negative as 2 marks | |

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| **5** | *13.7*<br>*(a)*<br>*(b)* | *Many organisations use industry standard packages.*<br>*Name and describe **three** methods of support available to their users.*<br>*Name and describe **three** methods of training available to their users.* | <br>*(6 marks)*<br>*(6 marks)* |

(a) 1 for method (**m**), 1 for description/example/expansion (**e**) – max. 3 x (2,1,0)
*marks are independent*

| **Method (m)** | **Description/example/expansion (e)**<br>*These are examples only – other expansions are equally valid* |
|---|---|
| (External) Phone line/Help desk | someone technical to guide/help / supplier service |
| On-site support technician or Help desk | to be on-hand to solve problems |
| Call-out technician | Phone and will come on-site |
| User guides/ articles/ utilities/ books/ documentation | people can work at own pace/ have instructions at side/ look it up for themselves |
| Communications systems/ bulletin boards/ internet site/ intranet *(passive)* | more able users can help themselves by reading the information |
| On-line technical help *(active)* | Get specific queries solved by a technical expert/via email |
| Email updates | Subscribe to service/arrives automatically |
| Existing User base | Contact by meeting or phone |
| Help within package | Context-sensitive or using wizard etc |

(b) 1 for method (**m**), 1 for description/example/expansion (**e**). Any 3 x (2,1,0)
*marks are independent*

- On-line tutorials/internet (m), + (e)
- Step through guide/user **training** manual (**NOT** text-book) (m), + (e)
- Training course (internal **or** external) (m) + (e)
- CBT using a CD-Rom or Software or DVD-Rom (m), + (e)
- Video using VHS or DVD or CD (m) + (e)
- One-to-one/on-the-job training (m), +(e)

*For example:*
*Computer based training (m), where you sit in front of a computer following demonstrations and then completing exercises (e).*

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| **6** | *13.4* | *An accountant calculates an organisation's profit and loss based upon financial information from many sources.*<br><br>*Name **three** characteristics that this information must have to be described as 'good' information for the accountant and, for each characteristic, state why it is necessary.* | *(6 marks)* |
| | | 1 for characteristic(c), 1 for reason (r) to any 3 x (2,1,0)<br>**NB** – need a reason, not just an example; Do not give negatives<br><br>• Accurate (c) as precision is of utmost importance when dealing with money (r)<br>• Complete/up-to-date (c) as the accountant needs all the information to be able to produce correct figures (r)<br>• Relevant (c) as relevant data will enable the accountant to keep to timescales/make the correct calculations (r)<br>• From a reliable source/user confidence (c) so that judgements being made based on the information produced from the data will be valid (r)<br>• In the right format (c), the accountant works with numerical data/ a format easy to electronically merge into the existing data would save time and effort (r)<br>• At the right time (c), as the accountant is likely to be working to a deadline and needs all the data available to do the calculations (r) | |

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| **7** | *13.2*<br>*13.8* | *The development of a successful information system depends, in part, on good teamwork.* | |
| | *(a)* | *Give **three** other factors that help to ensure the development of a successful information system.* | *(3 marks)* |
| | *(b)* | *Formal development methods have distinct phases.*<br><br>*For the following development phases:*<br>• *state **one** activity that is undertaken;*<br>• *state **one** deliverable that is a typical output.* | |
| | | *(i) Analysis* | *(2 marks)* |
| | | *(ii) Design* | *(2 marks)* |
| | | *(iii) Implementation/Programming* | *(2 marks)* |
| | | *(iv) Testing* | *(2 marks)* |
| | *(c)* | *Identify **three** characteristics of an effective ICT team, stating why each one is important.* | *(6 marks)* |

**Examiners: the answers given in this mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.**

(a) Any 3 x 1

- adequate analysis/other phase
- emphasis info needs of users/ good management and/or user involvement
- (having a system that) meets user requirements
- good management knowledge of ICT and its capabilities
- use of development standards
- complete technical and user documentation
- smooth changeover methods/procedures in place
- staff prepared/ trained ready for introduction of new IS
- consideration for post-implementation maintenance

(b) Examples below – others are acceptable

| **Phase** | **Activity** | **Deliverable** |
|---|---|---|
| Analysis | Interviewing; data analysis. | Systems Specification; Data Flow Diagrams; Feasibility study |
| Design | Screen Design;<br>Data Dictionary design | Input/Output/ Process and Data designs; Prototype; Test Plan and Data |
| Implementation/ Programming | Writing code; Unit testing. | Completed Source Code; created system |
| Testing | Functional/Systems Testing; User Acceptance testing. Alpha or Beta testing | Completed test plan with actual results (results of testing). Test evaluation |

(c) 1 for characteristic (c), 1 for why it is important (i) to any 3 x (2,1,0)

The 'i' phrases below are examples:

- Leadership; seniority to task (c) demonstrate full understanding/someone with the ability to hold team together/to have good control over the team/ meet deadlines (i)
- Balance of team members (c) so a full spread of expertise and knowledge is represented e.g. business/system/operational/technical(i).
- Appropriate allocation to task (c) so that the team plays to strengths of team member, viewing "whole" (i)
- Adherence to agreed standards (c) to ensure that the resultant system is fully understandable and maintainable by another team in the future (i)
- Skills to monitor and control (c) it is important to meet deadlines (i)
- Skills to adequately and systematically monitor and control costs (c) the project might be running to someone else's budget constraints (i)
- Good communication skills with end users/company management (c) + (i)
- Good internal/within team communication skills (c) + (i)

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| **8** | *13.3*<br>*13.4* | *A high-street building society uses a data processing system to record receipts and withdrawals from its customers' accounts. The data from branches are sent once a day up to the ICT systems at head office in Yorkshire to update all master accounts, and all data is then input into various management information systems.* | |
| | *(a)* | *For each of the following users, state the level of information that is needed by:* | |
| | | *(i) a Customer Service Clerk in a local branch;* | *(1 mark)* |
| | | *(ii) a Branch Manager;* | *(1 mark)* |
| | | *(iii) the Managing Director of the building society.* | *(1 mark)* |
| | *(b)* | *For each of the following individuals, name a suitable output, state how it may be used, and give a typical item of data that it may contain.* | |
| | | *(i) a Customer Service Clerk in a local branch;* | *(3 marks)* |
| | | *(ii) a Branch manager;* | *(3 marks)* |
| | | *(iii) the ICT Manager, controlling all ICT systems within the building society;* | *(3 marks)* |
| | | *(iv) the Managing Director of the building society.* | *(3 marks)* |
| | *(c)* | *Explain why the information used by the Customer Service Clerk is not appropriate for the Managing Director.* | *(3 marks)* |
| | (a) | 1 mark for each and this order only<br>i. Operational<br>ii. Tactical/Implementation<br>iii. Strategic | |
| | (b) | 1 for output (o), 1 for how used (u) and 1 for item of data (d) to 4x(3,2,1,0)<br><br>Examples (*Other output at the correct level are also valid)*:<br>i. Report of a single customer's account details (o), to check current balance (d) so that the clerk can see if the customer can make a withdrawal (u)<br>ii. List of daily branch deposit and withdrawal totals (o), containing number of transactions of each type and total amounts (d) so that he/she can check against the balance of cash/number of cheques etc at the end of the day (u)<br>iii. Network accounting log (o) for applying usage charges to each branch (u) containing branch id/processor time used in a time period/resources used in a time period etc (d)<br>iv. A comparative study report of all branches over a time period (o) showing branch transaction handling in descending order of efficiency (d) to help him/her decide how many and which branches to close down (u) | |

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| | (c) | Any 3 x 1<br>• CSC working at operational/day-to-day/transaction level<br>• MD at strategic/decision-making/long-term level<br>• CSC needs detail<br>• MD uses summarised information<br>• CSC uses internal information<br>• MD also access external information<br>• Information not relevant to each other<br>• CSC uses Data Processing System<br>• MD uses Management Information System | |

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| **9** | *13.6*<br>*13.9* | *Protecting its Information systems and the data that they contain is a major concern for an organisation.*<br><br>*Discuss the aspects of system security and data security that an organisation needs to consider, paying particular attention to the following:*<br>• *risk analysis;*<br>• *security policy;*<br>• *audit requirements;*<br>• *disaster recovery management.*<br><br>*The quality of written communication will be assessed in your answer* | *(20 marks)* |
| | | Continuous prose is expected for this answer. *Discuss* is the question, so each point made must be full, not just a single word/phrase. Mark as **R**,**S, A** or **D** for four bullets. A full explanation/description gets an extension mark (**Re**, **Se, Ae** or **De**) – *no more than 5 marks awarded in each section. Max 16 content marks.*<br><br>**R** – risk analysis<br>• identify each element of a successful information system<br>• place a value – to the business – on that element<br>• identify any potential threats to that element<br>• the likelihood of the threat occurring<br>• use an algorithm to calculate an overall risk figure<br>• that will indicate a degree of severity<br><br>**S** – security policy<br>• Prevention of misuse<br>• Physical security procedures<br>• Logical (software) security procedures<br>• Detection of misuse<br>• Investigation of misuse<br>• Staff responsibilities<br>• Disciplinary procedures<br>• Code of Practice<br>• Adherence/Compliance with legislation<br><br>**A** – auditing<br>• Network auditing<br>• Financial systems auditing<br>• Application systems auditing<br>• Impact of auditing<br>• Audit tools<br>• Audit trails | |

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| | **D** – disaster recovery<br>• Threats to systems – e.g. physical, document, personnel, hardware, communications (network), software (allow 1 mark in total if just listed, but 1 mark for each one explained/expanded)<br>• Why protect – commercial need<br>• Contingency plans – e.g. People involved, steps to be taken, types ( RAID, cold site recovery, reciprocal agreements) etc (again, if many methods just listed, 1 mark total, if good explanations then 1 each)<br>• Criteria for selecting contingency plan – e.g. scale, location, likelihood, recovery costs , type of systems etc (again, 1 for list, or 1 for each well-explained point)<br>• Backup (must talk about a feature or reason to get the first mark e.g. thinking about where to keep backup or frequency etc)<br>• Recovery (ditto) | |
| 4 marks | The candidate has expressed complex ideas clearly and fluently. Sentences and paragraphs follow on from one another smoothly and logically. Arguments will be consistently relevant and well structured. There will be few, if any, errors of grammar, punctuation and spelling. | |
| 3 marks | The candidate has expressed moderately complex ideas clearly and reasonably fluently through well-linked sentences and paragraphs. Arguments will be generally relevant and well structured. There may be occasional errors of grammar, punctuation and spelling. | |
| 2 marks | The candidate has expressed straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well-connected. Arguments may sometimes stray from the point or be weakly presented. There may be some errors of grammar, punctuation and spelling, but not such as to suggest a weakness in these areas. | |
| 1 mark | The candidate has expressed simple ideas clearly, but may be imprecise and awkward in dealing with complex or subtle concepts. Arguments may be of doubtful relevance or obscurely presented. Errors in grammar, punctuation and spelling may be noticeable and intrusive, suggesting weaknesses in these areas | |