

GCE 2004
June Series



Mark Scheme

Information and Communication

Technology 4 *(Subject code 6521)*

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.

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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 streets” 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. From the examinations for 2003 onwards, where one-word answers are acceptable will be indicated on the question paper. (For 2002 the acceptance or otherwise will be determined at standardisation.)
8. The meaning of ICT-specific words and phrases are defined by *A Glossary of Computing Terms* (current edition) by the British Computer Society.

Specific marking guidelines

9. The basic rule is one mark one tick. The tick to be positioned at the point where the mark is gained in the answer and definitely not in the margin.
10. The only figures in the margin should be sub-totals for parts of questions and a final ringed total for a whole question.
11. Where questions are divided into parts a, b 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.
12. 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.
13. 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.
14. All zero values should be crossed through.
15. All blank spaces should be crossed through with a vertical line through the text space – not in the margin.
16. All writing must be marked as read, either by the presence of ticks or by striking through the script with a vertical line.
17. All blank pages must be crossed through.
18. Where candidates have added extra 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.

19. The use of the following symbols/marks 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 mark ^ 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.**

20. NO other symbols or comments should be used.

21. 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

1	<p>13.4 Information</p> <p>Give three characteristics of good information, using an example for each.</p>	
	<p>1 for characteristic, 1 for the example – any 3 x (2,1,0)</p> <p><u>NOT</u> Brief</p> <p><i>Examples must be IT/Organisation related, not general i.e. it must have a context</i></p> <p><i>Be careful not to give a mark for a description – second mark must be for an example- do not give same example twice</i></p> <p>Characteristics -</p> <ul style="list-style-type: none"> • Relevant • Accurate (allow Correct) • Complete • User Confidence/Reliable • To right person • At right time/timely • In right detail/concise • Via correct channel of communication • Understandable/ease of use/user friendly (allow appropriate) • Up-to-date <p>Examples – <i>other valid examples should be credited</i></p> <ul style="list-style-type: none"> - Complete, for example the sales director of a company uses a report that is based on the sales in all the regions that the company works in. - Relevant – an area manager uses a report to make decisions about his area – it does not need sales information included about the other areas in the company. - Accurate, for example the figures on a financial report have come from reliable sources. - In the right detail, the CEO of a company does not need to see every product sold, but just needs summary reports with indicators of any problem areas. 	<p>(6 marks)</p>

2	<p>13.3 Information flow</p> <p><i>Using examples, distinguish between formal and informal information flows within an organisation.</i></p>	
	<p>Any 4 x 1</p> <ul style="list-style-type: none"> • Formal flow is a system with fully documented/agreed procedures (1) • Stating stages of flow/control/exception handling/distribution (1) • Informal is not a system/ using the grapevine/ unstructured/ naturally arising (1) • Formal example – <i>e.g. business letter/report/memo/agenda/minutes of meeting/planned or scheduled meeting</i>(1) • Informal example – <i>e.g. note/gossip/non-documented conversation/phone call/personal conversation/during a meeting/observation/e-mail/bulletin board/special interest group</i> (1) <p>Be careful with email if used as an example – make sure it is tied in with procedures if being used as example for Formal.</p> <p>Do NOT accept Lotus Notes.</p>	(4 marks)

3	<p>13.9 Info and the professional</p> <p><i>New employees at a publishing company are asked to sign an IT Code of Practice.</i></p> <p><i>Name three topics that are normally covered in such a Code of Practice.</i></p>	
	<p>Any 3 x 1</p> <ul style="list-style-type: none"> • use of company software/not breaching copyright/licences • use of company hardware/not bringing in floppy disks/introducing viruses etc • use of data • correct use of time/not sending personal emails • use of the internet or intranet/not going on “unsuitable” sites • authorisation paths/levels, access rights/job related • security, password/ids/physical aspects/protecting passwords • penalties for misuse/disciplinary procedures • company’s implementation of legislation (as a general point) 	<p><i>(3 marks)</i></p>

4	<p>13.5 Management of change 13.8 Project Management and effective ICT teams <i>For the successful introduction of a new or updated information system, an organisation needs to have clear management objectives and effective staff teams.</i></p> <p>(a) Name four aspects of an organisation that may need careful management during the introduction of a new or updated information system.</p> <p>(b) Describe two characteristics of an effective ICT team.</p>	
	<p>(a) any 4x1</p> <ul style="list-style-type: none"> • Staff re-skilling/training • Staff attitude/morale/fears/resentment • Organisational structure • Employment pattern • Employment conditions • Internal procedures 	(4 marks)
	<p>(b) 1 for characteristic (c) 1 for description/expansion/example (e) to any 2 x (2,1,0)</p> <ul style="list-style-type: none"> • Leadership (c) as appropriate management and project control will encourage(motivate) the team to work together /in an organised manner/effectively/ will ensure deadlines are met(e) • Appropriate allocation of tasks (c), so that each team member is asked to work to their strengths/will ensure each task is completed in the best way possible (e) • Adherence to standards (c), so that anyone would be able to continue the work in an emergency/others to do with professional or methodical ways of working e.g. appropriate documentation is produced and kept up-to-date/as by following set procedures the team will ensure that nothing is missed by mistake (e) • Monitoring of progress (c), to ensure that the project completes to schedule/to ensure that the work has not been underestimated/ to ensure that each team member is working at the appropriate pace/to ensure that all team members are doing what they are supposed to do to the right level of effectiveness (e) • Monitoring of costs (c), to ensure that money has not been misused/ to keep within the customer's budget/ to be able to report back to customer (e) • Control (over change) (c), to make sure that the project is delivering only what is required/ to allow for change to be incorporated or left to a later phase/ to ensure the project is delivered to original schedule (e) • Balance of team (c) People from many departments work together effectively/e.g. programmers, analysts, users and ... work together (e) • Good communication skills (c) Someone/people who are able to communicate well with people <u>outside</u> the team/they have clear <u>internal</u> communication (e) <i>n.b. communication skills only given once</i> 	(4 marks)
	Total	(8 marks)

5	<p>13.6 Audit</p> <p><i>Data must be recorded to enable auditing of ICT systems.</i></p> <p><i>For each of the following examples, state two items of data and describe how they may be used in the audit of the system:</i></p> <p><i>(a) a company's stock control system;</i></p> <p><i>(b) a company's network security system.</i></p>	
	<p>(a) Items of data – (any 2 x 1)</p> <ul style="list-style-type: none"> • User ID/User Name/"user" • Function reference • Date & Time (<i>Must have both</i>) • Item Code/Stock code/Product code/Item of stock/"Item" (<i>NOT name/description</i>) • Quantity/No of items/Amount <p>How used (any 1)</p> <ul style="list-style-type: none"> • to identify the ups and downs of stock usage/able to know when reorder level reached • to reconcile stock levels during a stock take • to identify who accessed the data, when and what for. <p>(b) Items of data – (any 2 x 1)</p> <ul style="list-style-type: none"> • Logon ID/User ID/Name/"user" • Terminal ID/I.P.address/"Terminal"/"Workstation" • Date & Time (<i>Must have both</i>) • Length of connections/Time spent logged on • Number of login attempts • Applications accessed • Data or Files accessed • CPU usage • Storage usage <p>How used (any 1)</p> <ul style="list-style-type: none"> • to identify who was connected, when, where and for how long – for security control purposes/ to monitor for malpractice (allow hacking) • what system resources were accessed and used, for accounting purposes in a company that has internal accounting systems 	<p>(3 marks)</p> <p>(3 marks)</p>
	Total	(6 marks)

6	<p>13.6 Security; 13.7 Training</p> <p><i>An organisation has recently produced a new information system security policy.</i></p> <p><i>(a) State four factors that should be covered in the policy.</i></p> <p><i>(b) The organisation would like all staff to be aware of the implications of the security policy as soon as possible.</i></p> <p><i>Describe four ways in which the organisation could provide this information.</i></p> <p><i>(c) A new member of staff joins the organisation.</i></p> <p><i>State three ways in which this member of staff might be made aware of the security policy.</i></p>	
	<p>(a) any 4 x 1</p> <ul style="list-style-type: none"> • prevention of misuse • detection of misuse • investigation of misuse • procedures for preventing misuse <i>(can use an example of a procedure – but it has to have a verb in description – only credit the first example)</i> • staff responsibilities • disciplinary procedures <p>(b) 1 for method (m), 1 for description/expansion/example (e) to 4 x (2,1,0)</p> <ul style="list-style-type: none"> • Staff meeting • Training/education of staff/internal course(s) • CD or Video that explains new policy, people can study at a time convenient for them • Handouts of policy/Leaflet/Pamphlet/Handbook/Report • Intranet/central information store • Email to <u>all</u> staff • Send in the post to <u>all</u> staff • Posters (on noticeboards/wall) • Bulletin Boards (electronic noticeboards) <p>(c) any 3 x 1</p> <ul style="list-style-type: none"> • As part of company induction/idea of action in first few days (1); • Handout (report/pamphlet/handbook/leaflet) about security policy for reading (1); • Have a session with IT security manager/other member of staff (1); • CD or Video (1). • Include in code of practice/code of conduct/acceptable use policy <p>NOT posters/noticeboards/newsletters</p>	<p>(4 marks)</p> <p>(8 marks)</p> <p>(3 marks)</p>
	Total	(15 marks)

7	<p>13.3 Personnel and 13.4 Effective presentation</p> <p><i>A chain of supermarkets uses a number of linked data processing and management information systems, including a point-of-sale system, a stock control system and a management sales information system. Outputs from these systems are aimed at different levels of user.</i></p> <p><i>(a) For each of the following users, state the level of information that is needed:</i></p> <ul style="list-style-type: none"><i>i. supermarket stock-checker;</i><i>ii. manager of the fresh food department in one store;</i><i>iii. company executive officer, based at head office.</i> <p><i>(One-word answers are acceptable for part (a))</i></p> <p><i>(b) For each of the following individuals, identify a suitable output, giving a typical item of data that it may contain and state how it may be used:</i></p> <ul style="list-style-type: none"><i>(i) supermarket customer;</i><i>(ii) supermarket stock-checker;</i><i>(iii) manager of the fresh food department in one store;</i><i>(iv) company executive officer, based at head office.</i> <p><i>(c) Explain why the information used by the stock-checker is not appropriate for the company executive officer.</i></p>	
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	<p>(a)</p> <p>(i) Operational (ii) Tactical (iii) Strategic</p> <p>(b) 1 for naming a suitable output/method of output(o), <i>(These can be generic e.g. list/printout/VDU)</i> 1 for giving an item of content(c), 1 for stating its use(u) <i>The following are examples only, other valid outputs can be credited</i></p> <p>(i) <i>(Customer)</i></p> <ul style="list-style-type: none"> • Till receipt (o) shopping items bought, prices, total cost, (c), used to check shopping against receipt/check prices/check new loyalty card points/use to get refund/see how much you've spent (u) • Touch screen display (o) showing stock levels of particular items/special offers/loyalty card balance (c), used for deciding what to buy/see what's on special (u) <p>(ii) <i>(Stock-checker)</i></p> <ul style="list-style-type: none"> • Stock list (o) showing item description/quantities/size/price (c) so that they can be certain the correct goods are picked up from the warehouse and go on the shelves/so they can see what needs reordering (u) <p>(iii) <i>(Fresh food department manager)</i></p> <ul style="list-style-type: none"> • Fresh goods sales list/stock position list (o) showing quantities sold (in a period), wastage, and costs (c), used for deciding whether to order more/less of item (u) <p>(iv) <i>(CEO – this example must have feel for strategic level/overview)</i></p> <ul style="list-style-type: none"> • Sales summary (o) showing total goods sold by department/store/region (possibly graphically) (c), used for making long-term decisions for the company (u) <p>(c) any 3, in explanation context Stock-checker uses -</p> <ul style="list-style-type: none"> • in detail/tabular listing(1) • operational/day-to-day level info(1) • immediate use information(1) <p>CEO uses</p> <ul style="list-style-type: none"> • summary/graphs & totals(1) • strategic level(1) • historical for future use/long-term decisions(1) 	<p>(3 marks)</p> <p><u>(3 marks)</u></p>
	Total	(18 marks)

<p>8</p>	<p>13.6 legislation</p> <p><i>All commercial companies that employ staff and hold personal data in information systems should comply with current legislation.</i></p> <p><i>(a) State four principles of the current Data Protection Act.</i></p> <p><i>(b) Describe three methods that companies may use to ensure that their staff comply with data protection legislation.</i></p>	
	<p>(a) any 4 – Data must be.....</p> <ul style="list-style-type: none"> • fairly and lawfully processed; • processed for limited purposes; • adequate, relevant and not excessive; • accurate; • not kept longer than necessary; • processed in accordance with the data subject's rights/data is not passed on without permission; • secure; • not transferred to countries without adequate protection. <p><i>(Up-to-date on its own is not enough – not in current legislation)</i></p> <p>(b) 1 for method (m), 1 for description/expansion/example (e) to 3 x (2,1,0) <i>(these expansions are example, others are equally valid; If no clear-cut method mark, look for implication in description and give the e mark)</i></p> <ul style="list-style-type: none"> • Have a departmental data protection officer (m), to oversee the implementation of protective procedures (e) • Detailed job descriptions/signed contract/agreement (m), so that each staff member is aware of their responsibilities under the legislation (e) • Procedures to follow up anomalies (m), so that there is no risk to personal data of accidental disclosure (e) • Security around machines – password/physical/logins etc (m) so that only authorised staff have access to personal data (e) • Strict code of practice/company policy (m) so that all staff are aware of the procedures to use around personal data and their responsibilities towards it (e) • Education of staff (m), to make them aware of any changes to legislation and to ensure they are reminded of duties and legal obligations (e) • Network activity logging (m) to track and trap unauthorised access to personal data or any attempts (e) • Use of access levels (m), to allow different people appropriate access to personal data (e) • Disciplinary procedures (m) that spell out the consequences of misusing the data (e) 	<p><i>(4 marks)</i></p> <p><i>(6 marks)</i></p>
	<p>Total</p>	<p><i>(10 marks)</i></p>

9	<p>13.2 IS and Organisations – essay question</p> <p><i>“Information systems are the life-blood of any organisation.”</i></p> <p><i>Discuss this statement with the aid of examples. Include in your discussion:</i></p> <ul style="list-style-type: none"> • <i>the rôle and relevance of an information system to aid decision making;</i> • <i>the development and life-cycle of an information system;</i> • <i>factors which lead to the success or failure of an information system.</i> <p><i>The quality of written communication will be assessed in your answer.</i></p>	
	<p>All points made are single – if well-expanded/described or exemplified, can get a second mark. Maximum of 6 marks in each area – to max 16 content marks. Show expansion with a small “e” after relevant letter.</p> <p>Rôle and relevance (R)</p> <ul style="list-style-type: none"> • Difference between data processing system and an information system • Difference between IS and MIS • Where data comes from/ Internal/external sources • Examples of information systems • What used for/ Keeping businesses operational • Who used by/ Managers at all levels • Currency of information • Appropriate formats • Decision making for planning/directing/controlling • Tactical/short-term examples • Strategic/long-term examples <p>Dev Life Cycle (D) (<i>need description of a stage for 1 mark – if just listed, then 1 for 2 or more stages</i>)</p> <ul style="list-style-type: none"> • Feasibility study • Requirements/systems analysis • (systems) design • project planning • programming/build • testing • implementation/installation • review and maintenance • Different development methodologies 	

	<p>Success/Failure (S) (<i>need description of a factor for 1 mark, a list of 2 or more gets 1 mark</i>)</p> <ul style="list-style-type: none"> • inadequate analysis or other stage/use of development life cycle methodology • lack of management/end-user involvement in design or testing or development/ good relationships with business managers and end users • emphasis on computer system • concentration on low level data processing • lack of management knowledge of ICT and its capabilities/ effective project management methodology being used • inappropriate or excessive management demands/good management communication links • lack of team work/effective teamworking/team leadership/well-balanced teams • lack of standards/ use of standards • lack of training/ adequate training for all staff/users/managers • problems with changeover/ consideration of staff who will be using new system/ having an implementation strategy • documentation (user/technical) ready at the right time <p>Quality of written communication will be assessed in this answer [Q]</p>	<p>(16 marks)</p> <p>(4 marks)</p>
	Total	(20 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.	4 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.	3 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.	2 marks
	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	1 mark