

General Certificate of Education

Information and Communication Technology 6521

Unit 4 Information Systems within Organisations

Mark Scheme

2007 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.

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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 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.
- 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.

Information Systems within Organisations / Unit 4

1	13.2 MIS	
	What is a Management Information System?	(3 marks)
	 Any 3 x1 a system to convert data from internal and external sources into information (1) communicated in an appropriate/understandable form (1) for use by managers at different levels (1) to use the information produced (1) to enable them to make effective decisions/ for control/planning purposes (1) 	

2	13.6 Legislation	
	Name three items of ICT-related legislation that could impact on procedures within organisations.	(3 marks)
	Any 3 x 1	
	 Data protection legislation Freedom of Information legislation Computer misuse legislation Copyright, designs and patents legislation Health and safety legislation Software Misuse legislation (NOT Act) 	

13.5 Management of change		
State four changes that may occur and, for the organisation or its staff.	r each one, explain a possible effect on either	(8 mar
1 for area for change (c), 1 for effect (e) to	o max 4 x (2,1,0)	
Area that may change	Example effects – accept others [Only accept an effect once]	
Organisational structure	Departments may merge, or disappear	
Employment work pattern	longer(shorter) hours/ shift work may be required	
Employee work conditions	staff move around/working out of comfort zone	
Internal procedures (or any example of such)	new working practices that have to be learnt/ so training must be given	
New jobs / job changes/ completely new system	May need reskilling/may have to take on specialist staff	
Staff positions/levels change or go	May involve redeployment/redundancies	
Staff morale/attitudes	resistance to change/fear of change needs managing/need to keep staff involved/communications	
	When an organisation introduces a new in affect both the organisation and its staff. State four changes that may occur and, for the organisation or its staff. 1 for area for change (c), 1 for effect (e) to the organisational structure. Employment work pattern. Employee work conditions. Internal procedures (or any example of such). New jobs / job changes/ completely new system. Staff positions/levels change or go	When an organisation introduces a new information system, changes may occur that affect both the organisation and its staff. These changes must be managed. State four changes that may occur and, for each one, explain a possible effect on either the organisation or its staff. 1 for area for change (c), 1 for effect (e) to max 4 x (2,1,0) Area that may change Example effects – accept others [Only accept an effect once] Organisational structure Departments may merge, or disappear Employment work pattern longer(shorter) hours/ shift work may be required Employee work conditions staff move around/working out of comfort zone Internal procedures (or any example of such) New jobs / job changes/ completely new working practices that have to be learnt/ so training must be given New jobs / job changes/ completely may need reskilling/may have to take on specialist staff Staff positions/levels change or go May involve redeployment/redundancies Staff morale/attitudes resistance to change/fear of change needs

	A new appointments and records system for patients is being developed for use in a large medical centre.		
(a)	Staff employed at the centre will need training in those parts of the system that they will be required to use.		
	For each of the following individuals working at the medical centre, suggest a method of training that is appropriate to their use of this system, and explain why you have suggested it. Each training method should be different.		
	(i) the centre manager(ii) a doctor(iii) an appointments receptionist	(2 marks (2 marks (2 marks	
(b)	The medical centre is also updating its generic software to a new industry standard.	(
	Describe three methods of support that could be available for the staff at the medical centre.	(6 marks	
(a)	1 for the method (m) and 1 for saying why it is appropriate (a)		
	• On-line tutorials/internet (m), + (a)		
	• Step through guide/user training manual (NOT text-book) (m), + (a)		
	• Training course (internal or external) (m) + (a)		
	• CBT using a CD-Rom or Software or DVD-Rom (m), + (a)		
	• Video using VHS or DVD or CD (m) + (a)		
	• One-to-one/on-the-job training (m), +(a)		
	(i) example: External training course by the developer (m) so that the busy Practice manager is not disturbed by day-to-day activities/so the Practice manager can act as the support for the rest of the medical centre staff later on (a)		
	(ii) example: Computer-based-training created by the developers (m) as each Doctor may have different skill levels and different free times from others (a)		
	(iii) example: One-to-one/on-the-job training by the Practice manager (m) who will have been trained by the developers/as they cannot afford for the receptionist to take time off work for training (a)		

(b) 1 for method (m), 1 for description/example/extension (e) to max 3x(2,1,0)

Method (m)	Description/example/expansion (e)
` '	Examples only – other expansions are equally valid
(External) Phone line/Help desk	someone technical to guide/help / supplier service
On-site support technician / Help desk	to be on-hand
Call out technician	Contract support that guarantees to come on-site within a set time
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 e-mail
E-mail updates	Subscribe to service/arrives automatically
Existing User base	Contact by meeting or phone
On-screen help / system help	Type in the problem, gives possible answers

5		anisation structure rmation flow			
	A large s	upermarket chain has	s a hierarchical organisation structure.		
	, ,	state the three levels o xample job title.	of staff within this organisation and, for each one	e, give an	(6 marks)
		Owing to the size of the nethods of information	ne supermarket chain, information is passed using n flow.	g formal	
	I	Define the term forma	l information flow, giving an example in this con	itext.	(3 marks)
	(a) 1 for	level, 1 for job title			
		LEVEL	Example Job Title (others allowed, but must be at the right level)		
		Strategic Tactical	CEO, Managing Director, Director Branch Manager, Department Manager		
		Operational	Checkout operator, Shelf stacker, Stock controller		
	(for strate	ecept the title "managegic) and Middle mar	ger" on its own. Mark as 'bod' titles such as Senionager (for tactical)	or manager	
	 A system with fully documented/agreed procedures (1) Stating stages of flow/control/exception handling/distribution (1) and any 1 example in context e.g. a memorandum to staff about Christmas opening times/an incentive scheme, formal (with agenda/regular) meeting to discuss special offers, meeting minutes for meetings with store and department managers email to head office with a summary of branch events, SMS messages to checkout staff on standby stocking shelves to come to the tills 				

13.9 Code of Practice		
Correct use of company time is a ICT Code of Practice.	one topic that is commonly found in an organisation's	
Name and describe four other to Practice.	pics that might be found in such an ICT Code of	(8 mark
1 for naming the topic (t), 1 for c	description/extension (e) to max 4 x (2,1,0)	
Торіс	Example description/extension – accept others	
use of software (or a particular package e.g. email software)	not breaching copyright or abusing licence agreements/rules on the use of specific software	
use of data	making sure you don't allow anyone else access to the data that you are allowed to see	
use of the internet	use for work purposes, not going on inappropriate sites	
use of company hardware	not printing unnecessary copies, wasting toner	
authorisation paths/levels	having access rights that are job related	
security	use of password/ids/physical aspects	
company's implementation of legislation	DPA, H&S, etc	
penalties for misdemeanours/ disciplinary procedures	warnings/ sanctions/dismissal	
	ICT Code of Practice. Name and describe four other to Practice. 1 for naming the topic (t), 1 for our company's implementation of legislation	Name and describe four other topics that might be found in such an ICT Code of Practice. 1 for naming the topic (t), 1 for description/extension (e) to max 4 x (2,1,0) Topic Example description/extension – accept others

7	13.8 I 13.2 S	CT teams SDLC	
	(a)	Explain why ICT projects are often sub-divided into tasks and allocated to teams.	(3 marks)
	(b)	Within ICT projects, describe the need for: (i) clear timescales;	(2 marks)
		(ii) agreed deliverables;	(2 marks)
		(iii) approval to proceed.	(2 marks)
	(a)	an answer encompassing any 3 of the following ideas -	
		an be broken into more manageable sub-projects (1)	
		as smaller managed (1) teams ble to have a balance of skills//allocating ICT task to correct ICT team (1)	
	• m	akes the project easier to control (1)	
		akes testing more manageable (1) ble to run non-dependant sub-projects simultaneously (1)	
	• th	e elapsed timescale would be shorter (1)	
	(b)		
	(i)	any 2 from –	
		 so that the project can be monitored (1) using stage end dates/deadlines that are achievable (1) 	
		• that both parties have agreed to (1)	
		• so that the project is completed on time (1)	
	(ii)	any 2 from –	
		 so that the documentation/output (1) from each stage of the project (1) 	
		 has been detailed/planned (1) 	
		• and the ICT team know what they have to produce (1)	
		• so that the end user gets what they are expecting (1)	
	(iii)	 any 2 from – to ensure the user is satisfied with work to date/there are no errors in the 	
		system (1)	
		• by getting sign off for a stage from the user/management (1)	
		• giving the go-ahead for the next stage of the project to continue (without errors) (1)	

13.2 Success or Failure of an MIS		
A newly developed Information System development.	n can fail because of a lack of teamwork during its	
Describe three other factors that migh	nt cause the Information System to be unsuccessful.	(6 ma
1 for factor (f), 1 for description/exten	asion (e) to max 3 x (2,1,0)	
Factor for Failure	Example Description/Extension – accept others	
inadequate analysis/other phase	not enough user involvement and approval	
emphasis on computer system	not on information needs of users/letting technology get in the way of a simple solution	
concentration on low level data processing	rather than designing with the output or needs of end users in mind	
not giving managers what they need/not meeting requirements	and therefore not enabling them to do their jobs efficiently	
lack of management knowledge of ICT and its capabilities	which may cause unrealistic expectations	
lack of communication/ involvement between team/managers/users	leading to the end result being inefficient or not used	
lack of standards	leading to a system that is hard to maintain or update later	
Incomplete documentation	leading to problems when the original developers have left	
problems with changeover/ system compatibility	procedures not ready/data not converted/ system not trialled or piloted or tested	
staff not prepared/ don't know how to use the system	due to a change in roles/training not taken place etc	
lack of consideration for post- implementation maintenance	by not using standards/ not using formal methods etc	
excessive management demands	that are not controlled/managed by the development team	
N.B. Make sure NOT to give any man	rks for teamwork.	

	nation	
customers a (a) Wit	g concert tickets over the Internet from an on-line booking company, access the company's booking and payment systems. This context, and using a different example for each one, describe four racteristics of good information.	(8 mark
	od information is vital to both the on-line booking company and its customers. hin this context:	
(i)	state two benefits to the company of having good information;	(2 mark
(ii)	state two benefits to the customers of using a company that has good information.	(2 mark
NOT No	haracteristic/description (c), 1 for example (e). Any 4 x (2,1,0) Relevant or description (c) + example (e) e.g. Info about the concert being requested only, not any other Accurate or description (c) + example (e) Complete or description (c) + example (e) e.g. date, time, venue etc Reliable/have User's confidence or description (c) + example (e) Right person/level or description (c) + example (e) Right time or description (c) + example (e) Right detail/Concise or description (c) + example (e) Correct channel of communication or description (c) + example (e) Understandable or description (c) + example (e) Up-to-date or description (c) + example (e) e.g. number of seats available In right format or description (c) + example (e)	
 mea per: so t will or f rele will 	oints made that are valid – examples: ans that the organisation will know exactly how many seats are left for a formance/concert (1) hey can satisfy customer booking requirements (1) I not be embarrassed by over-bookings (1) raudulent card payments (as can instantly verify payment details before easing the booking to the on-line customer) (1) I be competitive with similar on-line booking organisations (1) tomer satisfaction/so will use the site again (1)	

- (ii) Any 2 points made that are valid examples:
 - means that the customer knows that their booking will be honoured (1)
 - that they will see the concert they booked (1)
 - the price quoted and seat availability is accurate (1)
 - customer has confidence (1)

10 *13.6 Security*

The security of both personal data and corporate data that is held in information systems is a major concern for most organisations. As a security consultant you have been asked to write a report for senior management on the subject of data security in information systems.

Your report should cover:

- the risks and threats associated with holding personal and corporate data in information systems
- measures that an organisation could use to help prevent security breaches
- measures that an organisation could use to detect security breaches
- policies and procedures that should be in place for the protection of data in information systems.

The quality of written communication will be assessed in your answer.

(20 marks)

Continuous prose is expected for this answer. *However, a report has been requested, so some element of headings and sectionalising is fine.*

A mark is awarded for a discussion of a topic, not just the words shown below.

Expansion or use of relevant example may get a second mark for the same topic.

A list of (bulleted) topics will get just 1 mark

Up to 5 marks in each of the 4 areas below, plus up to 3 for any generically good points made about security that does not fall under another coding.

To a maximum content mark of 16.

Coding:

R for Risks and Threats

S for Security breach Prevention

D for Security breach Detection

P for Policies & Procedures

G for generic points

Risks & Threats (R)

Natural disasters

Industrial espionage

Hackers

Disgruntled or nosy employees

Accidental damage

Accidental or deliberate disclosure

Deliberate damage e.g. virus, Trojan, logic bomb

Risk Analysis

Security breach prevention (S)

Network access controls

Data Access controls

Staff responsibilities

Staff awareness/training

Antivirus software

Firewalls

Physical security measure e.g. locked doors, biometric measures etc

Detection of Security Breaches (D)

Audit trails

Auditing software

Network monitoring

Policies & Procedures (P)

Information Systems Security Policy

Disaster Recovery Procedure

Contingency Plans

Back-up procedures

Acceptable use policy/Code of Practice

	Quality of Written Communication Marks (Q marks)				
4 ma	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 relevan 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 fluthrough well-linked sentences and paragraphs. Arguments will be generally relestructured. There may be occasional errors of grammar, punctuation and spelling					
2 ma	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 ma	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				