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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

2005 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 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. 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 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 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 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.

21. 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 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 ICT 4

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 ***SDLC***

During the development life-cycle of an information system, there is a need for agreed deliverables, e.g. a test plan with data that is produced at the design stage.

*Give **two** other examples of such deliverables, stating at which stage of the life-cycle each one would be produced.* *4 marks*

1 for deliverable, 1 for stage. **Any 2 x (2,1,0)**
Cannot give stage on its own – it is dependent on an example of a correct deliverable.

The following are examples – there are others.
Deliverable is something tangible, not an activity.

- Feasibility Study (report) - Cost-benefit analysis	Feasibility/Analysis
System Specification	Analysis
- User requirements - Project plan/Time schedule - Performance indicators/evaluation criteria - Or other sections of a system spec	
System Design	Design
- Detailed plan/schedule - Prototype - Data Flow Diagrams - Test strategy - Data Dictionary - Or other sections of Design spec	
- Program Code/Functionality/Final system - Test evidence and actual results - Program/technical documentation	Programming/Build/ Implementation/Development
- System test evidence - Etc	System/User Testing
- User Guide - User training plan* - Implementation plan* - Conversion plan* - Maintenance plan	Implementation/Installation
- Evaluation report	Evaluation
- Amended code or test plan	Maintenance

- * if not already given in previous stage
- OK to give project/time plan twice if outline/detailed feel given

NB. Do Not Give TEST PLAN/DATA – in the question
Do not allow Problem ID stage or anything in it

2	***Personnel*** *Managers at the highest, or strategic, levels of an organisation have particular requirements from an information system.* *(a) Give **one** example of an information system that would be useful to managers at this level, and explain how they would use it.* *(b) State the **two** other levels of task and/or personnel within an organisation.*	*3 marks* *2 marks*
	(a) 1 mark for an info sys, 1 for use (planning/decision-making), 1 for describing how. Info sys are (e.g.) MIS, EIS, DSS. These get the 1 for info sys. Anything else, read the whole answer and, if the explanation is at strategic level, give the mark for info sys as a 'bod'. ***Not IS on its own.*** ***Not DBMS***. <u>Example:</u> 1. (Good) A Sales information system (1, 'bod') could be useful when planning future expansion (1) as the information provided would show the growth areas in terms of product or geography (1) 2. (Acceptable) A management information system (1) is used to make decisions (1) such as when an MD of a supermarket uses the MIS to decide whether to close down a store (1). (b) Tactical (Implementation) (1); Operational (1) ***Not any example jobs – asked for levels, so must have the words***	

3 ***Management of change***

The introduction or development of an information system will result in change that must be managed.

*Describe **three** areas that will need effective management.* — *6 marks*

1 for area (**a**), 1 for description/example/expansion (**e**) to any **3 x (2,1,0)**

Non-dependant marks

Area	**Example expansions – accept others**
Staffing	Keeping current employees involved
Attitude of existing employees	resistance to change/ de-motivation if fear redundancy
Organisational structure	may flatten as a result/close (or open) departments
Employment work pattern	longer(shorter) hours/ shift work required (e.g. Call centre 24-hour operation)
Employee work conditions	staff move around/get re-trained
Internal procedures (or any example of such)	new working practices
Re-skilling (of existing employees)	assess training needs/ have to take on specialist staff

Not allowed as areas:

- ***Changeover***
- ***Conversion of data***
- ***Costs***
- ***Legislation***

4	***Information Flow*** *The structure of an organisation can influence the flow of information through it.* *Explain **two** effects that the structure of an organisation could have on the flow of information.*	*4 marks*
	1 for the effect on flow, 1 for description/example/expansion related to structure to any **2 x (2,1,0)** Look for the effect first, then look for the why or how in relation to structure. If states 'no structure' or 'no well-defined structure' then give as a 'bod' Effects are: ♦ Time (slower/faster) ♦ Accuracy (distorted) ♦ Style (formal/informal) ♦ Types ♦ Quality Examples: • Hierarchical, or pyramid shape organisation has longer more formal paths for information flow (1) may take longer (1) • Flatter, matrix/mesh shape tends to allow shorter routes (1), information may be less reliable/idea of Chinese whispers (1)	

5	***Legislation*** *Any personal data that an organisation holds on a computer about its employees, or its customers, is covered under Data Protection legislation.* *Describe **three** methods by which a company can ensure that the requirements of Data Protection legislation are followed.*	*6 marks*
	1 for what (**w**), 1 for how/why in context of D.P. legislation (**h**). **Any 3 x (2,1,0)** **Non-dependant marks** • Having a departmental data protection officer (w) whose job is to make sure all employees follow procedures/ makes sure that the organisation is following the legislation (h) • Having detailed job descriptions (w) so that all employees know what they should and should not be doing with personal data (h) • Having procedures to follow up anomalies/error handling (w) to make sure that data held is accurate and reliable in accordance with the legislation (h) • Having a strict code of practice for employees (w) e.g. re personal databases/ software etc (h) • Educating staff (w) e.g. by having regular briefing sessions for new employees and for all employees whenever procedures or the law change (h) • Network activity logging (w) to monitor who is accessing data (h) • Having Disciplinary Procedures (w) so that the organisation can take steps when there has been unauthorised access to data (h) • Having procedures for data collection & storage (w) to ensure only relevant and accurate data/ for purpose intended/ with subject consent (h) • Having procedures for checking data held (w) to ensure data is up-to-date/still accurate/still needed (h) • Having procedures for data access/viewing (w) staff access levels/ subject access/ transferring to other countries/ selling information on (h) • Having procedures to prevent unauthorised access to data (security) (w) e.g. using password/ physical means/ logins/ firewalls/ encryption (h) • Having a procedure for informing the Information Commissioner (Data Protection Registrar) (w) about what data is held and for what purpose (h)	

6	***Success or failure of an MIS*** *Management's understanding and involvement can play an important part in the introduction of a Management Information System (MIS).* *Give **three** actions that managers could take to increase the chances of a MIS being successful. For each action state how it would help ensure success.*	*6 marks*
	1 for action (**a**), 1 for description/statement/expansion of **how** it would help (**h**). **Any 3 x (2,1,0)** **Non-dependant marks** • Ensuring the right amount of management knowledge of ICT and its capabilities/having awareness or training sessions (a) so that they do not make excessive demands that are not technically possible (h) • Ensuring emphasis is on business process, not on low level data processing (a) regularly checking that the development will deliver what is required by the business (h) • Making only appropriate demands on development and ICT team (a) by not expecting them to take short cuts to deliver a sub-standard product (h) • Allowing development team to adhere to standards (a) not pressurising then to produce a "quick and dirty" solution that would become un-maintainable (h) • Have all parties working as a team (a) allowing good communication between managers, users and development team (h) • Allowing the development team to have enough time to complete each stage properly (a) by not pressurising them to cut corners (h) • Making sure there are no problems with changeover (a) by ensuring that all training and documentation is complete and that all other departments are ready (h) • Ensuring the right amount of user involvement/communication throughout the development cycle (a) and making sure that all parties are available for consultation (h) • Allowing for and ensuring the right staff/resources are available to the project team at all stages (a) e.g. Users for acceptance testing (h)	

7	***Information*** *Information produced by ICT systems may be required both within (internal) and outside (external) organisations such as schools and supermarkets.* *(a) Describe **two** examples of internal information requirements, stating for each:* o *who needs the information;* o *what information they require;* o *what it is to be used for.* *(b) Describe **two** examples of external information requirements, stating for each:* o *who needs the information;* o *what information they require;* o *what it is to be used for.*	*6 marks* *6 marks*
	(a) 1 for who (**w**), 1 for what info (**i**), 1 for use (**u**). **Any 2 x (3,2,1,0)** examples – • A supermarket fresh produce department manager (w), needs information about current stock levels on the shelf (i), so they can decide what needs stocking up and ultimately reordering from the warehouse (u) • A pastoral tutor in a college (w), needs up-to-date grades and attendance records (i), to use in a one-to-one progress review with their tutee (u) • The accountant at a hotel (w) needs to see what bookings have been made (i) so that they can predict revenue expected (u) (b) 1 for who (**w**), 1 for what info (**i**), 1 for use (**u**). **Any 2 x (3,2,1,0)** examples – • The inland revenue (w) receives lists of tax paid from payroll systems (i) so they can work out if any tax has been under or over paid (u) • Suppliers (w) receive automatic ordering information from customer stock control systems (i) so that they can fill the orders and satisfy their customers' requirements (u) • Examination boards (w) receive lists of candidate names and subjects from school exam control systems (i) so that they can administer their examination entry and result systems more efficiently (u) • Shareholders (w) who want to see details of profit & loss (i) so they can decide whether to sell or buy more shares (u) • Parents (w) who like to see performance statistics for the school (i) to decide whether or not to send their child there(u)	
	NB. Use must be active, not just "to see" – normally the computer can do the adding up!	

8	***Information and the professional*** *There are a number of social, moral and ethical issues associated with the introduction, and use, of ICT systems. Some of these issues may possibly be covered in an organisation's ICT Code of Practice.* *Describe **four** issues that could affect an ICT professional.*	*8 marks*
	1 for issue **(i**), 1 for description/example/expansion (**e**) to any **4 x (2,1,0)** **Non-dependant marks** Issues, such as – • De-skilling of employees (i) e.g. taking decision-making tasks off staff and changing their jobs to recipient of results or information (e) • Flexibility of workforce (i) e.g. introduction of on-line ordering or enquiry systems mean that the working day is extended, so staff may have to go onto shifts. (e) • Hacking into unauthorised areas (i) for malicious/mischievous purposes (e) • Un-licensed software use (i) e.g. bringing software into work/copying for home use (e) • Privacy of data (i) e.g. disclosing sensitive data to unauthorised people (e) • Security/accessibility (i) making sure that data and information are seen only by authorised people/setting passwords or physical security or access levels (e) • Property & copyright (i) not illegally copying someone's work and claiming it as your own (e) • Abiding by legislation (i) and making sure that others around you do so too (e) • Need to follow a Code of Practice/Conduct (i) which will cover staff procedures and outline consequences if rules are broken (e) • Introduction of virus/logic bombs (i) which could damage data within that organisation (e) • Provision of a safe working environment for ICT users/workers (i) in line with ergonomic and health and safety criteria (e) • Use of company internet/intranet/email for non-company business (i) there may be consequences if get caught on inappropriate sites (e) • Blurring of work/home life (i) if using ICT to work remotely (e)	

9	***Corporate IS policy*** ***Training*** *A growing organisation is advised to devise a corporate information systems security policy.* *(a) What is the role of such a policy?* *(b) State **four** topics that should be covered in a security policy.* *(c) Give **three** methods of making sure that staff in the organisation are aware of the security policy and, for each one, state why it is suitable.*	*2 marks* *4 marks* *6 marks*
	(a) **Any 2 x 1** • to have written procedures to follow (1) • that spell out what is to be protected (1) • how it is to be protected (1) • and who is responsible (1) (b) **Any 4 x 1** • prevention of misuse • detection of misuse • investigation of misuse • procedures for preventing misuse (accept an example e.g. Access levels etc) • staff responsibilities • disciplinary procedures	

	(c) 1 for method (**m**), 1 for how it is suitable (**s**) to 3 x (2,1,0) • Formal staff meeting (m) so that everyone has the awareness at the same time (s) • internal course(s) (m) so that all attend and are made aware (s) • Meeting/course that supervisors attend, formal waterfall information sessions (m) this will not disrupt too many people at once (s) • CD or Video that explains new policy (m), people can study at a time convenient for them (s) • Handouts of policy (m), so each member of staff has one to refer to (s) • Email to all staff (m) this ensure that all staff have the information available (s) • As part of company induction, include security policy for reading (m) so that people are aware from the start (s) • Have a session with IT security manager (m) so that questions can be asked from the most able person (s) • Assign a mentor to check awareness and understanding (m) this enables the employee to ask questions for clarification (s) • Bulletin board/Intranet (m) that is regularly checked and used by staff in the organisation (s)	

10	***Project Management and effective ICT teams*** *(a) Explain why ICT projects are often sub-divided into tasks and allocated to teams.* *(b) Within ICT projects, describe the need for:* *(i) clear timescales;* *(ii) approval to proceed.*	*(3)* *(2)* *(2)*
	(a) an answer encompassing any 3 of the ideas below • broken into more manageable sub-projects (1) • within smaller managed (1) teams • with a balance of skills//allocating ICT task to correct ICT team (1) • that would make the project easier to control (1) • and testing more manageable (1) • can run sub-projects simultaneously (1) • doing this would bring down the elapsed timescale (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 – • 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 project to continue (without errors) (1)	

11	***User Support and Training*** *When introducing new or improved ICT systems, successful organisations know that, in order to achieve a successful transition, they must provide both initial training and on-going support.* *A national supermarket chain relies heavily on various information systems. It employs both full-time and part-time staff working in stores and warehouses sited around the country, or at the head office.* *Discuss the options available for both training and support. Make suitable recommendations for this particular company for the training and support of the different groups of staff identified below, namely:* • *part-time store staff;* • *full-time store staff;* • *warehouse and home delivery staff;* • *head office staff;* • *managers at all levels.* *The Quality of Written Communication will be assessed in your answer*	*20 marks*
	Continuous prose is expected for this answer. Candidates can gain a second mark for a point made for discussion or expansion. A list of training options or support options will not gain more than 1 mark overall – one option or method must be fully explained/described/discussed to get one mark. **They do not get a mark just for naming the method or option.** The essay could be structured in more than one way – 1. The discussion of support/training options, then recommendations made 2. By people **Give a maximum of 16 marks for content (C)** Support options – • Help Desk/phone line • On-site technical support • User guides/articles/utilities/books • Communications systems/bulletin boards/internet site/email updates, • On-line technical help • On-screen help • Peer or supervisor/managerial support • System Developer support • Help desk software/expert system/knowledge base	

	Training methods – • On-line tutorials/internet • Step through guide/user training manual (**NOT** text-book) • Training course (internal or external) • CBT • Video • One-to-one (on the job) training • model office training(On-site 'classroom') • pre-release version training, at user's premises • involvement with user testing, at supplier's premises • skills-based training where appropriate • task-based training where appropriate • training cascade	

	Quality of written communication marks allocated as below:-
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