AQA

ASSESSMENT and QUALIFICATIONS ALLIANCE

Mark scheme January 2003

GCE

Information and Communication Technology

Unit ICT4

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Unit 4: Information Systems within Organisations

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's" 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. Where one-word answers are acceptable this will be indicated on the question paper.

Specific marking guidelines

8. 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.
9. The only figures in the margin should be sub-totals for parts of questions and a final ringed total for a whole question.
10. 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.
11. 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.
12. 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.
13. All zero values should be crossed through.
14. All blank spaces should be crossed through with a vertical line through the text space – not in the margin.
15. All writing must be marked as read, either by the presence of ticks or by striking through the script with a vertical line.
16. All blank pages must be crossed through.
17. 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.

18. 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.

19. **No** other symbols or comments should be used.

20. 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 marker's work.

This paper is synoptic – therefore answers drawn from all parts of the specification are acceptable.

1 ***13.1 Organisational structure***

Information is communicated at three levels within an organisation.
*State these **three** levels.*

- Strategic
- Tactical
- Operational

3 × 1 each *3 marks*

2 ***13.2 IS and Organisations***

Describe what is meant by the following terms, and give an example of each:
(a) a data processing system;
(b) a management information system (MIS).

(a) Data processing system
- precise/low level/electronic data capture (1) used for repetitive/routine business activities/day-to-day transactions/transaction processing. (1)
  - Examples: Stock control/payroll calculations/invoices/ point-of-sale (1)

3 marks

(b) Management information system
– a system to **convert data from internal and external sources** into information (1) communicated in an **appropriate form/aid decision-making** (1)
  - Examples: Sales Information system/Financial Info system/Production summary (1)

3 marks

3 ***13.2 Success or failure of an MIS***
13.5 Management of change

Company management sometimes introduce new information and communication systems, giving little advance notice to their staff. This may contribute to the failure of these systems, and cause other problems for their staff.

*(a) State **six** factors that may cause the failure of a system that has been introduced too quickly*

*(b) Describe **three** problems that staff might encounter in this situation.* 1 for factor. Any 6 × 1

(a)

- inadequate analysis/design/testing/other phase
- no time made for consultation with users
- lack of user/management involvement in analysis/design/testing/other phase emphasis on computer system/ not on info needs of users
- concentration on low level data processing
- not giving managers what they need/not meeting requirements
- lack of management knowledge of ICT and its capabilities/ being fooled by fancy package supplier marketing
- lack of team work
- not wide enough consultation/IS department making decisions for whole organisation
- lack of standards
- Incomplete technical documentation (e.g. Specification) due to speed of development
- problems with changeover/procedures not ready
- staff not prepared/ change in roles/ training not taken place etc
- lack of consideration for post-implementation maintenance

6 marks

(b) 1 for problem(P), plus 1 for explanation/expansion(E). Any 3 x (2,1,0)

- Problems using the system properly (P), because of lack of training/lack of skill (E)
- May lose job/be made redundant (P), due to new system doing what used to be a manual task (E)
- Changes forced upon staff (P) leading to resentment/attitude problems (E)
- Employment pattern changed (P) may want to relocate (E)
- May have a problem with new system and not know what to do (P), as new working procedures have been introduced but not communicated (E)
- Have problems with new/changed working conditions (P), which were introduced without consultation (E)
- Fall foul new/updated rules (P) that are included in a new Code of Practice (E)

6 marks

4 ***13.3 Personnel***

The owner of an independent driving school, which employs 6 instructors, decides to get a local software house to write a bespoke package to manage client information, including the booking of lessons, the tracking of progress, and the recording of payments.

*(a) Identify **two** different potential users of this system.*

(b) With the aid of examples, describe the different levels of information that each of these two users might require.

(a) any 2 × 1

- Driving school owner
- Driving instructor
- Administrative assistant/receptionist/secretary
- Driving learner/parents of

2 marks

(b) 1 for type/level(T), 1 for description/reason(D), 1 for example(E).
Any 2 × (3,2,1,0)

- Owner – strategic, support decision making, e.g. whether or nor to employ more instructors
- Instructor – tactical, planning, e.g. scheduling programme for a particular learner driver; also could be operational, daily diary, where and at what time is next pick-up.
- Administrative – accept any reasonable tactical or operational
- Learner – operational enquiry only as part of booking next lesson/s e.g. seeing when instructor is free.

6 marks

5 ***13.7 User support***

Describe, with the aid of examples, ***three*** *different methods of providing training in the use of software, and justify their use.*

1 for Name(N), 1 for example(E) and 1 for justification(J) (the "why" this method is suitable in the example given, often flagged as an advantage)
any 3 × (3,2,1,0)

- classroom training course (off-site)
- CBT
- 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 for IT illiterates
- on-the-job training
- on-line tutorial
- internet-based training
- user training manual (NOT user guide)
- video/interactive video

9 marks

Sample answers might be:

- Classroom training, off the premises for a group of managers, because they won't get disturbed by day-to-day office interruptions.
- User training manual (accept book) with step-by-step instructions, used generally for individual learning, it can be read for review even if the machine is not available. (often expressed as "read at home")
- CBT, available to be used by individuals as they are required to learn a package, means that everyone gets the same/standard training

6 ***13.8 ICT teams***

*Large organisations often run their own system development projects, collecting a number of suitably skilled people together to form the development team. Describe **four** characteristics of a good ICT development team.*

1 for main aspect (A), then 1 for further expansion (E). Any 4 × (2,1,0)

- Appropriate leadership; seniority to task, understanding, ability to hold team together/control team
- Balance of team members; business/system/operational/technical. Appropriate allocation to task; play to strengths of team member, viewing "whole"
- Adherence to standards; using agreed design methodology or procedures (e.g. ISO9000/2000)
- Skills to monitor and control; progress against plan, keeping to deadlines etc
- Skills to adequately and systematically monitor and control costs (2)
- Good communication skills; with end users/company management
- (No second mark when talking about internal team communication – not specific ICT skill)

8 marks

7 ***13.9 Information and the professional***

Discuss the social, moral and ethical issues for a professional working within the industry that might arise when introducing and using information and communication systems.

This answer should be in continuous prose - question is *Discuss*. (No penalties if not)
Points made must be expanded **to get a single mark**. Expansion must be descriptive or by use of a pertinent example, using both will get a second mark for that point made.

- De-skilling of employees, e.g. taking decision-making tasks off staff and changing their jobs to recipient of results or information
- Flexibility of workforce, 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.
- Hacking
- Un-licensed software use
- Privacy of data
- Security/accessibility
- Property & copyright
- Abiding by legislation
- Need for a Code of Practice/Conduct
- Introduction of virus/logic bombs
- Provision of a safe working environment for ICT users/workers

6 marks

8 ***13.6 Disaster recovery management***

A growing organisation has realised that so far they have been lucky in that their information systems have not failed. Before they expand their business operational reliance on ICT, they have been advised by their insurer to carry out a risk analysis and then plan what to do next.

(a) Explain what is meant by risk analysis.

*(b) State **three** different potential threats to an information system, and describe a counter-measure for each one.*

*(c) Describe **three** of the criteria that could be used to select a disaster contingency plan.*

(a) Any 3 × 1

- To identify each element of a successful information system (1)
- place a value – to the business – on that element (1)
- identify any potential threats to that element (1)
- the likelihood of the threat occurring (1)

3 marks

(b) 1 for threat(T), 1 for counter-measure(C), 1 for description of why/how it would counteract the threat(E). Any 3 × (3,2,1,0)

- Physical – e.g. theft/terrorists – use locks etc – prevent easy entry
- Personnel – e.g. accidental overwrite – have procedures – trained staff less likely to make mistakes
- Hardware – e.g. disk crash – have duplicate system – so that system can be up and running asap
- Communications breach – e.g. hacking in – firewalls, encryption, passwords – to lessen ability to see/steal/tamper with data
- Virus – e.g. Trojan – anti-virus software – to stop files getting infected
- Natural disaster causing hardware/software/data loss – e.g. Fire/flood/earthquake - backup kept off-site – so that a safe copy is held and system can be reloaded
- Electrical surge/power loss – e.g. caused by weather – UPS/ off-site duplication/RAID/Mirror – as above
- Data errors, inaccurate data in system – verification and validation – pick up data errors before they get into the system

9 marks

(c) 1 for criterion(C), 1 for description(E), Any 3 × (2,1,0)

- Scale of the organisation and its ICT systems
- Nature of the operation (e-business, on-line, batch)/Timing of recovery – how long until the system would be operating, and if this is important to the business
- Costs of recovery options relative to "value" of systems
- Perceived likelihood of disaster happening, based on risk analysis

6 marks

NOT:

- Volume of data
- Size of the system
- Any of the contents of the recovery plan (e.g. how to set up, reciprocal site, who does what or anything to do with back-ups)

9 ***13.4 Information and Data***

Puregreens, a retailer of organic vegetables, have recently launched a marketing web site. The e-mail response from the "contact us" button has been overwhelming, so they are thinking of expanding into selling on-line. Discuss the implications of this, paying particular attention to the following:

- *methods of data capture that will be available for on-line or off-line payment;*
- *the control and audit issues associated with this method of selling;*
- *the information needs of the management of this system;*
- *the additional information that might be generated.*

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 M, C and I or A for four bullets – **no more than the given marks awarded in each section**

Methods **(M)** – **max 4 -** could be

- filling in credit/debit card details on-line and submitting the payment
- printing a form for off-line filling in, either by word processor or by hand or .pdf; submitting by e-mail, or by non-electronic means (i.e. post with a cheque)

Control and audit **(C)** – **max 6**

- ask for pre-shopping registration – e-mail back access codes
- confirm order to e-mail address (insist e-mail address provided, check exists)
- use of credit checking agencies
- use of electronic payment, normally specialist applications/services – get authorisation before dispatching goods
- basic cross-field validation – e.g. checking address is correct for post-code; restricting values in fields
- keeping customer details secure and protected during communication (SSL or equivalent)
- holding previous orders and/or payment details, making easy to re-order same (like Tesco)
- adherence to Data Protection Legislation e.g. not passing data on unless the customer has given permission

Information needs **(I)** – **max 4**

- different levels of information (Strategic, tactical and operational)
- source
- frequency
- (gathering) customer info, demographics, spending habits/patterns and so on

Information generated **(A)** – **max 5**

- targeted market research/opinion, also targeted advertising/special offers to generate more sales
- food, seasonal, supply and demand issues (no point stocking up on certain items out of season if no/little demand – esp. as most is produce with short shelf life)
- importance of having up-to-date information of use for …

16 marks max for content

Quality of written communication

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.

4 marks