



ASSESSMENT and  
QUALIFICATIONS  
ALLIANCE

# Mark scheme

# June 2002

---

## GCE

Information and  
Communication Technology

## Unit ICT1

---

Copyright © 2002 AQA and its licensors. All rights reserved.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales 3644723 and a registered charity number 1073334  
Registered address: Addleshaw Booth & Co., Sovereign House, PO Box 8, Sovereign Street, Leeds LS1 1HQ  
Kathleen Tattersall: *Director General*

## Unit 1: Information: Nature, Role and Context

### Overall guidelines

1. All examples accepted should be clearly related to the subject area and should not be “generalised”.
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.)

### 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 question parts and a ringed total for the 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.
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.**
- a. **NO** other symbols or comments should be used

1. State *three* characteristics of good quality data

3 marks

Any 3 at 1 mark each

characteristics :

- accuracy/ correct/valid
- up to date
- relevant
- complete
- from reliable sources/reliable

Unacceptable are :

- clear
- useable
- anything to do with display
- understandable
- readable
- cost = value
- not adequate unless clear explanation
- consistent
- reasonable
- readable or legible
- timely
- in excess

NB It is **data**, not information that we are considering here (ICT4 looks at information)

2. *Data input to an ICT system can take many forms such as pictures, sounds, numbers and letters. In all cases the data has to be encoded.*

*Using an example, explain why data needs to be encoded.*

*2 marks*

1 mark for description

1 mark for example

Independent marks

Example:

Description

conversion of data into a machine understandable format/”so the computer can understand it” (1)

Examples

picture converted into pixels (e.g. jpg, gif, bmp) javascript (1)

sound file converted into wav format / sound converted from analogue to digital/mp3 (1)

letters converted into binary (e.g. ASCII) (1)

A generalised answer without reference to specific encoding will gain 1 mark maximum

Do not accept shortening to codes to make input faster or save on storage space – these are benefits from using codes.

Do not accept decoding or anything to do with security – encryption!!

Not processing

3. *When investigating the end users' requirements for a new IT system, a software developer needs certain personal skills.*

*Explain, with reasons, two essential personal skills that would be of use to the developer in performing this task.* *4 marks*

ANY 2 × 2 MARKS

Allocated            1 mark for stating quality  
                          1 mark for explaining **this must be with relevance to the scenario**  
Independent marks

Examples:

- **Be able to communicate well orally/Articulate/Good questioning skills** (1) – to enable efficient and effective communication with users/or colleagues/ being able to use suitable language, free from jargon so they can explain possible options (1)
- **Have patience** (1) – to keep calm and prevent end users from becoming flustered (1)
- **Have good written skills** (1) – to be able to provide end users with clear documentation of the system to enable discussion (1)
- **Approachable/Gain trust/people skills/confidence** (1) makes users feel at ease/easier to get information from them (1)
- **Observant/Listening skills** (1) plus explanation
- **Analytical/Problem solving/logical**(1) plus explanation

If have Communication skills, cannot then have separate written and oral

NB Question is about investigating, not designing a solution: not imaginative.

4. *Some transport and distribution companies have now installed information systems on their vehicles that give details of traffic problems across the country.*

*Explain **one** benefit to the company of installing these systems.*

*2 marks*

First mark

- Prevents vehicles being delayed/reduced delivery times(1)
- Prevents vehicles being stuck in traffic(1)
- Allows better route planning (1)

Second mark

- saves company money(1)
- stops company losing money on wasted staff time(1)
- stops company losing money on perished goods(1)
- increases customer confidence(1)
- makes them more competitive/more efficient service/better company image(1)

Basically first mark is for what the system does and second mark is the benefit to the company

Independent marks

5. Describe, using examples, **four** ways in which a company could make use of the Internet to benefit its business. 8 marks

Any 4 × (2, 1, 0) marks

1 mark for way in which Internet can be used

1 mark for benefit to company

Not dependent marks, but related.

Examples:

- Can have on-line store to sell goods (1) saves on cost of retail outlet/increase sales/ storage of stock/stock (1) or relevant benefit
- Can advertise/marketing on-line (1) larger customer base (1) or relevant benefit
- Can communicate with suppliers/staff/customers (1) speed of contact (1) or relevant benefit
- Teleconferencing
- Email
- Teleworking/Collaborative working
- Can research suppliers/competitors (1) large market to choose from (1) or relevant benefit
- Ability to gain market research data (1) provides larger sample/cheaper method (1) or relevant benefit
- Financial transactions over net (1) means saved time in accounting (1) or relevant benefit

First mark (W) is for what they are using the Internet for

Second mark (B) is for the benefit that they get to the company.

i.e. The marks are related

Check maximum 4W and 4B. Can't have 6W

BE CAREFUL with answers mentioning Intranets (NOT internal system).

6. Many organisations have adopted e-mail as a method of communication only to find that it can have disadvantages.

Describe **three** disadvantages of the use of email, other than contracting viruses, for business communication.

6 marks

Any 3 × (2, 1, 0) marks. Marks are related.

1 mark for disadvantage to **the business**

1 mark for effect on business communication

Examples:

- Excessive amounts of mail to deal with (1) leads to loss of staff time for other tasks(1)
- Used for personal use (1) results in lost staff time (1)
- Clogging up of network with mail messages(including Spam or junk mail) (1) reducing speed of communication for other business activities (1)
- Excessive amounts of storage used on mail messages/ (1) reduces disk space available/slows activities (1)
- Tendency to abruptness in email (1) leads to communication problems (1)
- Lack of social interaction (1) less of a productive environment (1)
- Length of disclaimer can be significant (1) if printing (1)
- Legal issues/liability issues (1) if emails passed on can cause company problems (1)
- Lack of all customers having the facility (1) means can't rely on being able to use for all customers (1)
- Interception of email / vulnerability to outside viewing / accessibility of address book (1) leading to changed content or secret info being acquired (1)
- System failure leading to suspension of e-mail service (1) inability to send/receive e-mails (1)

And others but **NOT VIRUSES**

Also watch out for the personal use issues

- File size issues for transfer
- Cost of equipment
- Health problems
- More training
- Accidental deletion
- Delay in receipt



7. *In order to protect the health and safety of the end user, certain factors should be considered when designing a piece of software.*

State **four** factors that should be considered, giving a reason for each one.

8 marks

Any  $4 \times 2$  marks.

1 mark for factor

1 mark for why it is relevant to health and safety i.e. the reason

#### DEPENDENT MARKS

NB Question does not actually ask for health risk as such so they may or may not include a specific risk in their answer.

Question does ask for FACTORS that should be considered when DESIGNING

#### Examples

- Menu design/good screen layout (1) efficient menu structure reduces keystrokes/mouse clicks (1)
- Short cut keys (1) use reduces stress for experienced users / can also reduce keystrokes(1)
- Flashing banners/ flashing lights / use of clear contrast/appropriate use of colours(1) suitable for colour blind people/ reduce eye strain/epilepsy (1)
- Order of fields (1) facilitate data entry and reduce stress (1)
- Pre coding/use of drop down lists etc (1) prevents stress/RSI reducing data entry(1)

Other acceptable would be the following with reasons for the second mark:

- Font size/Icon size
- Validation to prevent errors
- Help provided
- Tailored to user/Suitable for task
- Autosave facilities
- Common User Interface with other packages used/easy to understand icons
- Clear error messages

BUT NOT just easy to use or efficient

Not bug free

Not speed of working

Not user friendly

Not hardware related

Stress not enough without qualification

No break messages

8. *Explain, using examples, the difference between malpractice and crime as applied to Information Systems.* 4 marks

Marks are NOT DEPENDENT

Any two of the following for malpractice

- Principle that malpractice is bad practice concerned with actions within the company or organisation caused by own staff not following procedures (1)
- example (1).( not logging off correctly OK )

Any two of the following for crime

- Crime is concerned with illegal activities frequently caused by people from outside the organisation (1)
- If state “without permission” = BOD for illegal
- Example (1).

DO NOT ACCEPT NON-ICT ANSWERS SUCH AS MEDICAL

9. *The use of Automated Teller Machines (ATMs), provided by banks and building societies, has become a common way for people to obtain cash.*

*State:*

***one** advantage to the bank or building society of installing ATMs; 1 mark*

***two** advantages to the customer of using ATMs; 2 marks*

*The use of ICT has allowed banks and building societies to keep detailed records of purchases that people make using credit or debit cards.*

*Explain **one** reason why this is a benefit.* 2 marks

(a)(i)

- reduces need for staff/saves on having branches reduces costs (1)
- allows provision of a new service/ increasing potential market(1)
- encourages customers to stay with bank/allows bank to compete (1) Any 1 at 1

(ii)

- Allows cash to be obtained 24 hours a day, 7 days a week /when required (1) [ not 24/7 ]
- Saves time no need to queue in branches/ fill in withdrawal slips (1)
- Lack of human error must have valid explanation of how this is an advantage to customer (1)
- Provides wider availability/easier to get to ATM (1)

Answers must relate to cash

*Any 2 at 1 each*

(b)

- Bank can identify stolen cards more easily (1) as know normal habits of customer (1)
- Selling data(1) financial gain (1)
- Decisions on loans (1) save money on bad debts (1)
- Returning goods/ proof of purchase (1) if don't have receipt (1)
- Records for customers (1) financial planning (1)

*Any valid reason at 1 + 1*

10. The personnel department of a large company keeps records on all the employees of the company. These records contain personal data and details of the employees' position, training and medical history. The company is registered on the Data Protection Register and has to abide by the principles of the 1998 Data Protection Act. Three of these principles are:

- "Personal data shall be adequate, relevant and not excessive in relation to the purpose or purposes for which they are processed"
- "Personal data shall be accurate and, where necessary, kept up to date"
- "Appropriate technical and organisational measures shall be taken against unauthorised or unlawful processing of personal data and against accidental loss or destruction of, or damage to, personal data"

For each of the principles stated above describe what the company must do to comply with the principles. 6 marks

### ANSWERS MUST RELATE TO ACTIONS THE COMPANY MUST PERFORM

For **first principle mark** as 1 for any of the following:

- Company must not store more data than they need (1)
- Company must make sure the data they use is relevant for that use (1)
- Enough data must be stored for purpose it is used for (1)

And second mark for one of the following:

- a deeper explanation (1)
- example (1)
- also addressing adequate (1)
- separately covering excessive and relevant (1)

For **second principle mark** as 1 for any of the following:

- Accurate - Company must make sure that data used is validated and verified (1)
- Up to date - They check regularly or update regularly to ensure the data they hold is up to date (1)

And second mark for one of the following

- Example (1)
- also addressing accurate/up to date (1)

For **third principle mark** as 2 from any of the following:

- Security - Company should ensure that they protect the data by keeping it secure (1)
- It is backed up to reduce chance of accidental loss (1)
- Privacy explanation (1)
- Example of security measure
- Example of privacy measure

11. An organisation pays its employees weekly by transferring money electronically into their bank accounts. Employees are paid different amounts depending on the hours that they have worked and their grade – which determines their hourly rate of pay. The company makes use of a payroll program.
- (a) State:
- (i) **two** items of data that would need to be input to the payroll program each week for each employee; 2 marks
  - (ii) **two** items of data that would be stored for use every time the program is executed; 2 marks
  - (iii) **two** possible documents output on paper from the payroll program 2 marks
- (b) Explain **three** advantages to the organisation of transferring money electronically into its employees' bank accounts, rather than paying their employees in cash. 6 marks

(a)(i)

Identifier / employee code/ name(1)  
hours worked (1)

*Any 2 at 1*

NOT GRADE or DATE

(ii) rates of pay (1)  
Identifier / employee code/ (1)  
Name / address (1)  
employee grade (1)  
bank account details(1) / [account number(1) sort code (1)]  
Totals to date (1)

*Any 2 at 1*

(iii) payslip (1)  
spreadsheet  
summary report showing total paid out/statistics for company (1)  
individual bank transfer details/ BACS reports (1)  
Tax/ NI detailed document  
(Must show understanding of document/report)  
Receipt or Invoice, if used = BOD. Max 1 BOD allowed

*Any 2 at 1*

(b) 3 × 2 marks

Less chance of error (1) no money needs counting (1)  
Less chance of money being lost/stolen (1) as no cash involved (1)  
Saves time/staff (1) no need to count and put up wages (1)  
Easier to produce statistics/accounts (1) no manual calculations needed (1)

Total = 60