



## **General Certificate of Education**

# **Information and Communication Technology 2520**

**INFO2      Living in the Digital World**

## **Mark Scheme**

*2009 examination – January 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.

Further copies of this Mark Scheme are available to download from the AQA Website: [www.aqa.org.uk](http://www.aqa.org.uk)

Copyright © 2009 AQA and its licensors. All rights reserved.

#### COPYRIGHT

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

## **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.** 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.
- 4.** Rules on positioning of ticks and marks are to aid in checking and remarking of scripts.
- 5.** 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.
- 6.** 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.
- 7.** One-word answers, where acceptable, will be indicated on the question paper.
- 8.** The meaning of ICT-specific words and phrases are as defined by the *BCS Glossary of Computing and ICT* (current edition).

### **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 total for the whole question in the box provided.
- 11.** All writing must be marked as read, either by the presence of ticks or by striking through the script with a vertical line.
- 12.** Where candidates have added extra to their answers on additional pages, the total mark should be indicated as ‘including x marks from supplementary page y’. The total mark should be written in the appropriate printed box on the question paper.

- 13.** 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. 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.
  - c. 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.
  - d. The use of letters associated with ticks **may** be used to indicate different areas being marked in a question. **THIS WILL BE OUTLINED DURING THE STANDARDISATION PROCESS.**
- 14.** Markers are responsible for checking:
- a. The transposition of marks to the front cover
  - 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.

1	What is an ICT system?	4 marks
---	------------------------	---------

**Guidance for examiners on how to mark this question**

- a description of what an ICT system is
- identification of the components of an ICT system
- description of specific system and its components

The candidate may answer using a combination of these

**Notes to examiners**

- The specification states the components are people, data, procedures, software, hardware and information.
- Do not exceed 4 marks

**Mark Scheme examples**

- An ICT system is one that involves input (1), processing (1) and output (1) where the output goes directly to a human being (1)
- An ICT system consists of data (1), people (1), procedures (1) and hardware (1)
- An example of an ICT system is a company payroll system (1) where the input would be the hours worked (1), the processing would be calculating the pay by multiplying the hours worked by the hourly rate (1) and the output would be the wage slip (1)

**MAX 4**

2(a)	Explain the type of processing that would be suitable for each of the following ICT systems  Generating and sending out monthly bills	2 marks
------	---	---------

**Guidance for examiners on how to mark this question**

- Batch processing (1) and explanation of why suitable for **this** system (1)
- **or** a good explanation of batch processing **in context** could gain 2 marks

**Notes to examiners**

- Question does not ask candidates to **state** the type of processing

**Mark Scheme examples**

- Batch processing (1) would be the most suitable because the **output** is only required monthly (1)

**MAX 2**

2(b)	Internet banking	2 marks
------	------------------	---------

**Guidance for examiners on how to mark this question**

- Transaction / Interactive processing (1) and explanation of why suitable for **this** system (1)
- **or** a good explanation **in context** could gain 2 marks

**Notes to examiners**

- Candidates may use more than one term, e.g. interactive transaction, pseudo-real time also acceptable. 1 mark only
- Question does not ask candidates to **state** the type of processing

**Mark Scheme examples**

- Transaction processing (1) would be the most suitable because it would ensure that the bank account is updated immediately (1)
- Interactive processing (1) would be the most suitable because the customer gets immediate feedback from the bank's website (1)

**MAX 2**

2(c)	Instant messaging	2 marks
------	-------------------	---------

**Guidance for examiners on how to mark this question**

- Interactive processing (1) and explanation of why suitable for **this** system (1)
- **or** a good explanation **in context** could gain 2 marks

**Notes to examiners**

- Allow real time (due to concept of instant)
- Question does not ask candidates to **state** the type of processing
- Do **not** accept Transaction or pseudo real-time

**Mark Scheme examples**

- Interactive processing (1) would be the most suitable because it would provide a conversational mode of operation (1)

**MAX 2**

3(a)	<p>Mr and Mrs Smith and their son Charles each have their own computer at home. The three computers are linked together using a wireless network. A router is also linked to the network providing access to the Internet for the computers.</p> <p>Describe <b>three</b> threats to this network; at least one threat should be from inside the home and one threat from outside.</p>	6 marks
------	--	---------

**Guidance for examiners on how to mark this question**

- Identifying threatening action in context (1)
- Consequences of an action in context(1)

Identification and description of **three** threats

One threat must be external and one internal for maximum marks

**Notes to examiners**

- If all described threats are internal or external then a maximum of 5 marks available.
- Candidate does not need to explicitly state internal / external
- Viruses and hacking can be classed as internal or external

**Mark Scheme examples**

- Malpractice (1) Son whilst working at his computer deletes father's files (1)
- Malware is unknowingly downloaded whilst connected to the Internet (1) and monitors key presses whilst the family are working on their computers (1)
- The cleaner unplugs the computer system (1) causing data loss (1)

**MAX 6**

3(b)	Describe measures the family could take to protect their network from threats.	4 marks
------	--	---------

**Guidance for examiners on how to mark this question**

- Identification of an appropriate measure in context (1)
- Description (up to 2 marks)

**Notes to examiners**

- At least 2 measures needed for maximum marks
- One measure with good description could be worth 3 marks
- Do **not** accept switching off the router as network is not available then
- Antivirus / Antimalware / Antispyware award one mark. Ensure description explains how or why these work.
- Not Code of Practice – inappropriate in context

**Mark Scheme examples**

- Use of passwords (1) to protect access to personal files of each family member (1)
- Use of a firewall (1) to prevent access from external agencies (1)

4	Explain what is meant by the terms the <i>World Wide Web</i> and the <i>Internet</i> . Your explanation must show that you understand the difference between the two terms.	3 marks
---	---	---------

**Guidance for examiners on how to mark this question**

- Explanation of the term WWW (1)
- Explanation of the term Internet (1)
- Shown an understanding of the difference (1)

**Mark Scheme examples**

- The World Wide Web is a collection of information held in multimedia form (1)
- The Internet is a global collection of linked networks (1)
- WWW is hosted by the Internet (1)

5(a)	Give <b>three</b> personal characteristics required for the IT technician to work effectively, and explain why you consider each of these characteristics would be essential for this job.	6 marks
------	--	---------

**Guidance for examiners on how to mark this question**

Identification of **three** personal characteristics and an explanation of why each is essential for the job in the exam paper.

**Notes for examiners**

- Always refer to the job description in the question paper
- If it doesn't link to one of the duties on the job description, don't award credit
- Only credit personal characteristics not technical skills
- Allow creative since definition includes innovative, resourceful etc
- Personal characteristic e.g. listen **carefully** (see examples below of qualification of characteristic)
- If a candidate gives more than three characteristics mark the best three
- Beware of awarding same personal characteristic twice

**Mark Scheme examples**

- **Good** written communication skills (1) in order to maintain existing documentation accurately (1)
- **Good** oral communication skills (1) in order to be able to explain effectively how to solve ICT problems when taking calls at the help desk (1)
- A **good** team worker (1) in order to contribute to departmental IT projects (1)

5(b)(i)	<p>As well as IT technicians and managers, there are many other jobs that are available to ICT professionals.</p> <p>Identify another job that would require an ICT professional.</p>	1 mark
---------	---	--------

**Guidance for examiners on how to mark this question**

- Naming a suitable job title or description of role or task

**Notes for examiners**

- Allow Project Manager / Consultant (as ICT is specified in the question)

**Mark Scheme examples**

- One example of a job that would require an ICT professional would be a Systems Analyst (1)
- Writing systems maintenance documentation is a job which would require an ICT professional. (1)

5(b)(ii)	Identify a personal characteristic and explain why it would be essential for the ICT professional that you identified in part 5(b)(i).	2 marks
----------	--	---------

**Guidance for examiners on how to mark this question**

- Identification of a personal characteristic relevant to job role correctly identified in 5(b)(i) and an explanation of why it is essential for the job identified by the candidate.

**Notes to examiners**

- If no marks awarded for 5(b)(i) do **not** award marks
- Allow creative **only** if it relates to the job specified e.g. Web Designer but not where it is inappropriate e.g. Systems Analyst

**Mark Scheme examples**

- (For Systems Analyst) **Good** written communication skills (1) in order to write documentation that could be easily understood by the System Designer (1)

**MAX 2**

5(c)	ICT professionals often work in teams. Describe, with the aid of examples, the characteristics of an effective ICT team.	8 marks
------	--	---------

**Guidance for examiners on how to mark this question**

- Marks for characteristics of an effective team (C)
- Marks for descriptions (D)
- Marks for **ICT** examples (E)

Candidates must include at least two **ICT** examples within their answer to gain full marks

**Notes for examiners**

- Characteristics must relate to teams **not personal** skills e.g. do not allow willingness to work flexible hours / patience etc
- Do **not** accept team working as question relates to working in a team
- Answers must map to:
  - effective leader
  - good organisation
  - appropriate allocation of tasks
  - monitoring of progress
  - control over change
  - balance of team
  - good internal and external communication skills
  - adherence to agreed standards

**MAX 6 IF NO EXAMPLES**

**Mark Scheme examples**

- **Appropriate** allocation of team member to task (C) play to strengths of team member (D) e.g. send a networking specialist to solve a problem relating to a network server (E)
- **Effective** team communication (C) so team members can explain tasks clearly to each other (D) e.g. using agreed methods of communication e.g. minutes and agendas via e-mail (E)

6(a)	<p>You have been asked to design a mobile phone for older users.</p> <p>What would you need to consider when designing the user interaction with this mobile phone?</p>	8 marks
------	---	---------

### Guidance for examiners on how to mark this question

- Characteristics / requirements of users which should be considered
- What can be incorporated into the design
- Why it should be incorporated
- Consideration of target group
- Consideration of options available
- Matching target group to options

### Notes to examiners

- **INTERACTION** not just interface
- Remember that 'older' can be early 20s
- Only credit characteristic once but there could be different reasons that could be incorporated for the same characteristic (see dexterity below).
- The specification lists the following characteristics of users:
  - Experience
  - Physical characteristics
  - Environment of use
  - Task to be undertaken
  - Age
- Answers may describe the stages in designing user interaction
- Simple / easy to use / user-friendly is **not** enough, unless qualified.

### Mark Scheme examples

- Users may have restricted vision (1) therefore large size of text should be available on both buttons and screen (1) to help them read it more easily (1)
- Users may have restricted dexterity e.g. arthritis (1) therefore big buttons should be available (1) to enable them to be pressed more easily (1). Also a voice activated interface could be provided (1) so they would not need to use their fingers as much (1)
- The type of user interface needs to be considered (1) because it should match the needs of the target user (1) e.g. an interface providing a limited number of options (1) would be suitable for older users as it is less confusing

**MAX 8**

6(b)(i)	Explain, giving reasons for your choice, what type of interface you would recommend for this phone.	4 marks
---------	---	---------

**Guidance for examiners on how to mark this question**

- Type of interface (1) appropriate reasons in context (3)

**Notes for examiners**

- **INTERFACE**
- Speed of processing **not** an appropriate reason

**Mark Scheme examples**

- A Menu driven interface would be suitable (1) because it is a simple interface which is easily understood (1). You can only choose from a set list of options (1) which will reduce user errors (1)
- GUI (1) because it has icons (1) where text might be too small (1) because the elderly often have poor eyesight (1)

6(b)(ii)	Which types of interface would you <b>not</b> recommend for this phone and why?	4 marks
----------	---	---------

**Guidance for examiners on how to mark this question**

- Each type of interface (1)
- Each reason (1)

**MAX 3** if only one interface referred to

**Notes for examiners**

- **INTERFACE** therefore nothing to do with hardware
- Question asks for **types** of interfaces not descriptions
- Interfaces must be different from 6(b)(i)
- Maximum of 3 marks if only one interface considered

**Mark Scheme examples**

- A command line interface (1) would not be suitable because the user is unlikely to have the experience to use it (1) and commands have to be remembered (1) A GUI would also not be suitable. (1)

6(c)	<p>These phones are to be marketed to younger people who have particular needs. What changes would you recommend to the interface?</p>	4 marks
------	--	---------

**Guidance for examiners on how to mark this question**

- Marks available for:
  - Identifying particular needs
  - Giving changes that you recommend
  - Expanding on why changes needed

**Notes to examiners**

- Particular needs could be interpreted as either needs of young people in general or young people with individual particular needs
- Colours used is acceptable if candidates are referring to the interface not the colour of the phone itself
- Question refers to **changes** e.g. clear graphics is not a change as it should apply to all phones
- No credit for changing the **type** of interface

**Mark Scheme examples**

- An icon could be provided for the camera (1) because younger people may use the camera feature frequently (1) which would enable them to get to it faster (1)
- If the phone has been designed for older people it (1) it could be used by younger people with physical impairment (1) without any changes (1)

**MAX 4**

7	<p>Explain, with the use of examples, how the use of ICT has been influenced by all of the following factors</p> <ul style="list-style-type: none"> <li>• Cultural</li> <li>• Economic</li> <li>• Environmental</li> <li>• Ethical</li> <li>• Legal</li> <li>• Social</li> </ul>	20 marks
---	--	----------

### Guidance for examiners on how to mark this question

- **Read the full answer before awarding credit**
- **The mark awarded must not be dependent solely on the number of factors correctly referenced**
- No ticks or other annotation to be used on the script, just the final total
- Start at the bottom band and work up

#### Low mark range

Candidate uses relevant examples that correctly reference at least 1 factor. The candidate has used a form and style of writing which is barely appropriate for its purpose. The candidate has expressed simple ideas clearly, but may be imprecise and awkward in dealing with complex or subtle concepts. Information or arguments may be of doubtful relevance or be obscurely presented. Errors in spelling, punctuation and grammar may be noticeable and intrusive to understanding, suggesting weaknesses in these areas. Text is barely legible.

**0-5**

#### Medium mark range

Candidate uses relevant examples that correctly reference at least 2 factors. The candidate has used a form and style of writing which is sometimes appropriate for its purpose but with many deficiencies. The candidate has expressed straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well-connected. Information or arguments may sometimes stray from the point of information or may be weakly presented. There may be some errors of spelling, punctuation and grammar, but not such as to cause problems in the reader's understanding and not such as to suggest a weakness in these areas. Text is legible.

**6-10**

#### Good mark range

Candidate uses relevant examples that correctly reference at least 4 factors. Meaning is clear. The candidate has in the main used a form and style of writing appropriate for its purpose, with only occasional lapses. The candidate has expressed moderately complex ideas clearly and reasonably fluently. Candidate has used well-linked sentences and paragraphs. Information or arguments are generally relevant and well structured. There may be occasional errors of spelling, punctuation and grammar. Text is legible.

**11-15**

**High mark range**

Candidate uses relevant examples that correctly reference all 6 factors. Meaning is clear. The candidate has selected and used a form and style of writing appropriate to purpose and has expressed complex ideas clearly and fluently. Sentences and paragraphs follow on from one another clearly and coherently. Specialist vocabulary has been used appropriately. There are few if any errors of spelling, punctuation and grammar. Text is legible.

**16-20**