



## **General Certificate of Education**

# **Information and Communication Technology 5521**

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

# **Mark Scheme**

*2008 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)

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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.
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 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: Nature, Role and Context

**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	<p><b>10.1 Knowledge, Information and Data</b></p> <p><i>Three stages of a data processing system are input, processing and output.</i></p> <p><i>State, using an example for each one, what is meant by the following terms.</i></p> <p>a) <i>Input</i></p> <p>b) <i>Processing</i></p> <p>c) <i>Output</i></p>	<p>(2 marks)</p> <p>(2 marks)</p> <p>(2 marks)</p>
	<p><b>For each of a) b) and c) (2, 1, 0) marks, possible to get any of the individual marks</b></p> <p>a) Input – <b>capturing data/entering data/data entered</b> (1) plus example (1)</p> <p>b) Processing – <b>converting/changing/ordering data</b> into information (1) plus example (1)</p> <p>c) Output – (the action of) producing <b>information/information</b> produced (1) plus example (1)</p> <p>ICT related examples only</p>	<p>(2 marks)</p> <p>(2 marks)</p> <p>(2 marks)</p> <p><b>Max 6</b></p>

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2	<p><b>10.7 Information and the Professional</b></p> <p><i>A company is recruiting a new member of staff for its ICT support desk. The head of Human Resources has asked the manager of the support desk what personal qualities the new employee should have in order to be able to carry out the job effectively.</i></p> <p><i>State, with reasons, three personal qualities that the manager would want a new support desk employee to have.</i></p>	(6 marks)
	<p><b>Any 3 x (2, 1, 0) marks, 1 for QUALITY 1 for REASON</b></p> <p><b>NB Context is ICT support desk so reason must be in context for the second mark</b></p> <p><b>Willing to work flexible hours (1)</b> – user support roles require the ability to stick at problems and see them through after their normal working hours (1)</p> <p><b>Be able to communicate well orally (1)</b> – to enable efficient and effective communication with users or colleagues to discover what the ICT problem is (1)</p> <p><b>Good written communication skills (1)</b> – ability to write understandable documentation for both technical staff and end users/necessary for recording faults clearly and documenting solutions in an understandable form (1)</p> <p><b>Organisational skills/work under pressure (1)</b> – ability to manage several jobs efficiently at the same time/users may have urgent work to do and be demanding (1)</p> <p><b>Good listening skills (1)</b> - if ICT support worker does not listen carefully then users ICT problems are often misinterpreted (1)</p> <p><b>Perseverance/problem solving (1)</b> – ability to work on ICT problems without giving up / finding more than one solution to a problem (1)</p> <p>DO NOT ACCEPT Initiative, managerial skills, technical skills, previous experience or other generalised answers</p>	

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3	<p><b>10.2 Value and Importance of Information</b></p> <p><i>A Sales Manager requires good information that has value and importance.</i></p> <p><i>Describe three characteristics of information that give it value and importance for the Sales Manager.</i></p>	
	<p>The answers must be in context The following are <b>EXAMPLES</b> only</p> <p>Accuracy (1) - this means that the information on a sales report must be exact monetary value (1)</p> <p>Up to Date (1) – a list of customer e-mail addresses must be the most recent/ checked at regular intervals to ensure customers can be contacted (1)</p> <p>Relevant for a particular use (1) – the information on a summary sales report must show sales of individual members of staff (1)</p> <p style="text-align: right;">3 times (2.1.0)</p>	(6 marks)

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4	<p><b>10.4 Capabilities and Limitations of Information and Communication Technology</b>  <b>10.5 The Social Impact of Information and Communication Technology</b></p> <p><i>For each of the following areas, state one use of ICT (other than the Internet) and a benefit of that use.  Your benefits must be different for each area.</i></p> <p>a) <i>Education</i></p> <p>b) <i>Medicine</i></p> <p>c) <i>Banking</i></p> <p>d) <i>Travel industry</i></p>	<p>(2 marks)</p> <p>(2 marks)</p> <p>(2 marks)</p> <p>(2 marks)</p>
	<p>For each of a) to d)</p> <p>For example</p> <p>a) Use – Student records can be held on a database (1)  Benefit – Records can be searched with greater speed than manually searching through a filing cabinet (1)</p> <p style="text-align: right;"><i>4 x (1+1)</i></p>	



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<b>5</b>	<p><b>10.8 Information Systems Malpractice and Crime</b></p> <p><i>Information Systems need to be protected.</i></p> <p>(a) (i) <i>Explain, using an example, what is meant by an internal threat to an information system.</i></p> <p style="text-align: right;">(3 marks)</p> <p>(ii) <i>Describe a measure that a company can take to protect its information system from an internal threat, stating how the system will be protected from it.</i></p> <p style="text-align: right;">(2 marks)</p> <p>(b) (i) <i>Explain, using an example, what is meant by an external threat to an information system.</i></p> <p style="text-align: right;">(3 marks)</p> <p>(ii) <i>Describe a measure that a company can take to protect its information system from an external threat, stating how the system will be protected from it.</i></p> <p style="text-align: right;">(2 marks)</p>	
	<p><b>a) (i) (3,2,1,0)</b></p> <p>Internal threats are from within the company or organisation (1) caused by own staff (1) example internal (1).</p> <p><b>a) (ii) (2,1,0)</b>      1 mark for measure 1 mark for explanation of how measure protects the system</p> <p>Examples</p> <p>Procedures for using portable storage media (1) prevents employees bringing in viruses which may spread across the network (1)</p> <p>Passwords &amp; Ids/Access levels (1) to prevent unauthorised modification/copying of data (1) NB Not just prevent access</p> <p>Guidelines on working practice / Code of practice (1) + expansion (1)</p> <p><b>b) (i) (3,2,1,0)</b></p> <p>External threats come from outside the company or organisation (1) caused by people gaining unauthorised access to data (1) example external (1).</p> <p>NB Examples may only be used once e.g. hacking into a system - either internal or external but not both.</p>	

	<p><b>b) ii) (2,1, 0)</b>      1 mark for measure  1 mark for explanation of how measure prevents threat</p> <p>Examples</p> <p>Firewalls (1) prevent unauthorised access to data from external sources (1)</p> <p>Anti-virus software (1) will detect and delete a virus which will protect company data (1)</p> <p>Encryption (1) used to prevent misuse of data if intercepted during transfer (1)</p> <p>Physical measures - locks/guards/ CCTV (1) prevent unauthorised access by non employees (1)</p> <p>Audit trails/Backups - MUST explain how they protect (so either 2 or 0)</p>	
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6	<p><b>10.9 The Legal Framework</b></p> <p><i>People who access computer systems without authorisation can be prosecuted for committing an offence under the Computer Misuse Act.</i></p> <p><i>(a) For each of the three sections of the Computer Misuse Act, describe the section and give an example of an offence under that section.</i></p> <p><i>(b) Explain why there are few prosecutions under the Computer Misuse Act.</i></p>	<p>(6 marks)</p> <p>(2 marks)</p>
	<p>Independent marks 3 x (2,1,0)</p> <p>NB The mark is <b>not</b> for candidate writing <b>unauthorised</b></p> <p>a) <b>(unauthorised)</b> access to computer material (1). An example would be the student who gains access to the administrative side of a college network or to another student's user area to show that they can. (1)</p> <p><b>(unauthorised)</b> access with intent to commit, or to facilitate commission of, further offences (1). For example accessing bank records with the intent of committing fraud. Accessing personal details with the intent of committing blackmail. (1)</p> <p><b>(unauthorised)</b> modification of computer material / the code or data is actually changed rather than simply viewed and used (1). For example changing the balance in a bank account/ altering someone's credit status/ changing an examination mark. (1)</p>	
	<p>b) (2,1,0)</p> <p>Fear of effect on customers/reputation (1) if think their data/system is unsafe (1)</p>	

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7	<p><b>10.4 Capabilities and Limitations of ICT</b></p> <p><b>10.6 Role of Communication Systems</b></p> <p>(a) <i>The Internet is used by many organisations.</i></p> <p><i>For each of the following activities, state how the Internet can be used by an organisation and explain the benefit of that Internet use to the organisation.</i></p> <p style="padding-left: 40px;">(i) Advertising</p> <p style="padding-left: 40px;">(ii) Selling</p> <p style="padding-left: 40px;">(iii) Researching</p> <p>(b) <i>Individuals and organisations make use of the Internet for communication.</i></p> <p><i>Describe three ways of communicating that the Internet supports and give a benefit to the user of each one.</i></p> <p>(c) <i>An employee works away from both her home and her company's offices. The company wants to be able to contact the employee wherever she is, including abroad.</i></p> <p style="padding-left: 40px;">(i) <i>Suggest an electronic device that the company could provide her with so that she can be contacted.</i></p> <p style="padding-left: 40px;">(ii) <i>Explain why the device you have suggested would be a good choice for the company.</i></p> <p style="padding-left: 40px;">(iii) <i>What would be a disadvantage to the employee of having to use this device?</i></p>	<p>(2 marks)</p> <p>(2 marks)</p> <p>(2 marks)</p> <p>(6 marks)</p> <p>(1 mark)</p> <p>(2 marks)</p> <p>(1 mark)</p>
	<p>(a) 1 mark for How 1 mark for Benefit For example (i) an organisation may advertise on another organisation's website (1) this will reach a wider audience and may increase sales (1)</p> <p>(b) 3 x (2, 1, 0) 1 mark for Way and 1 mark for Benefit e-mail (1) + benefit (1) videoconferencing (1) + benefit (1) instant messaging (1) + benefit (1)</p> <p>(c) (i) any suitable device (1) (ii) any reasonable explanation (2) (iii) any reasonable disadvantage (1)</p>	