General Certificate of Education
June 2010

Information and Communication Technology **INFO1**

Practical Problem Solving in the Digital World

Unit 1

Final

Mark Scheme

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.

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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. 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 generally as defined by *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. For questions where candidates' answers are assessed for QWC, no individual ticks should be written on the script as it should be marked holistically.

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.

SECTION A

1 For each of the following tasks name and justify what you consider to be the most suitable data input method to use.

(a) Automatic sorting of post using the postcode on each envelope *(2 marks)*

(b) Recording the answers from multiple-choice examination papers *(2 marks)*

(c) Producing a letter. *(2 marks)*

Guidance for examiners on how to mark this question

For a, b and c
Suitable input method (1) + reason (1)

Example answer

(a) optical character recognition (1) an efficient method for dealing with large volumes of envelopes. (1)
(b) optical mark recognition (1) no special equipment is required by the student to complete the examination paper. (1)
(c) data entered via a keyboard/speech recognition (1) increases speed of data entry. (1)

2 Validation and verification techniques are used in the design of robust data entry.

Explain, giving examples, why these techniques are required. *(6 marks)*

Guidance for examiners on how to mark this question

One mark per reason
One mark per example
Max 4 if no example

Example answer

To ensure the data entered is reasonable (1) sensible (1) and has not changed as it has been entered from a source document. (1) For example validation on a member number may be a range check (1) of 1000 – 12000 (1) only numbers within this range would be accepted. (1)

3 Describe, using examples, the current health and safety legislation as it relates to the use of ICT systems. *(6 marks)*

Guidance for examiners on how to mark this question

Example (1)
Description (1)
Health and Safety at Work Act / purpose of the legislation (1)
Display screen equipment regulations (1)

Up to 2 marks for stating legislation
Up to 4 examples
Up to 4 descriptions

Example answer

To ensure safe workstation use (1) employers should provide employees with a height adjustable chair (1) employees should adjust the chair to the correct height (1) to prevent back ache. (1) Employers should provide employees with an ergonomic keyboard (1) to prevent RSI. (1)

Max 6

4 Explain how the evidence from test results can be used in the evaluation of an IT solution to a problem. *(3 marks)*

Guidance for examiners on how to mark this question

Relevant point x 3
Candidates may answer by giving examples.

Example answer

A client requirement has been tested (1) successfully (1) this proves that the requirement has been met. (1)

The ease of navigation of a website was tested (1) by giving the users a questionnaire asking appropriate questions (1) they all answered that this requirement had been met. (1)

Max 3

SECTION B

5(a) With reference to your Sample Work, describe the problem that required a solution. *(2 marks)*

Guidance for examiners on how to mark this question

Check page reference first (no page reference or incorrect page reference no marks)

No problem stated no marks

Description of problem (1 or 2)

Example answer

The problem was that my client did not have the best methods of advertising her business (1) because of the recession, competition is tough and so she wants a website solution to advertise her business to attract customers. (1)

5(b) With reference to your Sample Work, identify who needed the solution. *(2 marks)*

Guidance for examiners on how to mark this question

Check page reference first (no page reference or incorrect page reference no marks)

No identification of who needed the solution no marks

Client (1)
Client name or role (1).

Example answer

The client needed the solution to the problem (1) Mr Reebok (1)

5(c) For the solution that you were asked to produce for your Sample Work, describe the input, processing and output required. *(12 marks)*

Guidance for examiners on how to mark this question

Input required (up to 6)
Processing required (up to 6)
Output required (up to 6)

Max 10 if only two of input, processing and output have been included
Full marks available only when descriptions are given

Example answer

I was asked to produce an invoice; the inputs required were the customer's number (1) which would be used to look up the customer name (1), the invoice date would be entered automatically from the system (1), product code would be used to look up product description (1) and quantity. (1) One process was to multiply the quantity of one product ordered (1) by the price of that product (1) to give a sub-total. (1) Another process was to add the sub totals together (1) to give the final total. (1)The invoice was printed (1) on to A4 paper, landscape, 2 copies. (1)

Max 12

5(d) Identify **three** items of test data you have used and justify why you selected each one.

Your justification must be different for each one. *(9 marks)*

Guidance for examiners on how to mark this question

Check page reference first (no page reference or incorrect page reference no marks)

Test data (up to 3 marks)
Justification (up to 6 marks)

Max 3 if only test data stated

Example answer

29 (1) I chose this to test within the range 1 –100 (1) this was normal data which was accepted. (1) I chose 152 (1) to test outside of the range 1 – 100 (1) this was erroneous data and was rejected. (1) I chose 100 (1) to test the boundary of 1 – 100 (1) this was accepted as expected. (1)

Max 9

6(a) 'Digital cameras make taking large numbers of photographs much easier than did the old film cameras. As a result, personal collections of digital images have become much larger. Printing digital images and saving image files correctly are important parts of preserving these digital memories.' (Source: *Image Permanence Institute.)*

Describe appropriate media and devices that are available to store the photographs, and justify why the items you have selected would be appropriate for preserving digital memories. *(8 marks)*

Guidance for examiners on how to mark this question

Storage devices (up to 3 marks)
Storage media (up to 3 marks)
Justification (up to 4 marks)

Max 5 if no justification

Example answer

Initially the images will be stored on the camera's flash memory card (1) but they cannot be stored there indefinitely as it will become full (1), the photographs could then be written to the hard drive on my laptop (1) where they will be stored magnetically. (1) I could write the files to CDR (1) this is optical storage. (1) This type of storage is easily transportable (1), so I could post a disk to my grandparents in Australia for them to view. (1)

6(b) Describe appropriate methods and devices that are available to output the photographs, and justify why the items you have selected would be suitable to display digital images. *(6 marks)*

Guidance for examiners on how to mark this question

Output methods (up to 3 marks)
Output devices (up to 3 marks)
Justification (up to 3 marks)

Max 4 if no justification

Example answer

As soon as I have taken the photographs I am able to view them on my digital camera (1), this is very useful as I can delete the photos that are not very good. (1) I could print a hard copy of the photographs. (1) I could output the photographs to my page on a social networking site (1) this will make them available for all my 'friends' to view instantly (1) via their screen/monitor. (1)

7 A student is leaving home to start an apprenticeship later this year. His parents plan to purchase a laptop computer and appropriate software for him to take. They do not know what software to buy because they do not understand the role and functions of either systems software or applications software.

They have asked you to explain to them, with the use of examples, the role and functions of both systems software and applications software so they can make a decision on what software to buy. *(20 marks)*

Guidance for examiners on how to mark this question

Low mark range
Candidate shows little understanding and has only identified one role/function of system software and/or applications software. At least one appropriate example has been used. The candidate has used a form and style of writing that is barely appropriate to 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 marks

Mid mark range
Candidate discusses some roles/functions of system software and applications software. Appropriate examples have been used. Meaning is nearly always clear. The candidate has, in the main, used a form and style of writing, which is appropriate for its purpose with some lapses. The candidate has expressed simple ideas clearly and reasonably fluently. Candidate has used sentences and paragraphs. Information or arguments are generally relevant. There may be some errors of spelling, punctuation and grammar. Text is legible.

6 – 10 marks

Good mark range
Candidate discusses, partly in context, a range of roles/functions of system software and different types of applications software. Appropriate examples have been used. Some specialist vocabulary used has been explained. Meaning is clear. The candidate has, in the main, used a form and style of writing, which is appropriate for its purpose with 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 marks

High mark range
Candidate discusses, in context, a wide range of roles/functions of system software and different types of applications software. Appropriate examples have been used. Any specialist vocabulary used has been explained. 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. There are few, if any, errors of spelling, punctuation and grammar. Text is legible.

16 – 20 marks