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General Certificate of Education (A-level)
June 2013

ICT INFO1

(Specification 2520)

Unit 1: Practical Problem Solving in the Digital World

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 events which all examiners participate in and is the scheme which was used by them in this examination. The standardisation process 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 standardisation each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, examiners encounter unusual answers which have not been raised 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 from: 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. 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	Write the name of each device on the dotted line and then match the device to its use by drawing a line from one to the other.	*(6 marks)*
	Purpose of the Question Knowledge of output and storage devices and their uses	
	Guidance for examiners on how to mark this question One mark for each correct naming of device One mark for the correct linking of one or two devices and uses Two marks for the correct linking of three or four devices and uses	
	Example answer **See scan overleaf** Hard drive (1) linked to 'Store records of family accounts' e-reader (1) linked to 'Store reading material' Printer (1) linked to 'To produce an essay to hand in to a teacher' Optical mark reader (1) linked to 'To capture examination marks' Plus 2 marks for 4 correct links	
	Area of the Specification and AOs this question covers 3.1.4, 3.1.5, 3.1.6 AO1.2, AO1.5	
	Notes for examiners	

Do not write outside the box

Section A

Answer **all** questions in the spaces provided.

1 Write the name of each device on the dotted line and then match the device to its use by drawing a line from one to the other.

Device	Use
OMR (optical mark reader)	To store records of family accounts
ink jet printer	To view/store reading material
internal hard drive.	To capture examination marks
electronic book reader	To produce an essay to hand in to a teacher

(6 marks)

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2	A garden centre requires an input device to read barcodes on a range of items from seed packets to garden furniture. Name and justify a suitable device(s) for the garden centre to use.	*(3 marks)*
	Purpose of the Question Application of knowledge	
	Guidance for examiners on how to mark this question One mark for naming a device – up to 2 devices Up to two marks for justification Max 2 marks if no justification	
	Example answer To read the barcodes on a range of items the garden centre could use a hand held barcode reader. (1) This would be required so that the small items could be scanned with the reader in its holder (1) and it could be taken from the holder and used to scan garden furniture which could not be lifted. (1)	
	Area of the Specification and AOs this question covers 3.1.3	

3	One type of systems software is an operating system. Describe other types of systems software.	*(4 marks)*
	Purpose of the Question Knowledge and understanding of the evaluation of ICT-related solutions	
	Guidance for examiners on how to mark this question One mark per point Max 3 marks for a list of types of systems software	
	Example answer Other types of systems software include disk defragmenters (1) which can detect computer files whose contents are broken across several locations on the hard disk(1) and move the fragments to one location to increase efficiency. (1) Another type is a backup utility. (1)	
	Area of the Specification and AOs this question covers 3.1.10 AO1.6, AO2.6	

4	Choosing the right software to solve a problem using ICT is very important. Give an example of a problem you have solved, stating the software you used and explaining how the functionality of the software helped you to produce an effective solution.	*(7 marks)*
	Purpose of the Question Application of knowledge and understanding of choosing the right software to solve a particular problem and the functionality of the software used.	
	Guidance for examiners on how to mark this question Example of problem – 1 mark Software used for solving the problem – 1 mark Functionality up to 3 marks (*breadth of knowledge*) Justification of why functionality used up to 4 marks (*depth of knowledge*) Max 5 if no justification	
	Example answer I used presentation software (1) to create a multimedia presentation for my history assignment. (1) I included a clip from Black Adder that I found on YouTube (1) to provide interest and humour. (1) I also included music (1) to gain my peers' attention at the beginning of the presentation. (1) My grandfather had given me his ration card which I scanned and included. (1)	
	Area of the Specification and AOs this question covers 3.1.7 AO1.2, AO1.5	
	Notes for examiners A full mark answer must address all aspects of the question	

<table>
<tr><td rowspan="4">5a (i)</td><td>Give the page number in your Sample Work where you have identified who needed the solution.

Page……
In your Sample Work, write ‘5(a)(i)’ in the margin of that page next to your evidence.

With reference to your Sample Work, identify who needed the solution.</td><td>(2 marks)</td></tr>
<tr><td>Purpose of the Question

Knowledge and understanding of the client being the person who needed the solution.</td><td rowspan="3"></td></tr>
<tr><td>Guidance for examiners on how to mark this question

Check page reference

No identification of who needed the solution - no marks

Marks for:
Understanding that it is a client who needs the solution
Naming the client
Describing the client or what the client needs</td></tr>
<tr><td>Example answer

My client (1) the owner of Hubert cars (1) needed to advertise his cars.</td></tr>
<tr><td></td><td>Area of the Specification and AOs this question covers

3.1.2 AO2.1</td><td></td></tr>
</table>

5a(ii)	Give the page number in your Sample Work where you have identified one of the people who will use your solution. Page……. *In your Sample Work, write '5(a)(ii)' in the margin of that page next to your evidence.* With reference to your Sample Work, identify one of the people who will use your solution and describe what they will use it for.	*(3 marks)*
	Purpose of the Question Knowledge and understanding of the user being the person who will update the solution.	
	Guidance for examiners on how to mark this question **Check page reference first** **No identification of the user - no marks** One mark for describing/naming a user One mark for a use One mark for expansion	
	Example answer My user is the advertising manager (1) who will use the solution to update advertising material (1) such as posters. (1)	
	Area of the Specification and AOs this question covers 3.1.2 AO2.1	

5b Give the page number in your Sample Work where you have evidence of testing your solution. *(10 marks)*

Page……

In your Sample Work, write '5(b)' in the margin of that page next to your evidence.

Test plans may include tests carried out for a number of reasons using normal, extreme and erroneous data.

With reference to your test plan, test data and testing evidence, describe and justify tests you have carried out for two different reasons.

Purpose of the Question

Application of knowledge and understanding and testing of ICT-related solutions

Guidance for examiners on how to mark this question

Check page reference first

Award marks for the following

- Reason for performing the test
- Description of the tests performed
- Justification of why test was performed
- The test data used
- Justification of the test data
- Reporting on the result of testing

Max 7 if only 1 reason is referred to

To achieve full marks must have justification of tests

Example answer

The reason I carried out one test was to ensure accuracy of output (1) this was test number 12 which tested the calculation of a total. (1) The data was 10, 5 and 15 (1) the expected result was 30, (1) the actual result was 30 (1) to check the calculation was correct I entered the numbers into a calculator (1) this gave 30 which proved the calculation was correct. (1)
Another test I did was to test the validity of data input (1). The customer number range check of 100 – 1000 (1). The justification for doing this test was to check that data outside of the range was not accepted. (1)

Area of the Specification and AOs this question covers

3.1.9 AO2.4

	Notes for examiners Reasons for testing in specification are to ensure: • Validity of data input • Accuracy of output • Presentation of output • That the solution meets the requirements of the client • That the solution is usable by the end user and/or intended audience NOT that it works Do not award marks just for mentioning normal, extreme, typical, boundary or erroneous as this is covered in the question.	

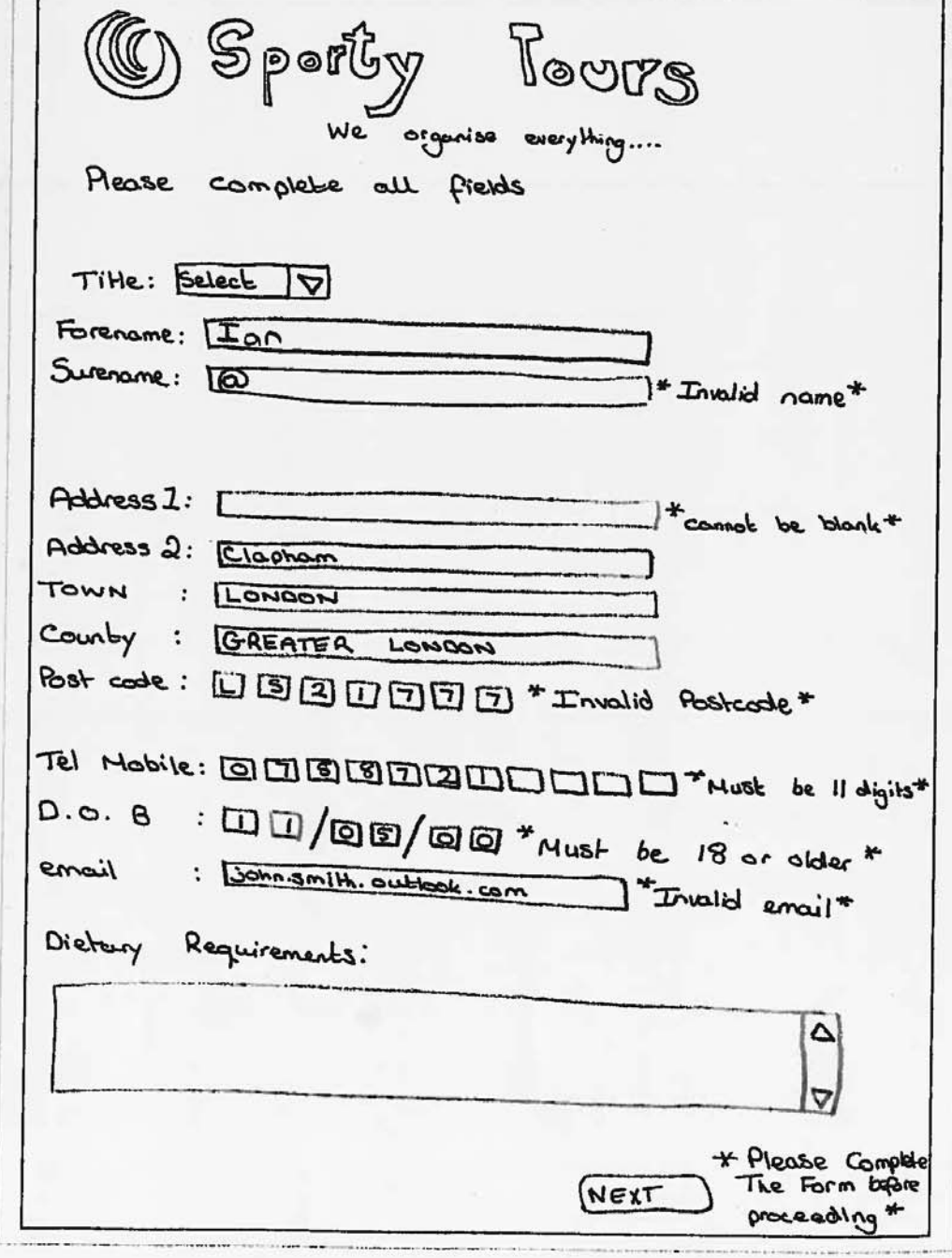
5c	The suitability of the output produced is one way of judging the effectiveness of a solution. With reference to your Sample Work, explain how you ensured the outputs produced were suitable and therefore effective.	*(7 marks)*
	Purpose of the Question Application of knowledge and understanding of producing suitable outputs for an effective solution.	
	Guidance for examiners on how to mark this question Answer must have at least two outputs for full marks. Max 3 marks for identifying outputs Max 4 for explanation of how student ensured **one** output produced was suitable and therefore effective.	
	Example answer 1 For the advertising campaign one output was a large poster (1) which I showed to John to ensure it was suitable for his needs. (1) I asked John to keep a record for two weeks to find out if the poster had been well-received by their customers (1) the results showed that it has been. (1) Another output was a flyer which was delivered door to door locally. (1) New customers were asked to bring it to the shop with them to give an idea of whether or not it had the desired effect. (1) Ten new customers came in during the two weeks that we tested the effectiveness. (1) **Example answer 2** I made sure that the outputs provided were suitable by testing my solution (1) making sure that all the images loaded (1) and all the hyperlinks worked correctly. (1) I tested the website more than once to make sure that the outputs remained reliable. (1) Once I had the finished product I asked people to look at the finished website and act as the users of the solution (1) to see if the outputs were effective. I asked them to give me feedback about any improvements that I could make. (1) I did this before I showed the solution to the client (1) so I could make any changes before that.	
	Area of the Specification and AOs this question covers 3.1.2 / 3.1.6 / 3.1.9 / 3.1.10	
	Notes for examiners	

6a	Explain, using an example, what is meant by *verification.*	*(3 marks)*
	Purpose of the Question Knowledge and understanding of verification (and validation) to ensure robust data entry.	
	Guidance for examiners on how to mark this question Up to 2 marks for what is meant by verification Up to 2 marks for an example	
	Example answer Verification is a check to make sure data has not been corrupted (1) as it is copied between different parts of a computer system. (1) It is often used to check that passwords have been entered accurately and consistently when signing up for web sites or email accounts. (1)	
	Area of the Specification and AOs this question covers 3.1.3 AO1.6, AO2.2	
	Notes for examiners A full mark answer must include an example	

6b (i)	A group of friends are using a local travel company, 'Sporty Tours', to organise a tour to Australia in 2013. 'Sporty Tours' has recently produced a website for online booking. They are trying to encourage people to sign up to the website and enter their personal data, as they are in the process of moving away from a paper-based data entry form, shown in **Figure 1** on the insert. You have been asked to design an online booking form. Explain the validation and verification you could include in your design to support robust data entry by minimising errors and ensuring accurate and valid data entry.	*(8 marks)*
	Purpose of the Question Knowledge and understanding of the design of ICT-related solutions to ensure robust data entry	
	Guidance for examiners on how to mark this question Up to 6 marks for the identification of a field **and** the check on that field (both are required) Up to 6 marks for explaining how this would support robust data entry, minimise errors and ensure accurate and valid data entry Max 6 marks if no explanations Max 6 marks if only validation or verification included in answer	
	Example answer I have included drop down menus for the title field (1) to try and cut down on data entry errors as by giving a user some options they will not be required to enter all of the data by themselves as they just choose an option (1) The email will require to be entered twice (1) as a verification check comparing the two will reject the email address if it does not match. (1) I have included a format check on the date of birth field (1) as this ensures that the correct format of dd/mm/yyyy (1) is entered, for example 24/06/2012. (1) A presence check has been included on home phone. (1)	
	Area of the Specification and AOs this question covers 3.1.3 AO1.6, AO2.2	

6b (ii)	In the space provided below sketch a design for an online input screen for entering the personal data for collection by the Sporty Tours.	*(7 marks)*
	Purpose of the Question Knowledge and understanding of the design of ICT-related solutions	
	Guidance for examiners on how to mark this question One mark for • a heading • submit button • same layout as the paper-based form • all fields present and correct Up to 3 marks for additional features	
	Example answer **See example overleaf**	
	Area of the Specification and AOs this question covers 3.1.3 AO1.6, AO2.2	

6 (b) (ii) In the space provided below, sketch a design for an online input screen to be used for entering the personal data for collection by Sporty Tours. *(7 marks)*



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7	The articles below relate to the health problems that may arise when using computers and other electronic input and output devices. 'Many children are now using computers at home or school – or both. Few schools or homes provide proper workstations for children; furthermore, people become injured at "ergonomically correct" workstations every day because of improper posture and technique and sheer overuse of the hands.' http://www.rsihelp.com/children.shtml 'Children learning to use computers are being put at risk of permanent injury, some health experts are warning. They say thousands of children have already been damaged by medical problems associated with the operation of computers.' http://news.bbc.co.uk/1/hi/health/1041677.stm Discuss the advice you could give parents concerning their children's use of ICT devices, the health problems that may arise and how those problems could be prevented. In your answer use your knowledge of and experience with ICT devices and the fact that current health and safety legislation does not apply to children. In this question you will be marked on your ability to use good English, to or organise information clearly and to use specialist vocabulary where appropriate.	*(20 marks)*
	Purpose of the Question Understanding and application of knowledge of health and safety	
	Guidance for examiners on how to mark this question **Low mark range** Candidate gives some generalised statements about how health problems can be prevented. 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 gives some generalised statements about health problems and has given some simple advice which they may relate to children. 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 gives some advice which they relate to children explaining how a range of health problems could arise and how the problems could be prevented. 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 gives appropriate advice showing a clear understanding of the issues involved. They refer to more than one device. 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**	
	Area of the Specification and AOs this question covers 3.1.1. 3.1.4, 3.1.5 AO1.4, AO1.5	