AQA

General Certificate of Secondary Education
Higher Tier
June 2010

Information and Communication Technology (Specification A) (Full Course)

3521/H

H

Written Paper

Monday 21 June 2010   9.00 am to 10.30 am

You will need no other materials.
You may use a calculator.

Time allowed
● 1 hour 30 minutes

Instructions
● Use black ink or black ball-point pen.
● Fill in the boxes at the top of this page.
● Answer **all** questions.
● You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
● Do all rough work in this book. Cross through any work you do not want to be marked.

Information
● The marks for questions are shown in brackets.
● The maximum mark for this paper is 80.
● You are reminded of the need for good English and clear presentation in your answers.

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

1 (a) Tick **three** boxes to show which of the following sentences are true.

	Tick **three** boxes only
A joystick is used to input information	
A speaker is used to input information	
A monitor is used to input information	
A sensor is used to input information	
A light pen is used to output information	
A microphone is used to output information	
A plotter is used to output information	
A scanner is used to output information	

(3 marks)

1 (b) Tick **one** box to show which of the following sentences is true.

	Tick **one** box only
A graphics digitiser is used to store information	
A touch pad is used to store information	
A flash memory card is used to store information	
A tracker ball is used to store information	

(1 mark)

1 (c) Name **one** other storage device not given above.

....

(1 mark)

5

2 Match the letters **A**, **B**, **C** and **D** with the definitions given below.

A Data logging

B Logging interval

C Period of logging

D Calibrate

2 (a) The process of collecting and storing data at regular intervals over a fixed time period.

Answer [ ] *(1 mark)*

2 (b) The time between one reading being taken and the next reading being taken.

Answer [ ] *(1 mark)*

2 (c) Matching the reading being taken against a known scale.

Answer [ ] *(1 mark)*

2 (d) The time between the first reading being taken and the last reading being taken.

Answer [ ] *(1 mark)*

4

Turn over for the next question

3 The manager of Lancre Sports Centre has produced the flyer below using Desktop Publishing software. The flyer will be delivered to houses around the Sports Centre to try and attract new members.

Lancre Sports Centre
'Try a new sport' week.
Get fit for the summer
For more details phone Sue on 057 117 11700
Dates: 1st to 7th of June 2010
For one week only all activities will be half price.

3 (a) Tick **two** boxes to show which of the following features of a Desktop Publishing package would be the best to use to improve the layout of the leaflet.

	Tick **two** boxes only
Coloured text	
Line spacing	
Centre	
Mail-merging	
Hyperlink	

(2 marks)

3 (b) Name **one** feature of the software that could be used to check the accuracy of the text used in the flyer.

Feature ....

(1 mark)

3 (c) The manager wants to use the cut and paste feature of the Desktop Publishing package to move the fourth line to the end of the flyer.

Describe how this would be done.

....

....

....

....

(2 marks)

5

5

Do not write outside the box

4 When planning a new computer system it is very important to consider carefully the type and design of the user interface. Many systems today use a Graphical User Interface (GUI).

4 (a) Give **one** advantage of using a Graphical User Interface.

....

....

(1 mark)

4 (b) Name **two** other types of user interface.

User interface 1 ....

User interface 2 ....

(2 marks)

4 (c) When designing the new user interface, it is necessary to consider such important factors as consistency of layout. Give **two** other important features to consider when designing a user interface.

Feature 1 ....

Feature 2 ....

(2 marks)

4 (d) (i) When planning a new computer system, it is also important to consider which operating system to install. Which **two** of the following tasks are managed by an operating system?

	Tick **two** boxes only
The rotation of a shape in a graphics package	
Mail-merging in a word processing document	
Data transfer to and from peripherals	
Sharing resources between different tasks	
The use of 'what if' modelling situations	

(2 marks)

4 (d) (ii) Give another task that would be carried out by an operating system.

....

....

(1 mark)

8

Turn over ▶

0 5

5 A school uses a database to store details about Year 11 students going to the Prom at the end of June 2010. Part of this database is given below.

Student Number	Student Name	Consent Form Received	Deposit Paid	Fully Paid	Travelling by Coach
0003	Abbot John	Y	Y	Y	Y
0005	Ali Fessur	Y	Y	N	Y
0006	Allen Rebecca	Y	Y	N	Y
0008	Allen Robert	Y	N		Y
0009	Armstrong Paul	Y	Y	N	Y
0012	Bashir Sabia	Y	Y	N	Y
0014	Bean Jade	Y	Y	N	Y
0016	Bell Lucy	Y	Y	N	Y
0018	Blackburn Sophie	Y	N	N	N
0020	Brown Sara	Y	Y	Y	N

5 (a) Student Number is the key field in this database table. Tick **two** boxes to show which of the following are important features of a key field.

	Tick **two** boxes only
A key field must always be a number	
A key field must always contain text	
A key field must never be empty	
A key field must never be longer than seven characters	
A key field must contain a different value in each record in the database table	

(2 marks)

5 (b) Much of the data entered into this database has been coded. Give **one** advantage of coding data.

....

....

(1 mark)

5 (c) (i) The database contains an error in the Fully Paid column. State clearly what the error is.

....

....

(1 mark)

5 (c) (ii) Explain how data validation could have been used to prevent this error.

....

....

....

(2 marks)

5 (d) The school is also looking at ways to improve the security of the computer systems around the site. Tick **two** boxes to show which of the following would be the most reasonable to make sure the hardware is physically secure.

	Tick **two** boxes only
To lock all computer rooms when not in use	
To keep all parts of the school locked at all times	
To use a virus scanner	
Make sure all the computer rooms are on the ground floor	
Use clamps and cables to attach the computer to the desk	

(2 marks)

5 (e) The school already uses passwords to restrict access to its network. Suggest **two** pieces of good advice that should be given to students about choosing a new password.

Advice 1 ....

....

Advice 2 ....

....

(2 marks)

10

Turn over ▶

6   A manager buys five copies of a database package to run on the office's five computers. The manager decides to take a copy of the software home and use it on her home computer as well.

6 (a) (i)   Tick **one** box to show which law has been broken.

	Tick **one** box only
Copyright	
Health and Safety	
Data Protection Act	

(1 mark)

6 (a) (ii)   How could the manager have avoided breaking this law?

....

....

(1 mark)

6 (b)   The office's computers are connected to the Internet and the manager worries about the possibility of hackers and viruses. What is meant by the term hackers and the term viruses?

6 (b) (i)   Hackers ....

....

....

(2 marks)

6 (b) (ii)   Viruses ....

....

....

(2 marks)

6 (c) Describe possible health and safety issues associated with the staff at the office using computers for long periods of time.

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(4 marks)

10

Turn over for the next question

Turn over ▶

7 The Lancre and District Football League has finished for the season and the final results are shown in the spreadsheet below.

	Arial					
I22	*fx*					

	A	B	C	D	E	F
1		Games Played	Games Won	Games Drawn	Games Lost	Total points
2						
3	Lancre United	16	14	1	1	43
4	Hickley Rovers	16	12	3	1	39
5	Lancre Town	16	10	2	4	32
6	Hickley Palace	16	8	2	6	26
7	Hazeldene Athletic	16	6	4	6	22
8	Whiteport Wanderers	16	5	2	9	17
9	Ramsby Rovers	16	4	3	9	15
10	Wheaton F.C.	16	1	5	10	8
11	Broughton United	16	0	2	14	2
12						
13						
14	Total		60	24	60	
15						

7 (a) Which cell contains the number 12? ....

(1 mark)

7 (b) What formula may have been used to find the total for the games won in cell C14?

....

(1 mark)

7 (c) In this league,
3 points are given for win
1 point is given for a draw
0 points are given for loss

Tick **one** box to show the formula used in cell F3.

	Tick **one** box only
=Sum(C3:E3)	
=C3*3+D3*1+E3	
=C3*3+D3	

(1 mark)

7 (d) A similar formula to the one in F3 would be needed in cells F4 to F11. Explain how this could be done without typing a formula into each new cell.

....

....

....

(2 marks)

7 (e) The spreadsheet comes with a help facility. Explain how you would get to this help facility to find more about using formulae.

....

....

....

(2 marks)

7 (f) It is important that each club knows the final results of the league. Give **two** advantages of these results being sent to each club by e-mail compared to sending them by post.

	Tick **two** boxes only
More than one e-mail can be sent to each club	
E-mails will usually arrive faster	
E-mails will arrive even if nobody is at home	
E-mails can be sent at any time of the day	
E-mails will be cheaper to send	

(2 marks)

9

Turn over ▶

8 **(a)** A new ICT system is being planned for a library. After the analysis stage, a detailed design is completed. Which **two** of the following would you expect to find in the design produced?

	Tick **two** boxes only
Detailed planning for the reports that will be produced by the system	
A listing of the performance criteria for use in the evaluation	
A review of the effectiveness of the system	
A test plan with test data	
The User Guide	

(2 marks)

8 **(b)** Give **one** more item you would expect to find in the documentation of the design stage.

....

....

(1 mark)

8 **(c)** The new system will need to be tested before it can be used on a daily basis in the library. The testing stage involves the use of a test plan. Which **one** of the following would you expect to find in a test plan?

	Tick **one** box only
Expected results	
The listing of performance criteria for use in the evaluation	
Instructions for installing the new system	
Printed results from the implementation	

(1 mark)

8 (d) As part of the testing, the computer software will check the number of books a person has on loan at any one time. The minimum number will be zero and the maximum number will be ten.

8 (d) (i) Which **one** of the following would be suitable to be used as extreme test data?

Data	Tick **one** box only
7	
10	
15	
2	

(1 mark)

8 (d) (ii) Which **one** of the following would be suitable to be used as erroneous test data?

Data	Tick **one** box only
7	
10	
15	
2	

(1 mark)

8 (e) What is meant by the term typical data?

....

....

(1 mark)

8 (f) Other than analysis, design and testing, name **one** other stage involved in the system life cycle.

....

....

(1 mark)

8

Turn over ▶

9 A large electrical superstore keeps information about the products it sells in a database table. Part of the database table is given below.

Product Code	Product Name	Colour	Number in Stock	Selling Price (£)	Other Comments
DV024	DVD player	Black	10	25.00	SALE price
DV061	DVD recorder	Black	8	7229.99	None
FZ034	Freezer	White	4	199.99	2 year guarantee
FZ078	Freezer	White	6	149.99	None
FG082	Fridge	Cream	3	109.99	None
FG123	Fridge	White	10	99.99	SALE price
FG156	Fridge	White	10	119.00	2 year guarantee
MV012	Microwave	White	12	39.99	SALE price
MV037	Microwave	Brown	8	75.00	None
TV459	Television	Black	15	99.99	Portable TV
TV517	Television	Black	3	695.00	2 year guarantee
TV629	Television	Black	8	299.95	SALE price
TV781	Television	Brown	1	495.00	Item needs to be reordered
WM278	Washing machine	White	7	199.00	SALE price
WM314	Washing machine	White	1	249.99	Item needs to be reordered

9 (a) (i) The database contains an error in one of the Selling Price (£) field entries.

State clearly what the error is.

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(1 mark)

9 (a) (ii) Explain how you know this is an error.

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(1 mark)

9 (a) (iii) Explain how data validation could be used to reduce the possibility of such errors happening in the future.

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(2 marks)

9 **(b)** In order to search the database, the following commands are used.

List
When
Equals
Greater than
Less than
And
Or

As an example
List Product Code **When** Colour **Equals** Brown

would produce the result
MV037
TV781

What would be the results of the following searches?

9 **(b) (i)** **List** Product Code **When** Selling Price (£) **Equals** 99.99

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(1 mark)

9 **(b) (ii)** **List** Product Code **When** Number in Stock **Less than** 3

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(1 mark)

9 **(b) (iii)** **List** Product Code, Product Name **When** Other Comments **Equals** 2 year guarantee

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(1 mark)

Question 9 continues on the next page

Turn over ▶

9 **(c)** Write down the instructions needed to produce the following.

9 **(c) (i)** A list of the Product Codes, where the Product Name is a DVD player.

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....

(1 mark)

9 **(c) (ii)** A list of the Product Codes and Product Names, where the Selling Price (£) is between 200 and 500 pounds.

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(3 marks)

9 **(d)** Give **two** advantages to companies of using a database to store the information rather than using manual methods.

Advantage 1 ....

....

Advantage 2 ....

....

(2 marks)

13

Turn over for the next question

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ANSWER IN THE SPACES PROVIDED

Turn over ▶

10 Libraries are used by a wide range of people for a variety of research projects. Many of these people will use a number of paper-based sources and the Internet to help gather the information they need.

10 (a) Describe possible **advantages** of using the Internet for the research rather than paper-based sources.

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(4 marks)

10 (b)   Describe possible **disadvantages** of using the Internet for the research rather than paper-based sources.

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(4 marks)

8

END OF QUESTIONS

There are no questions printed on this page

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