

Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

For Examiner's Use

General Certificate of Secondary Education
June 2007

**INFORMATION AND COMMUNICATION TECHNOLOGY 3522/H
(SPECIFICATION B) (FULL COURSE)
Higher Tier**

H



Tuesday 22 May 2007 1.30 pm to 3.30 pm

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

Time allowed: 2 hours

Instructions

- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.

Information

- The maximum mark for this paper is 120.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation in your answers.

For Examiner's Use			
Question	Mark	Question	Mark
1		5	
2		6	
3		7	
4		8	
Total (Column 1) →			
Total (Column 2) →			
TOTAL			
Examiner's Initials			



3522/H

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

1 Many people use e-mail.

(a) Tick **two** boxes to show valid e-mail addresses.

	Tick two boxes
peter.jones@schoolsnet.ngfl.uk	
patel327*nowmail.web.uk	
n.patterson.ngfl.sch	
pqr@manch.biz.net	
michael@jones@man.ac.uk	

(2 marks)

(b) When you receive an e-mail on a computer, you can delete it, reply to it or forward it. Tick **two** boxes to show which of these statements are true.

	Tick two boxes
When you delete an e-mail, you can never look at it again	
When you reply to an e-mail, the e-mail is automatically addressed to the person who sent it to you	
When you forward an e-mail, you have to enter the address of the person you are sending it to	
You always have to pay a fee each time you send an e-mail	
When you forward an e-mail, attachments are removed	

(2 marks)



- (c) This hyperlink appears on a Web page: Send an e-mail for help



Describe in detail what should happen when you click on the hyperlink.

.....

.....

.....

.....

(2 marks)

- (d) (i) Tick **one** box to show what can be attached to an e-mail.

	Tick one box
A flash memory stick	
A printed document	
A CD-ROM	
A peer-to-peer network	
A digital photograph	

(1 mark)

- (ii) State **two** other items that can be attached to an e-mail.

Item 1

.....

Item 2

.....

(2 marks)

Question 1 continues on the next page



- (e) Files attached to e-mails can be zipped.
Tick **one** box to show a feature of a zipped file.

	Tick one box
The file is compressed	
The file is always very small	
The file is unrecognisable	
The file is very big	
The file is word processed	

(1 mark)

- (f) Give **two** reasons why a file attached to an e-mail would be zipped.

Reason 1

.....

Reason 2

.....

(2 marks)

- (g) Design an e-mail signature.

(3 marks)



- 2 A customer downloads a bank account statement from an online bank.
The statement is downloaded into a spreadsheet.

	A	B	C	D	E	F
1	Your bank account statement on 6 April 2007					
2	Date	Details	Paid out	Paid in	Balance	
3	6 March 07	Balance brought forward			£300.00	
4	12 March 07	Sheffield Council Tax	£80.00		£220.00	
5	26 March 07	Gas Company	£30.00		£190.00	
6	28 March 07	Paid in at Barnsley branch		£25.00	£215.00	
7	4 April 07	Monthly interest to 4 April 07		£5.50	£220.50	
8	5 April 07	Cashpoint at Meadowhall	£50.00		£170.50	
9	6 April 07	Balance carried forward			£170.50	
10						

- (a) Tick **two** boxes to show what can be contained in a cell in a spreadsheet.

	Tick two boxes
A mouse	
A number	
A website	
A picture	
A word processor	

(2 marks)

- (b) The cell reference of the cell which contains 'Balance brought forward' is B3.
Write down the cell reference of the cell which contains 'Gas Company'.

Cell reference

(1 mark)

- (c) Tick **one** box to show the formula contained in cell E6.

	Tick one box
=E6+C6+D6	
=E5-C6+D6	
=D5+D6+D7	
=E5*C6*D6	
=E5+C5+D5	

(1 mark)

- (d) Write down the formula in cell E9.

.....
(1 mark)

Question 2 continues on the next page



- (e) (i) Tick **two** boxes to show what a spreadsheet should be used for.

	Tick two boxes
Controlling output from a scanner	
Drawing a picture of the car you want to buy	
Modelling future spending	
Writing to the bank manager	
Displaying the balance carried forward each month of the year in a graph	

(2 marks)

- (ii) State **one** other task a spreadsheet can be used for.

.....
.....

(1 mark)



	A	B	C	D	E	F
1	Your bank account statement on 6 April 2007					
2	Date	Details	Paid out	Paid in	Balance	
3	6 March 07	Balance brought forward			£300.00	
4	12 March 07	Sheffield Council Tax	£80.00		£220.00	
5	26 March 07	Gas Company	£30.00		£190.00	
6	28 March 07	Paid in at Barnsley branch		£25.00	£215.00	
7	4 April 07	Monthly interest to 4 April 07		£5.50	£220.50	
8	5 April 07	Cashpoint at Meadowhall	£50.00		£170.50	
9	6 April 07	Balance carried forward			£170.50	
10						

- (f) The customer is using a word processor to fill in a tax return. The customer needs to copy the monthly interest into the tax return. Describe in detail how cell D7 on the spreadsheet above could be copied into the tax return.

.....

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.....

.....

(2 marks)

Question 2 continues on the next page



- (g) The customer saves the statement on a flash memory stick.
Give **two** reasons why this may not be secure and suggest ways to make the statement more secure.

Reason why this may not be secure 1

.....

Way to make the statement more secure 1

.....

Reason why this may not be secure 2

.....

Way to make the statement more secure 2

.....

(4 marks)

- (h) Tick **one** box to show how much space the spreadsheet file is likely to use on backing storage.

	Tick one box
150 Megabytes	
80 Gigabytes	
15 Kilobytes	
10 bytes	
0 bytes	

(1 mark)



3 A student has access to the Internet and the Web at home and at school.

- (a) The student has a computer and a connection to the Internet.
Tick **one** box to show what else is needed to access the Web.

	Tick one box
A microphone	
A subscription to an ISP (Internet Service Provider)	
A PDA (Personal Digital Assistant)	
A printer	
A digital camera	

(1 mark)

- (b) Tick **one** box to show a valid website address.

	Tick one box
hp://www.pqrest.org.uk	
email://www.pqrest.web	
http://www.pqrest.com	
ww.pqrest.org.uk	
http:\\www.pqrest.gov.uk	

(1 mark)

- (c) Many schools have their own website.

- (i) Tick **one** box to show what information is likely to be available to anyone accessing a school website.

	Tick one box
A description of what subjects students can study at school	
The school's online bank statement	
Students' names and addresses	
News about national sporting events	
Teachers' names and addresses	

(1 mark)

- (ii) Describe **two** other items of information that might be on a school website.

Item 1

.....

Item 2

.....

(2 marks)

Question 3 continues on the next page



(iii) Name **two** other groups of people besides students and teachers who would be likely to look at a school website.

Group 1

.....

Group 2

.....

(2 marks)

(d) The student wants to buy a scanner to input images into the computer. State **three** features which should be considered when buying a scanner.

Feature 1

.....

Feature 2

.....

Feature 3

.....

(3 marks)

(e) Describe how the student could find details about a scanner on the Web.

.....

.....

.....

.....

(2 marks)



- (f) The student buys the scanner through an on-line shop.
Describe **three** problems the student might encounter.

Problem 1.....

.....

Problem 2.....

.....

Problem 3.....

.....

(3 marks)

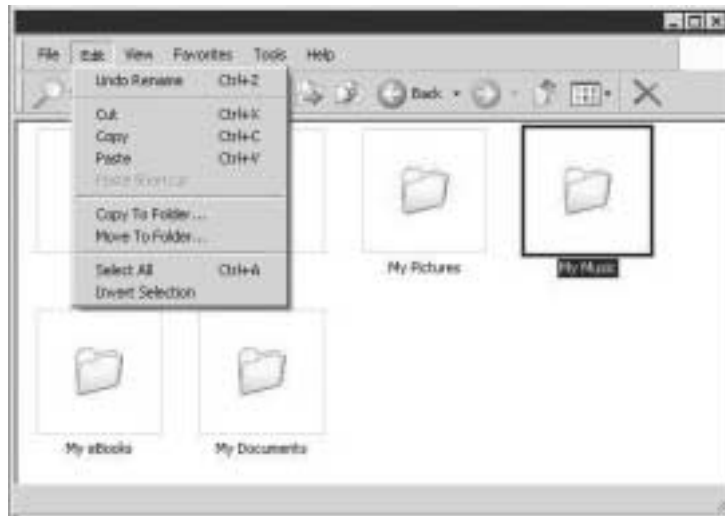
15

Turn over for the next question



Turn over ▶

- 4 A music fan has a home computer and a Personal Digital Assistant (PDA).
The home computer has a Graphical User Interface (GUI).



- (a) A GUI has windows, icons, menus and a pointer.
Show what each term means by writing the label of the description next to the term.

Label	Description
A	A small picture that illustrates what a program does
B	A rectangular area which shows what is being done with a program
C	An arrow or other symbol
D	A list of options which can be chosen

Term	Label
(i) Icon	
(ii) Menu	

(1 mark)

(1 mark)

- (b) Tick **two** boxes to show when the pointer may be different shapes.

	Tick two boxes
The pointer changes shape every two minutes	
The pointer changes shape when it has been clicked over an icon to show that a program is loading	
The pointer may be a different shape over different parts of a window	
The pointer changes shape to show which menu option is being chosen	
The pointer changes shape over an icon	

(2 marks)



- (c) The music fan saves music files in a folder called 'My Music'. Describe how to organise folders in 'My Music' so that all the music files for an artist are together, and all the music files for an album by the artist are together. You may draw a diagram.

.....

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.....

.....

(2 marks)

- (d) The music fan copies 'My Music' onto a DVD.

- (i) Tick **two** boxes to show why the music fan would copy 'My Music' onto a DVD.

	Tick two boxes
The music files take up one gigabyte on the computer's hard disk so they would not fit on a CD	
The music files will load faster from a DVD than from the computer's hard disk	
The music fan wants to play the music files on another computer	
The music files cannot be played on a laptop computer	
The music files will play faster from a DVD than from the computer's hard disk	

(2 marks)

- (ii) State **one** other reason why the music fan would copy 'My Music' onto a DVD.

.....

.....

(1 mark)

Question 4 continues on the next page



(e) The music fan copies the music files to a PDA.

- (i) Write down **one** advantage to the music fan of using a PDA to store music rather than a desk top computer.

.....

 (1 mark)

- (ii) Write down **one** disadvantage to the music fan of using a PDA to store music rather than a flash memory stick.

.....

 (1 mark)

(f) The music fan also has a large CD collection. The music files on these CDs have been ripped and converted to mp3 format and saved on the computer's hard disk in 'My Music'.

The music fan is considering whether to sell the original CDs.

- (i) Give **two** reasons why the music fan might want to sell the original CDs other than to make money.

Reason 1

.....

Reason 2

.....
 (2 marks)

- (ii) Give **one** reason why the music fan must **not** sell the original CDs.

.....

 (1 mark)

- (iii) Give **one** other reason why the music fan might not want to sell the original CDs.

.....
 (1 mark)



5 A systems analyst is designing a new ICT system for a doctors' surgery.

(a) Show what each term includes by writing the label of a description next to the term.

Label	Description
A	Installing new hardware and software, and training people to use the new ICT system
B	A detailed description of the new ICT system, what methods could be used, and how it will be judged a success
C	When the new ICT system is in use, checking it to make sure it does what it was designed to do
D	A quick look to see if it is worth building a new ICT system to do the job
E	Inputting typical and extreme data to see if the new ICT system processes this correctly

Term	Label
(i) Feasibility study	
(ii) Systems analysis and design	

(1 mark)

(1 mark)

(b) The systems analyst is an ICT specialist and has very limited knowledge of doctors' surgeries.

Tick **two** boxes to show how the systems analyst could find out what an ICT system for a doctors' surgery should do.

	Tick two boxes
The systems analyst does not need to find out what an ICT system for a doctors' surgery should do because all ICT systems are the same	
Investigate ICT systems used in swimming baths	
Talk to doctors who work at hospitals in Birmingham	
Talk to other ICT specialists who have written ICT systems for doctors' surgeries	
Talk to employees of doctors' surgeries and find out what they do	

(2 marks)

Question 5 continues on the next page



- (c) The systems analyst proposes that doctors should use a word processor to prepare prescriptions.
Tick **three** boxes to show why using a word processor is better than writing prescriptions by hand.

	Tick three boxes
You can include clip art in a word processor	
Some doctors have handwriting that is difficult to read	
Some drugs have names which are difficult to spell and these could be checked using a spelling checker	
There may only be one copy of a handwritten prescription. If a word processor is used, it is easier to store a record of what has been prescribed	
It would be better to use desk top publishing software than a word processor	
Doctors may have repetitive strain injury from typing	

(3 marks)

- (d) The doctors' surgery has a LAN (Local Area Network).
- (i) Draw a labelled diagram of a LAN showing at least **three** networked computers and a file server. You should include other hardware the doctors might use.

(4 marks)

- (ii) State **one** advantage of using the LAN.

.....

.....

(1 mark)



(e) The systems analyst suggests that the doctors' surgery should use a wireless LAN.

(i) State **two** advantages of using a wireless LAN compared with using a cabled LAN.

Advantage 1

.....

Advantage 2

.....

(2 marks)

(ii) State **one** disadvantage of using a wireless LAN compared with using a cabled LAN.

Disadvantage

.....

(1 mark)

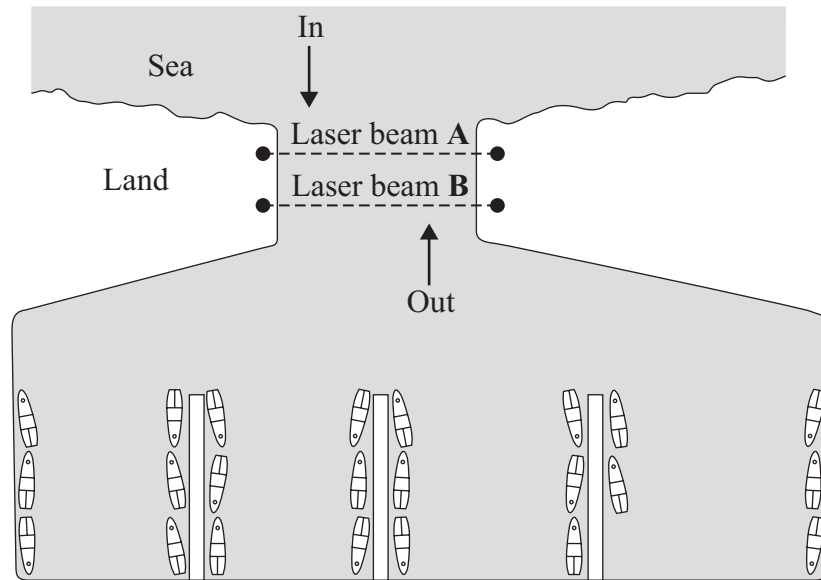
15

Turn over for the next question



Turn over ▶

- 6 A computer control system counts the number of boats in a harbour. This is a plan of the harbour.



The computer uses two laser beams across the harbour mouth to tell whether a boat is entering or leaving. The computer can sense when a laser beam is broken.

- (a) Explain how the computer knows whether a boat is entering or leaving the harbour.

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.....

.....

(2 marks)

- (b) Tick **two** boxes to show how the computer knows the number of boats in the harbour.

	Tick two boxes
When a boat enters the harbour, the computer adds 1 to the total	<input type="checkbox"/>
When a boat stays in the harbour, the computer sets the total to 0	<input type="checkbox"/>
When a boat leaves the harbour, the computer subtracts 1 from the total	<input type="checkbox"/>
When a boat enters the harbour, the computer subtracts 1 from the total	<input type="checkbox"/>
When a boat leaves the harbour, the computer adds 1 to the total	<input type="checkbox"/>

(2 marks)



- (c) Sometimes the actual number of boats in the harbour and the computer's total are not the same.
Give **two** reasons for this and suggest ways of improving the design of the harbour to help avoid the problem.

Reason 1

.....

Way of improving the design 1

.....

Reason 2

.....

Way of improving the design 2

.....

(4 marks)

- (d) The computer operator counts the actual number of boats in the harbour each morning and resets the computer's total.
Give **one** reason why the operator has to enter a username and password before access to the computer is allowed.

.....

.....

(1 mark)

- (e) (i) The computer operator changes the password each month.
Give **one** reason why passwords should be changed regularly.

.....

.....

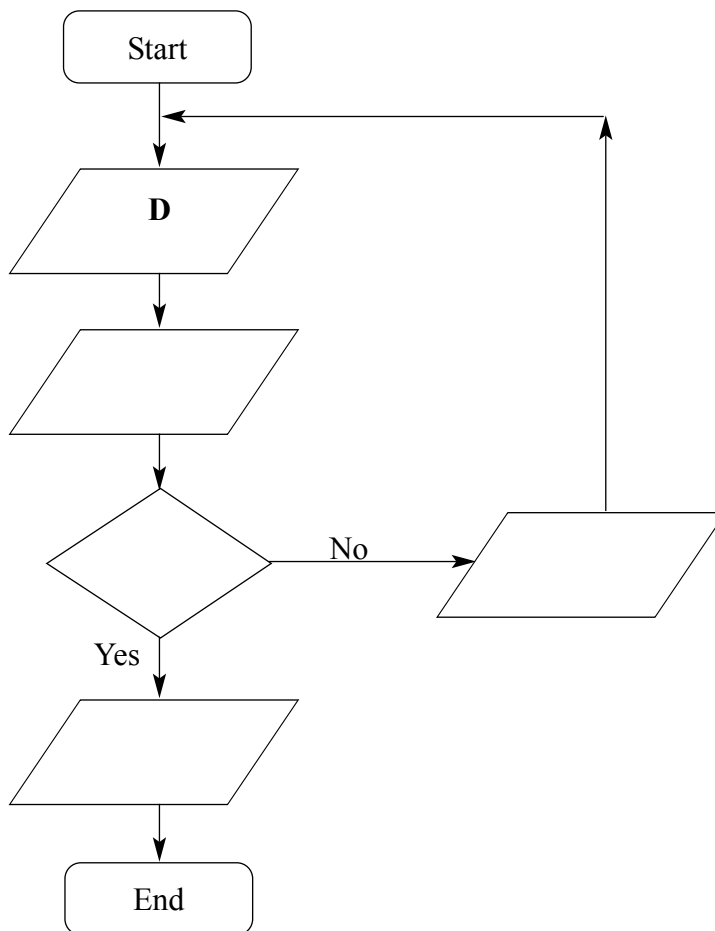
(1 mark)

Question 6 continues on the next page



- (ii) Write **one** label in **each** flowchart box to describe what happens when the password is changed. Some of the boxes have been completed for you.

Label	Statement
A	Display message 'your password has been changed'
B	Enter the new password for the second time
C	Has the same password been entered both times?
D	Enter a new password for the first time
E	Display message 'you entered different passwords – please start again'



(4 marks)



- (f) The computer operator looks at the online help when it is not clear how the computer system works.

This is a part of the online help. You do not need to read all of it.

To remove or change a password start the computer and enter the password when prompted and then click OK. On the tools menu click options and click the security tab and in the password to change box or the password to remove box select the placeholder symbols (usually asterisks) that represent the existing password. Remove the password by pressing remove and then click OK or change the password by typing the new password and then click OK. If you changed the password reenter the new password and then click OK.

Describe **one** way to improve this documentation.

.....
.....

(1 mark)

15

Turn over for the next question



Turn over ▶

- 7 A supermarket has a database of items for sale.
This is a part of the database.

Bar Code Number	Description	Supplier	Price	Quantity in Stock	Minimum Stock Level
010046 001102	Sweet Corn	Greenland	0.75	25	100
000157 024671	Baked Beans	Variety	0.36	650	1000
011673 107373	Chestnut Puree	Greenland	1.45	450	200
031021 952776	Chilli Peppers	BestBuy	0.30	50	200
000232 824806	Peach Slices	Variety	0.85	450	200
002359 645009	Chilli Sauce	Variety	1.25	250	200

- (a) State the key field.

.....
(1 mark)

- (b) The supermarket manager is searching the database.

- (i) Write down the **Description(s)** in the record(s) selected using this search condition.
Search Condition: **Description** contains Beans

Description(s) in the record(s) selected:

.....
(1 mark)

- (ii) Write down the **Description(s)** in the record(s) selected using this search condition.
Search Condition: **Supplier** is Variety AND **Description** contains Chilli

Description(s) in the record(s) selected:

.....
(1 mark)

- (iii) Write down the **Description(s)** in the record(s) selected using this search condition.
Search Condition: **Supplier** is BestBuy OR **Quantity in Stock** is NOT less than 600

Description(s) in the record(s) selected:

.....
(1 mark)



- (c) The supermarket manager wants to find out which items should be re-ordered. State the search condition the manager should use.

.....
.....

(1 mark)

- (d) Bar codes are printed on items for sale and scanned at the checkout when the items are sold. **Bar Code Numbers** are printed under the bar code.



Explain why the **Bar Code Number** is printed under the bar code.

.....
.....
.....
.....

(2 marks)

- (e) When a bar code is scanned there is a bleep if it has been recognised. Sometimes there is no bleep.

Tick **three** boxes to show why there might not be a bleep.

	Tick three boxes
The checkout operator does not like bleeps and has turned the sound off	
When the check digit was re-calculated it was not the same as the check digit scanned	
The bar code was not found in the database	
The bar code has been damaged	
The bleep is recorded on the bar code but not all bar codes have bleeps	
The bar code is an electronic memory device	

(3 marks)

Question 7 continues on the next page



- (f) Customers are given printed receipts when all the items they are buying have been scanned. This is a customer's receipt.

Description				
Sweet Corn	3	@	0.75	2.25
Chilli Peppers	2	@	0.30	0.60
Peach Slices	5	@	0.85	4.25
Total to pay:				£7.10

Write down the labels in order to show how the description and price can be printed on the receipt.

Label	
A	The description and price are sent from the database to the checkout
B	The bar code is sent to the computer
C	The bar code is scanned at the checkout
D	The receipt is printed at the checkout
E	The computer uses the bar code to search the database

Label

(3 marks)



- (g) Radio Frequency Identification (RFID) is being introduced.
An RFID tag is attached to an item instead of a bar code. The tag is very small and does not need to be removed. It stays with the item throughout its life.
An RFID tag has the functions of a bar code but it can be read by the supermarket's computer using a wireless network.

Tick **two** boxes to show which of the following are most likely to be true.

	Tick two boxes
When the police read an RFID tag they can tell whether the item has been stolen	
Checkouts are not required by RFID as the computer automatically scans the contents of your supermarket trolley and charges the cost to your bank account	
When you return to the supermarket, the computer reads the RFID tags in your clothing so it can direct you to similar items you might want to buy	
You can use RFID tags to listen to your favourite radio station	
RFID tags should not be kept together as they will combine to form an evil network	

(2 marks)

15

Turn over for the next question



Turn over ▶

8 SeeEarth is a Geographic Information System (GIS) which uses pictures taken by satellites. SeeEarth is a free program that can be downloaded from the Internet. It can be used to look at the whole Earth and zoom in on any point on the Earth's surface.

(a) Tick **two** boxes to show what you could do.

	Tick two boxes
Look at the layout of the streets and gardens in a residential neighbourhood	
Look at the shape of the United Kingdom and Europe	
Look at the layout of your school library	
See whether there would be room to park in a car park	
Read a newspaper spread out on a park bench	

(2 marks)

(b) The police want to track criminals using SeeEarth.

(i) Tick **two** boxes to show why this would **not** work.

	Tick two boxes
If a criminal used an umbrella he/she could not be tracked	
Satellite pictures are low resolution and they are not clear enough to identify individuals	
The police could track very big criminals but not small ones	
SeeEarth is not an interactive, real time system	
Criminals would need to log on to SeeEarth and they might forget their passwords	

(2 marks)

(ii) Give **one** other reason why police could not track criminals using SeeEarth.

.....

.....

(1 mark)



(c) SeeEarth allows you to select layers.

A layer is a map of particular information, for example, the location of hotels.

If you select a layer that shows all the hotels in an area, you could choose to display these.

Layers can be overlaid on each other.

Tick **three** boxes to show other information that might be a layer.

	Tick three boxes
The specification for a four wheel drive vehicle	
The location of petrol stations	
Instructions for using the software	
The location of schools	
The route taken by public transport	
The location of databases that store personal information	

(3 marks)

Question 8 continues on the next page



