

Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

Leave blank
-------------

General Certificate of Secondary Education  
June 2004



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

Monday 24 May 2004 1.30 pm to 3.30 pm

**H**

For Examiner's Use	
Number	Mark
1	
2	
3	
4	
5	
6	
7	
8	
TOTAL	
Examiner's Initials	

<p><b>No additional materials are required.</b> You may use a calculator.</p>
---

Time allowed: 2 hours

**Instructions.**

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

**Information**

- The maximum mark for this paper is 120.
- Mark allocations are shown in brackets.

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

**1** Roboshop sell robots.

A secretary is writing a letter using wordprocessing software. The letter looks like this:

Roboshop  
Unit 12  
Xenon Industrial Estate  
Acton  
AC1 2DH

01247 343434

12/05/2004

Dear Mr Pettiford

Many thanks for your order for robot R32. This is now out of stock. New stocks will be not available for at least 6 months.

You could purchase robot R35. This is available immediately from stock. By purchasing robot R35, you would receive a higher specification robot at a lower price.

Please consider our offer and let me know if you wish to purchase robot R35. I will reserve one of these for you for one week.

Yours sincerely

*J Wood*

J Wood

- (a) (i) The secretary has a picture of the robot that has been saved on disk. Describe how the picture of the robot can be put into the letter.

.....

.....

.....

.....

.....

.....

(3 marks)

- (ii) The secretary wants to improve the appearance of the letter. State **three** other features of wordprocessing software that could be used to improve the appearance of the letter.

Feature 1: .....

Feature 2: .....

Feature 3: .....

(3 marks)

- (b) (i) The secretary wants to send an e-mail to the manufacturer that makes the robots. The secretary inserts attachments in the e-mail. The attachments are sent to the manufacturer with the e-mail. Tick **two** boxes to show items that can be inserted as an attachment.

	Tick <b>two</b> boxes
A website	
A word processed document	
An Internet Service Provider (ISP)	
A spreadsheet	
A hyperlink	

(2 marks)

- (ii) State **one** other item that can be inserted as an attachment.

.....

.....

(1 mark)

QUESTION 1 CONTINUES ON THE NEXT PAGE

Turn over ►

(c) At the end of the e-mail, the secretary inserts a signature.

Tick **three** boxes to show what would be a part of the e-mail signature.

	Tick <b>three</b> boxes
the name and address of the manufacturer	
the secretary's signature written using a pen and paper	
Roboshop's address and telephone number	
the secretary's name	
a hyperlink to Roboshop's web site	
a wizard	

(3 marks)

(d) Very large files can be attached to e-mails. These files are sometimes zipped (compressed).

(i) Give **two** advantages of zipping very large files that are attached to e-mails.

Advantage 1:.....  
.....

Advantage 2:.....  
.....

(2 marks)

(ii) Describe what must be done before a zipped file can be used.

.....  
.....

(1 mark)

**TURN OVER FOR THE NEXT QUESTION**

**Turn over ▶**

- 2 A plumber uses a computer to estimate the cost of refitting a bathroom for a customer. This is part of the information displayed on the monitor.

	A	B	C	D
1	<b>Materials</b>	<b>Unit Cost</b>	<b>Quantity</b>	
2	Bath	£400.00	1	£400.00
3	Bath taps	£100.00	2	£200.00
4	Basin	£90.00	1	£90.00
5	Basin taps	£75.00	2	£150.00
6	Shower unit	£100.00	1	£100.00
7	Copper pipe (2 metres)	£25.00	6	£150.00
8	Total cost of materials			£1090.00
9	Labour costs			£500.00
10	Total cost of materials and Labour			£1590.00
11	VAT at 17.5%			£278.25
12	Total cost to customer			£1868.25

- (a) Name the type of software the plumber has used.

.....  
(1 mark)

- (b) Write the cell reference (if any) of the cell that contains each formula.  
If the formula is not in any cell, tick the column headed 'There is no cell with this formula'.

Formula	Cell reference	There is no cell with this formula
=B5*C5		
=D8+D9+D10		
=SUM(D2:D7)		
=D10*0.175		

(4 marks)

- (c) Describe **three** advantages to the plumber of using the software.

Advantage 1:.....

.....

Advantage 2:.....

.....

Advantage 3:.....

.....

(3 marks)

(d) The plumber is going to buy a new standalone computer to run the software. The plumber looks at adverts in the newspapers to find a suitable computer.

- (i) Name **two** input devices the computer could have other than a keyboard. For each input device, describe what it could be used for.

Name of input device 1: .....

What it could be used for: .....

.....

Name of input device 2: .....

What it could be used for: .....

.....

(4 marks)

- (ii) Name **three** backing storage devices the computer could have.

Backing storage device 1: .....

Backing storage device 2: .....

Backing storage device 3: .....

(3 marks)

15

**TURN OVER FOR THE NEXT QUESTION**

**Turn over ▶**

- 3 A hospital keeps information about patients in a database on a computer.  
This is part of the database.

Patient Number	Patient Name	Gender	Admission Date	Doctor
0232	McLoughlin	M	07/02/2004	Clarke
0617	Iqbal	F	07/01/2004	Stevens
0825	Morgan	F	20/03/2004	Stevens
0713	Rooney	M	15/03/2004	Clarke
0324	Wrig75	F	04/01/2004	Harrison
0611	Feather	M	17/04/2004	Stevens

The information about a patient is written on a form by the doctor.  
The information on the form is input to the computer by a clerk.

- (a) An error has been made. A **Patient Name** has been input incorrectly.

- (i) Tick **two** boxes to show verification checks that should detect this error.

	Tick <b>two</b> boxes
The clerk inputs the <b>Patient Name</b> then inputs the information on the next form.	
When the <b>Patient Name</b> has been input, the clerk checks again that the <b>Patient Name</b> on the monitor is the same as that on the form.	
The check digit is re-calculated when the <b>Patient Name</b> is input.	
The <b>Patient Name</b> is input twice. The computer checks that the two <b>Patient Names</b> input are the same. If they are not the same, the computer tells the clerk.	
The <b>Patient Name</b> is input by the doctor as the doctor is more accurate than the clerk.	

(2 marks)

- (ii) Tick **two** boxes to show validation checks that should detect this error.

	Tick <b>two</b> boxes
name check	
type check	
range check	
table look-up	
input check	

(2 marks)

- (b) The **Patient Number** is the key field.

Describe **two** essential features of a key field.

Feature 1: .....

.....

Feature 2: .....

.....

(2 marks)



- (c) Patients' **Gender** is coded.

Describe **two** advantages of coding information.

Advantage 1: .....

.....

Advantage 2: .....

.....

(2 marks)

- (d) (i) Write down the **Patient Names** in the order they would appear after the database has been sorted into ascending order on the **Admission Date** field.

Patient Name

(3 marks)

- (ii) Explain why sorting the database could be useful to the hospital.

.....

.....

(1 mark)

- (e) (i) Write down the name(s) of the patient(s) whose record(s) are selected using this search condition.

Search condition: **Doctor** is Stevens AND **Patient Name** begins with M

Records selected: .....

(1 mark)

- (ii) Write down the name(s) of the patient(s) whose record(s) are selected using this search condition.

Search condition: **Admission Date** is 20/03/2004 OR **Gender** is M

Records selected: .....

(1 mark)

- (iii) Write down the name(s) of the patient(s) whose record(s) are selected using this search condition. \* is a wild card.

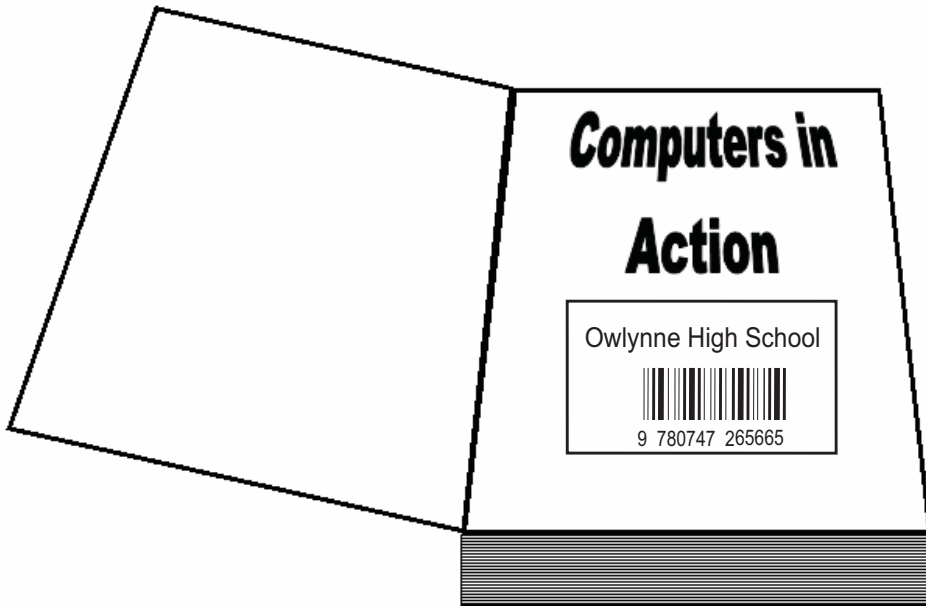
Search condition: **Admission Date** is \*/03/\*

Records selected: .....

(1 mark)

Turn over ▶

4 Books in a school library are identified by a bar code inside the front cover.



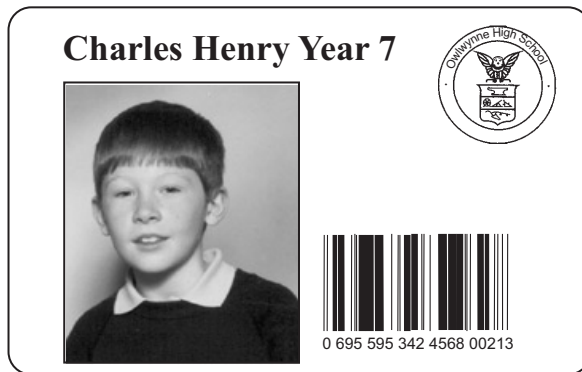
(a) Give **one** reason why the number is printed under the bar code.

.....

.....

(1 mark)

(b) Each pupil at the school has a library card.



A pupil borrows a book from the school library.  
The librarian scans the bar code on the library card and the bar code on the book.

Explain why the bar code on the library card and the bar code on the book are both scanned when a book is borrowed from the library.

.....

.....

.....

.....

(2 marks)

- (c) When the book is returned to the library, the bar code on the book is scanned but the bar code on the library card is not scanned.

Explain why only the bar code on the book is scanned.

.....

.....

.....

.....

(2 marks)

- (d) The library catalogue can be accessed using computers in the school library.

Describe **two** tasks a pupil could do using library catalogue software.

Task 1:.....

.....

Task 2:.....

.....

(2 marks)

- (e) The library software runs on a LAN (Local Area Network). Users can print book lists.

Draw a labelled diagram of the LAN. You should show on the diagram a fileserver and at least three computers connected to the LAN.

(3 marks)

**QUESTION 4 CONTINUES ON THE NEXT PAGE**

**Turn over ▶**

(f) Complete the sentences using words from this list:

- parents
- librarians
- the headteacher
- the network manager
- the school secretary

Technical documentation could be useful to .....

User documentation could be helpful to .....

*(2 marks)*

(g) The hardware and software used by the library computer system are very expensive. Justify the use of a computer system in the school library.

.....

.....

.....

.....

.....

.....

.....

*(3 marks)*

**TURN OVER FOR THE NEXT QUESTION**

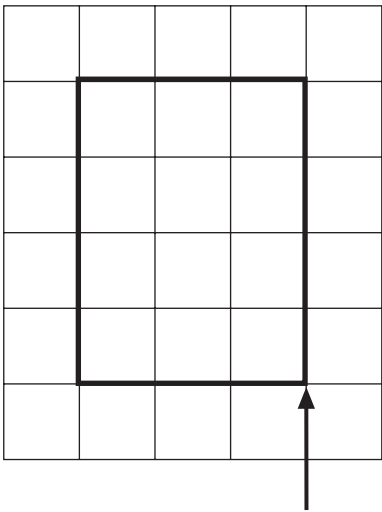
**Turn over ▶**

- 5 (a) A student writes a program in Logo.

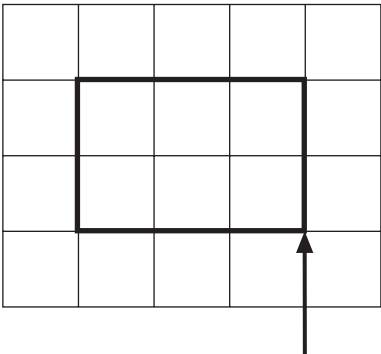
These are examples of Logo instructions.

Instruction	What the instruction does
clearscreen	clears the screen
forward 5	moves the pen forward 5 squares
left 90	turns the direction of the pen ninety degrees to the left
right 45	turns the direction of the pen forty-five degrees to the right
repeat 4 [instructions]	repeats the instructions in the bracket 4 times

This shape is produced by these Logo instructions. The grid is not produced but is shown to help you.

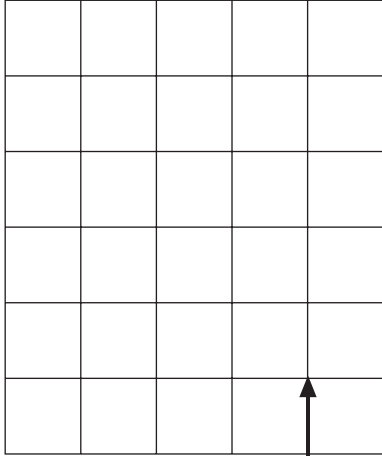
Display	Logo instructions
 <p style="text-align: center;">start here</p>	<pre>clearscreen repeat 2 [forward 4 left 90 forward 3 left 90]</pre>

- (i) Write the Logo instructions to produce this shape.

Display	Logo instructions
 <p style="text-align: center;">start here</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

(2 marks)

(ii) Draw the shape these Logo instructions would produce.

Display	Logo instructions
 <p>start here</p>	<pre>clearscreen repeat 4 [forward 3 left 90] forward 1 repeat 4 [forward 2 left 90]</pre>

(2 marks)

QUESTION 5 CONTINUES ON THE NEXT PAGE

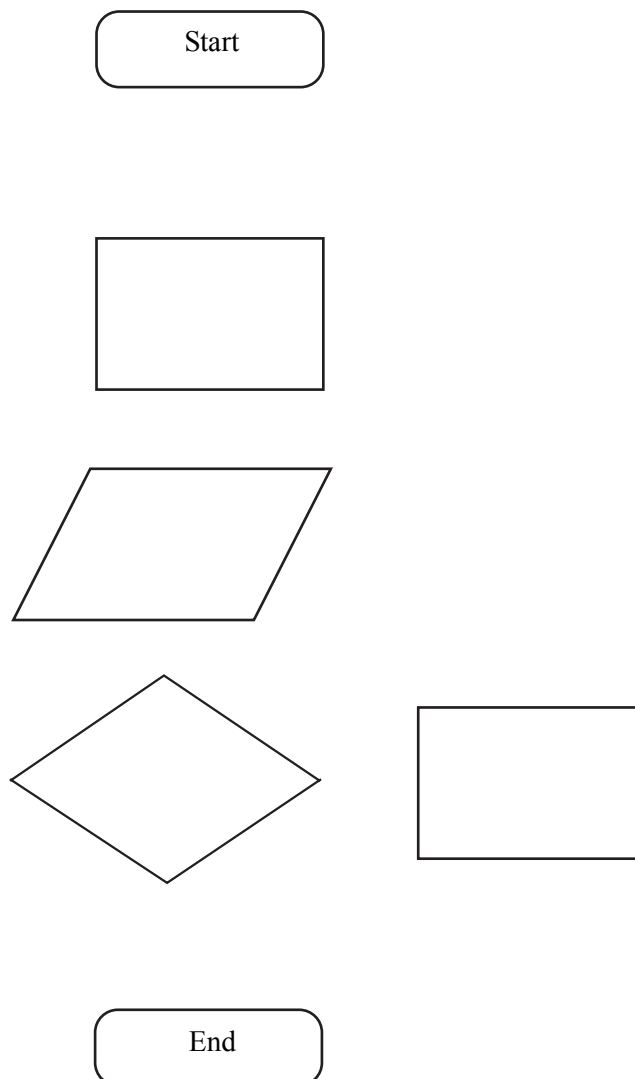
Turn over ►

(iii) Some Logo instructions should display a square but they do not work.

To show a method of developing and testing these Logo instructions, you should:

- Write the labels of these statements below in the boxes of the flowchart.
- Complete the flowchart, including lines with arrows to show direction.

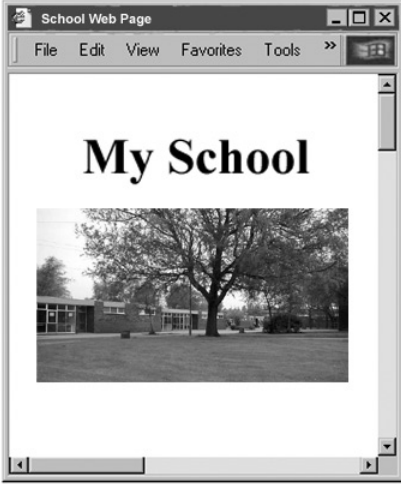
Label	Statement
A	The picture produced is displayed on the screen
B	Change the Logo instructions
C	Is the picture a square?
D	Run the Logo instructions




(6 marks)



- (b) A student is building a school web page using HTML (Hyper Text Mark-up Language). A web browser produces this display from this HTML.

Display	HTML
	<pre> &lt;START&gt; &lt;HEAD&gt; &lt;TITLE&gt;School Web Page&lt;/TITLE&gt; &lt;/HEAD&gt; &lt;BODY&gt; &lt;H1&gt;My School&lt;/H1&gt; &lt;IMG SRC="myschool.jpg"&gt; &lt;/BODY&gt; &lt;END&gt;                     </pre>

Write the HTML that a web browser would use to produce this display.  
The picture to be displayed is saved as a file called "mypicture.jpg"

Display	HTML
	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

(5 marks)

6 (a) When students log on to a network from a computer connected to it, they have to enter a username and a password.

(i) Explain why usernames and passwords are used.

.....  
.....  
*(1 mark)*

(ii) Describe **two** sensible rules about passwords.

Rule 1: .....  
.....  
Rule 2: .....  
.....  
*(2 marks)*

(iii) A student is changing a password.  
The student enters the new password.  
The computer asks the student to enter the new password again.  
Explain why a new password has to be entered twice.

.....  
.....  
*(1 mark)*

(b) A student sometimes saves work on the hard disk of the computer being used on the network.

(i) Give **three** reasons why this work is not secure.

Reason 1: .....  
.....  
Reason 2: .....  
.....  
Reason 3: .....  
.....  
*(3 marks)*

(ii) Describe what is meant by a backup.

.....  
.....  
*(1 mark)*

(iii) Describe **one** way students could make a secure backup of their work.

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

(2 marks)

(c) A student downloads some software from the Web and tries to install it on one of the computers on the network.

The computers have been set up so that students are prevented from installing software. Give **two** reasons why the computers have been set up in this way.

Reason 1: .....  
.....

Reason 2: .....  
.....

(2 marks)

(d) Students using computers connected to the network find that Internet access is very slow.

Give **three** reasons why Internet access could be slow.

Reason 1: .....  
.....

Reason 2: .....  
.....

Reason 3: .....  
.....

(3 marks)

7 An accountant uses one computer at home and another computer at work.

(a) The accountant usually works from home, but occasionally travels by car to the firm's head office in a large city.

(i) Tick **one** box to name this way of working.

	Tick <b>one</b> box
e-commerce	
teleworking	
multimedia	
downloading	
networking	

(1 mark)

(ii) Give **one** reason why this way of working can help improve the environment.

.....  
 .....

(1 mark)

(iii) Describe **two** other advantages to the accountant of this way of working.

Advantage 1:.....  
 .....

Advantage 2:.....  
 .....

(2 marks)

(iv) Describe **two** disadvantages to the accountant of this way of working.

Disadvantage 1:.....  
 .....

Disadvantage 2:.....  
 .....

(2 marks)

- (b) Describe **two** health hazards due to using a computer, and explain how each could be avoided.

Health hazard 1:.....

.....

How to avoid health hazard 1:.....

.....

Health hazard 2:.....

.....

How to avoid health hazard 2:.....

.....

*(4 marks)*

- (c) The accountant runs these applications on a computer at the same time: a web browser, a wordprocessor and e-mail software.

- (i) Complete the sentence using words from this list:

- background processing
- formatting
- multi-tasking
- on-line searching
- real time processing

Running more than one application on a computer at the same time is known as

.....

*(1 mark)*

- (ii) Give **one** reason why it is useful to be able to run more than one of these applications at the same time.

.....

.....

*(1 mark)*

**QUESTION 7 CONTINUES ON THE NEXT PAGE**

**Turn over ▶**

- (d) The Internet can be accessed throughout the world.  
Explain why people in developing countries may find it hard to access the Internet.

.....

.....

.....

.....

.....

.....

.....

*(3 marks)*

15

8 (a) Some people say that computers are more intelligent than people.

(i) Tick **two** boxes to show tasks people can do that computers cannot do.

	Tick <b>two</b> boxes
Do the ironing	
Make cars	
Total the shopping bill at a checkout	
Experience religious insights and prayer	
Control the production of soft drinks	

(2 marks)

(ii) Tick **two** boxes to show tasks computers can do better than people.

	Tick <b>two</b> boxes
Control the operation of traffic lights	
Design new clothes	
Recall census data	
Decide what colour to paint a room	
Help a friend	

(2 marks)

(b) Discuss whether computers are more efficient than people giving reasons for and against.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4 marks)

**QUESTION 8 CONTINUES ON THE NEXT PAGE**

**Turn over ▶**

- (c) Some people have parts of their bodies replaced or enhanced by computerised devices. Discuss the **advantages** and **disadvantages** of this, giving reasons for and against.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(7 marks)

15

**END OF QUESTIONS**