OCR
RECOGNISING ACHIEVEMENT

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

General Certificate of Secondary Education

INFORMATION AND COMMUNICATION TECHNOLOGY

PAPER 1 (HIGHER TIER)

2357/02

Thursday   **13 JANUARY 2005**   Morning   1 hour 15 minutes

Candidates answer on the question paper.
No additional materials are required.

TIME   1 hour 15 minutes

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions.

Write your answers, in blue or black ink, in the spaces on the question paper.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part question.

No marks will be awarded for using brand names of software packages or hardware.

The total number of marks for this paper is **60**.

FOR EXAMINER'S USE	
1	
2	
3	
4	
5	
6	
7	
8	
TOTAL	

This question paper consists of 11 printed pages and 1 blank page.

     [Turn over

Answer all questions.

1   This computer uses a dial-up modem to connect to the Internet along the ordinary telephone lines of the public telephone system.

Home computer with dial-up modem

An image has been removed due to third party copyright restrictions

An image of a computer

The Internet

Public telephone system
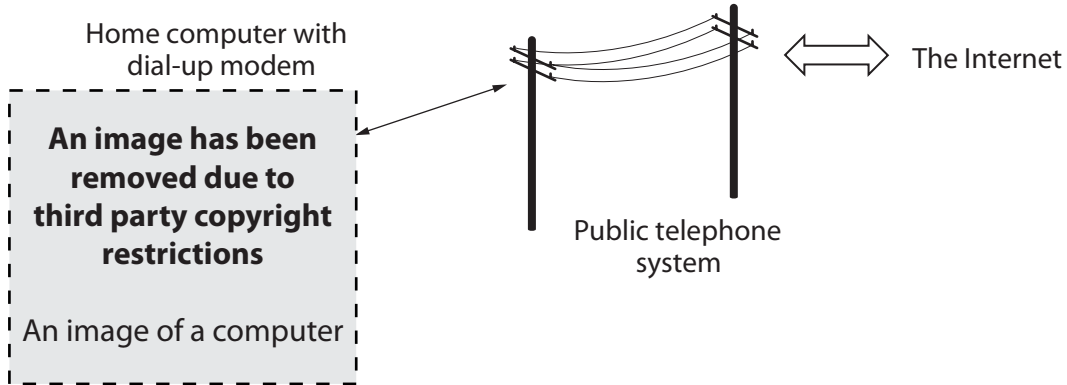
Explain why the modem is needed.

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....[2]

2   Peter is using a computer in a science experiment. He leaves a sprig of pond weed in the sun for an hour. He uses the computer to record the number of bubbles given off by the pond weed.

Sensor

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An image of a computer
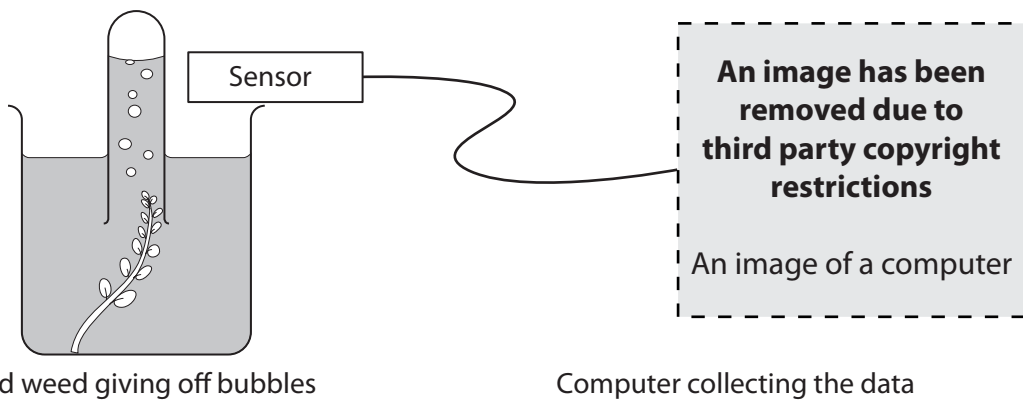
Pond weed giving off bubbles   Computer collecting the data

(a)   Give two advantages of using a computer to record the number of bubbles instead of counting them manually.

1 ....

2 ....[2]

Peter imports the results of the count into a spreadsheet.

	A	B
1	Time interval (minutes)	Number of bubbles
2	0 – 10	0
3	10 – 20	5
4	20 – 30	10
5	30 – 40	12
6	40 – 50	13
7	50 – 60	12
8		
9	**Total number of bubbles:**	
10		

(b) Write down the most suitable formula for Peter to put into cell B9 to calculate the total number of bubbles given off.

....[2]

(c) Peter makes this chart of his results.

Chart to show number of bubbles
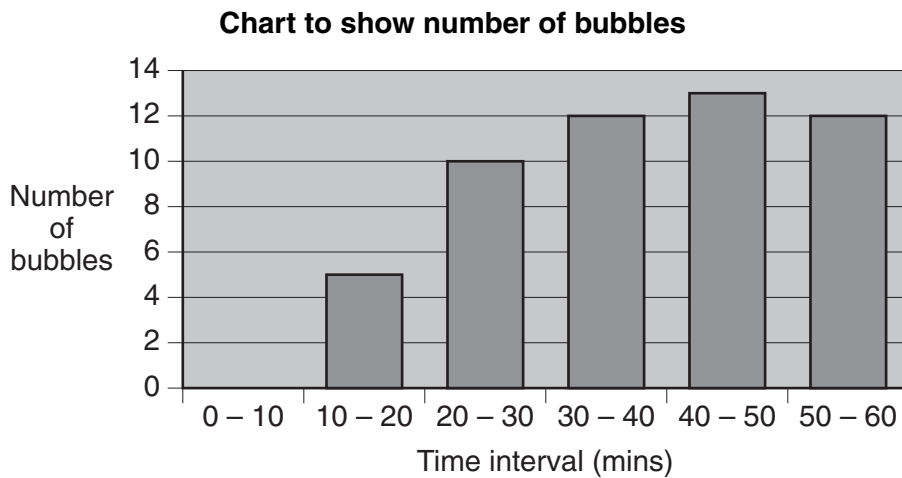
Describe how Peter made this chart from his spreadsheet of results.

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....[3]

[Turn over

3 A school keeps a database of the names and addresses of its pupils. The table below shows part of this database.

Forename	Surname	Contact Telephone Number	Gender	Address	Date of Birth	Pupil ID Number	Stay for School Dinners
Alice	Begum		F	72a East Rd Cambridge CB7 OA1	12-6-1992	50	Yes
Alastair	Brown		M	16 North St Cambridge CB12 PO2	13-8-1993	11	Yes
Stefan	Bury		M	20 Upper Side St Cambridge CB9 AP3	11-10-1992	22	Yes
Anne-Marie	Smith		F	22 Lower West St Cambridge CB13 6AT	16-5-1993	13	Yes
Sian	Williams		F	66 Southside Cambridge CB4 7SD	12-4-1991	4	No
Darren	Martin		M	101 Hull Rd Cambridge CB1 2TY	18-3-1991	161	Yes

(a) Give the most suitable field type for each of these fields:

Stay for School Dinners ....

Pupil ID Number ....

Address ....

Contact Telephone Number .... [4]

(b) It is not a good idea to store the address as shown in the table above.

(i) Give **one** reason why it is not a good idea.

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(ii) Suggest **one** improvement.

....

....[2]

(c) A search is performed on the database to find all the girls who stay for school dinners. Write down the search criteria to do this.

....

....[3]

(d) Why is Pupil ID Number chosen for the key field in this database?

....[1]

Each pupil has been asked to write down a contact telephone number on a form. The school secretary enters the telephone numbers into the database.

The secretary carries out verification of the data.

(e) What is meant by verification?

....[1]

(f) Give the **two** ways in which the secretary can verify the data.

1 ....

2 ....[2]

[Turn over

4 A gardener needs to make sure that the plants are kept in the right conditions for their growth. He uses sensors attached to his computer to monitor his greenhouse.

Motor on the window Interface box

An image has been removed due to third party copyright restrictions

An image of a computer

Computer

Sensors inside the greenhouse
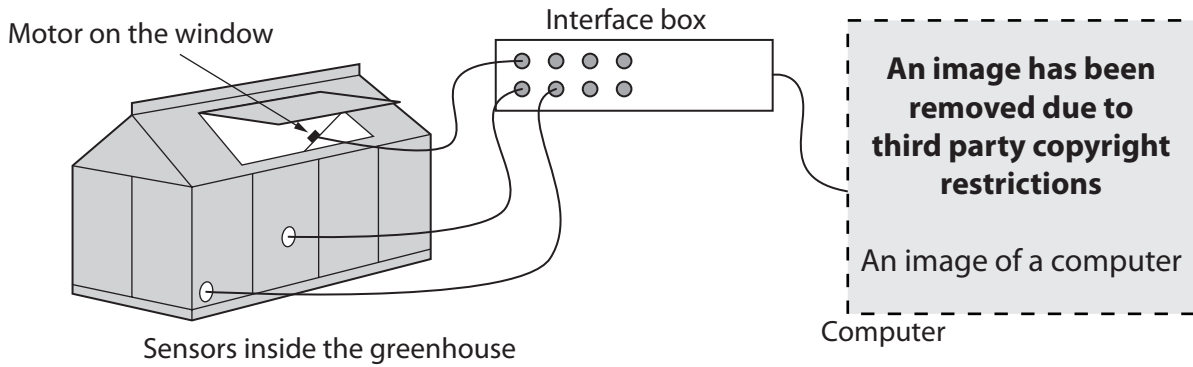
(a) One sensor that he uses is a temperature sensor. Identify   two other sensors that could be used to collect data from the greenhouse.

1 ....

2 ....[2]

(b) The electronic data collected from the greenhouse and recorded by the computer is important.
Give two ways the loss of the recorded data can be avoided.

1 ....

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2 ....

....[2]

(c) The sensors are connected to the computer via an interface box. Why is this?

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....[2]

The gardener uses programmable software on his computer to control the window motor.
The motor opens and closes the window to manage the temperature inside the greenhouse.
These are some of the instructions that can be used to control the motor.

Program instruction	What the instruction means or does
>	Greater than/more than/over
<	Less than/below
=	Equal to/same as
MOTOR BACK	Runs the motor backwards to close the window
MOTOR FORWARD	Runs the motor forwards to open the window
MOTOR STOP	Stops the motor
IF	Checks a condition
READ	Input data
END	Ends the sequence
START	Starts the sequence
WAIT *n*	Wait for *n* seconds

(d) Use the program instructions to complete this program sequence for opening the
window if the temperature rises over 60°C.

START

   READ temperature

   IF temperature **60**

   MOTOR ....

   WAIT 10

   MOTOR ....

END

[3]

[Turn over

5 A history teacher is writing a book on the history of the school. She is using her school computer and her home computer to write the book.

(a) She spends many hours at a computer and, as a result, has some health problems. State **one** possible problem and explain how this problem might be reduced.

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....[4]

(b) In 1935 the school football team won the Inter Schools Trophy. She has a photograph of the team and another of the trophy.
Describe how she could use photo-editing software to produce a new picture containing the two original photographs.

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....[4]

6 A software company has developed some new software for preparing school reports. It sends a copy of the software on CD-ROM to teachers and asks them to try it. Afterwards the company manager writes an evaluation.
Describe the sections that should be included in the evaluation.

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....[6]

[Turn over

7 Hacking can be described as the unauthorised access to data that belongs to someone else. Explain steps that can be taken to prevent hackers gaining access to data that does not belong to them.

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....[6]

8 *"The use of computer networks in schools has created more benefits than problems."*
Discuss this statement.

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12

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