



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

CANDIDATE  
NAME

CENTRE  
NUMBER

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NUMBER

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**COMPUTER STUDIES**

**0420/13**

Paper 1

**October/November 2010**

**2 hours 30 minutes**

Candidates answer on the Question Paper.

No Additional Materials are required.

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

**DO NOT WRITE IN ANY BARCODES.**

Answer **all** questions.

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

At the end of the examination, fasten all your work securely together.

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

**For Examiner's Use**

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This document consists of **19** printed pages and **1** blank page.



1 Explain, with examples where appropriate, the following **five** computer terms.

(a) interrupt .....  
.....  
..... [2]

(b) optical media .....  
.....  
..... [2]

(c) CAD .....  
.....  
..... [2]

(d) verification .....  
.....  
..... [2]

(e) global positioning system (GPS) .....  
.....  
..... [2]

2 (a) What is meant by the term *drop-down menu*?

.....  
..... [1]

(b) Give an example of where a drop-down menu could be used.

.....  
..... [1]

(c) Give **one** disadvantage of a drop-down menu.

.....  
..... [1]

3 A typical computer system contains the following **four** components:

- RAM
- ROM
- hard disk
- modem

Describe the function of each of these components.

RAM .....

ROM .....

hard disk .....

modem .....

[4]

4 (a) Describe **two** differences between batch processing and real-time transaction processing.

1 .....

.....

2 .....

..... [2]

(b) Give **one** example of the use of each type of processing.

batch: .....

.....

.....

real-time transaction: .....

.....

..... [2]



6 Complete the following table by writing down the most appropriate data collection method for the given application.

Application	Data collection method
Reading information from a credit/debit card	
Choosing an option from a customer information screen at an airport	
Reading the results from a questionnaire where pencil lines were used to choose options	

[3]

7 Name **two** of the common methods used to change over to a new computer system. For each named method, give **one** advantage and **one** disadvantage.

Method 1 .....

Advantage .....

.....

.....

Disadvantage .....

.....

Method 2 .....

Advantage .....

.....

.....

Disadvantage .....

.....

.....

[6]

8 Describe how computers are used to generate graphics and animation effects for films and arcade games.

.....

.....

.....

.....

.....

.....

.....

.....

.....

[3]

9 Students at a school decide to produce a monthly newsletter to inform parents of events. They could either produce a magazine on paper or arrange for a multimedia presentation in the school hall.

(a) State **two** advantages and **two** disadvantages of producing the magazine on paper.

Advantage 1 .....

.....

.....

Advantage 2 .....

.....

.....

Disadvantage 1 .....

.....

.....

Disadvantage 2 .....

.....

..... [4]

(b) State **two** advantages and **two** disadvantages of giving a multimedia presentation.

Advantage 1 .....

.....

.....

Advantage 2 .....

.....

.....

Disadvantage 1 .....

.....

.....

Disadvantage 2 .....

.....

..... [4]



10 (a) What is meant by a *virus*?

.....  
.....  
.....  
..... [2]

(b) What is meant by *encryption*?

.....  
.....  
.....  
..... [2]

(c) (i) A student wrote “*I would make backup copies of my data to guard against viruses*”.  
Why is the student’s statement not necessarily true?

.....  
.....  
..... [1]

(ii) The same student also wrote “*Encryption would stop a hacker accessing the data in my computer files*”.  
Why is the student’s statement incorrect?

.....  
.....  
..... [1]

11 (a) Which validation methods are being carried out by the following three pseudocode statements?

(i) **if** age > 10 **and** age < 20 **then print** "correct"

.....  
.....

(ii) **if** gender = "male" **and** title = "Mr" **then print** "correct"

.....  
.....

(iii) **if** field = "" **then print** "input data is missing"

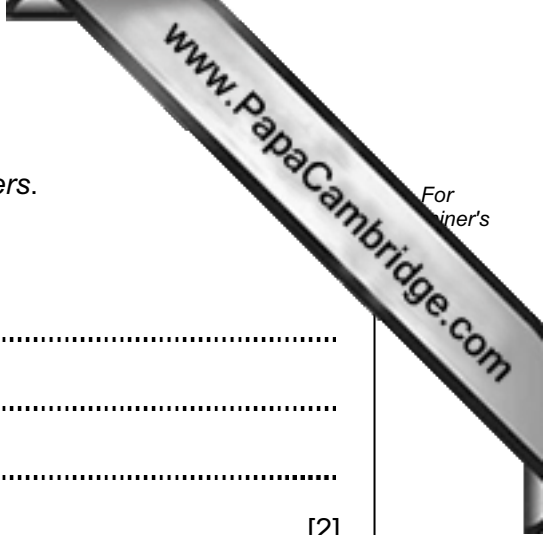
.....  
..... [3]

(b) Name a **different** validation technique and give an example to show how it works.

Name .....

Example .....

[2]



12 (a) A student is trying to find out information about *cloud computers*.

How could he use the Internet to find this information?

.....  
.....  
.....  
..... [2]

(b) Give **two** advantages of using the Internet to find information.

1 .....  
.....  
.....  
2 .....  
.....  
..... [2]

(c) Give **two** disadvantages of using the Internet to find information.

1 .....  
.....  
.....  
2 .....  
.....  
..... [2]

13 A spreadsheet has been set up to compare the monthly costs of five mobile networks. Normally a text message costs 2 cents and one minute of talk time costs 15 cents for all networks (100 cents = \$1).

	A	B	C	D	E
1	<b>Network name</b>	<b>Monthly charge (\$)</b>	<b>No. of free texts</b>	<b>No. of free talk time minutes</b>	<b>Value of texts + talk time (\$)</b>
2	<b>Lemon</b>	65	500	500	85
3	<b>Yodafone</b>	65	1000	280	62
4	<b>C-mobile</b>	65	800	400	76
5	<b>O-3</b>	65	1000	500	95
6	<b>T-world</b>	65	2000	100	55
7				Best network:	

(a) What formula must be in E2 to calculate the value of the *Lemon* network offer?

.....  
..... [2]

(b) What formula needs to be placed in E7 to find the best offer?

.....  
..... [1]

(c) The customer actually uses 800 minutes of talk time per month.

How could the spreadsheet be modified so that the customer can find out which network still gives him the best deal?

.....  
.....  
.....  
..... [2]

14 An airport has a number of hotels nearby. A database has been set up to give customer information to allow them to select a hotel.

Hotel Ref	Name of hotel	No. of stars	No. of rooms	Hotel parking	Price per person (\$)	Distance from airport (km)
H41	The Grand	3	45	Y	65	11
K22	Sleepy Inn	2	15	N	45	10
N15	Britannia	5	140	Y	150	4
L44	Beach Hotel	4	62	N	85	8
H30	Sea View	3	38	N	60	4
H21	Pyramid	3	25	N	70	5
N21	Superior	5	120	Y	200	2
K14	Travellers	2	15	N	45	10

(a) How many records are shown in the database?

..... [1]

(b) Which field in each record must be unique?

..... [1]

(c) The following search condition was typed in:

**(No. of stars > 3) OR (Hotel parking = Y)**

Using **Hotel Ref** only, which records would be found?

.....  
..... [2]

(d) Write down the search condition to find which hotels were less than 10 km from the airport and charged under \$100 per person.

.....  
..... [2]

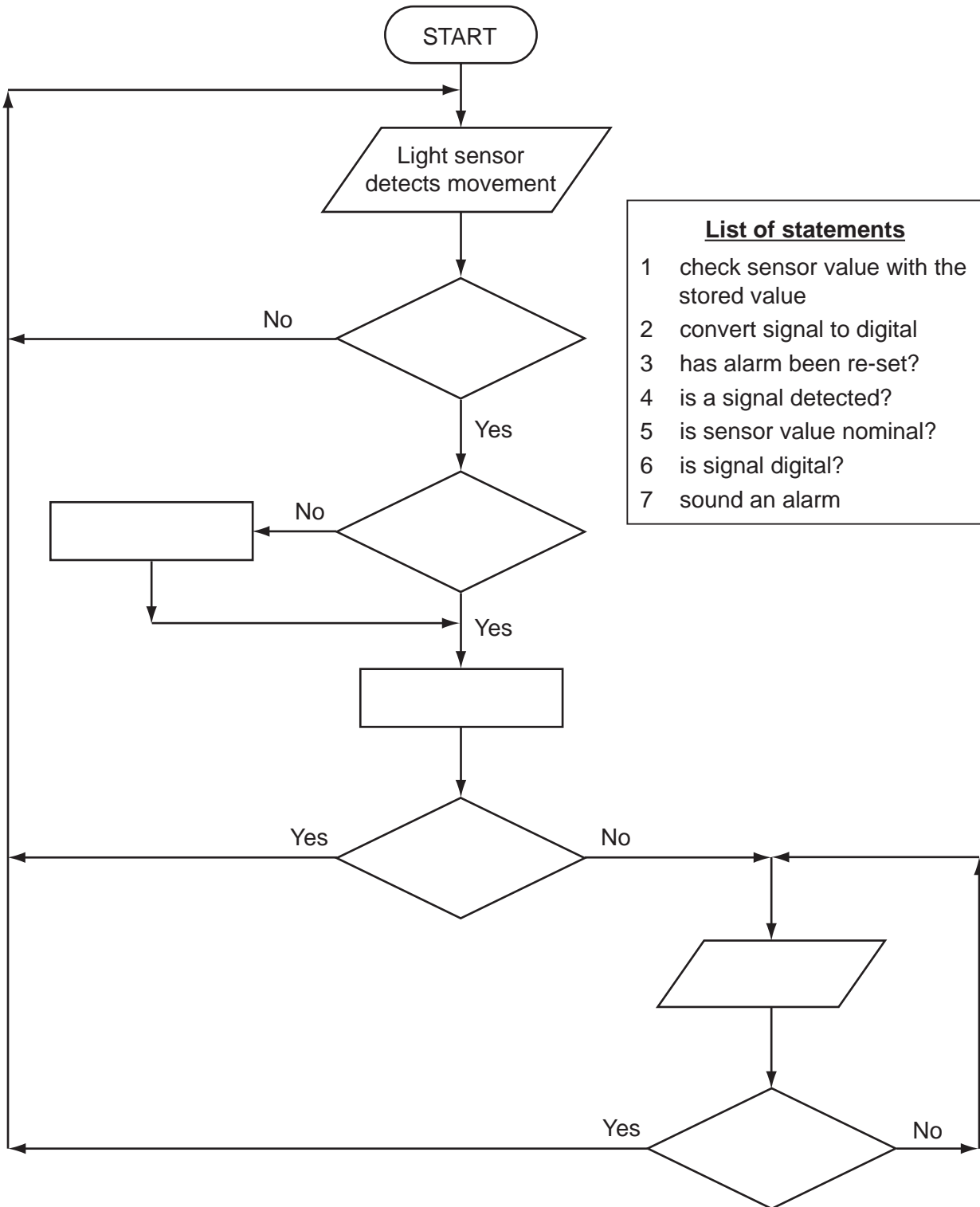
(e) The database was sorted into *descending order* using **No. of rooms**.

Using **Hotel Ref** only, write down the sorted order of records.

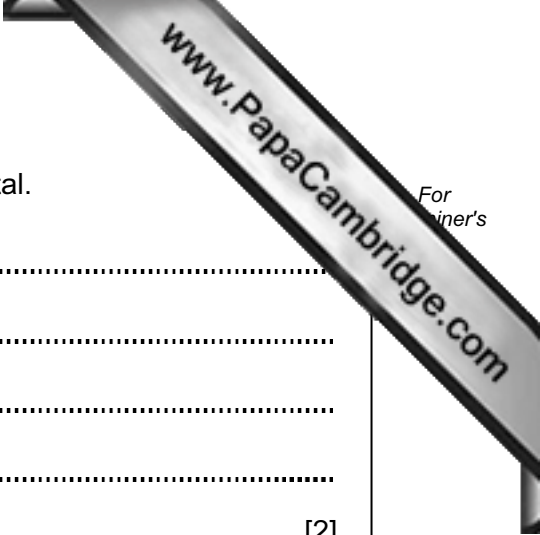
.....  
.....  
..... [2]

15 (a) The following flowchart shows how a burglar alarm system uses light sensors to determine if an intruder has entered the house and decides to sound an alarm.

Select statements from the list below, **using numbers only**, to complete the flowchart.



[4]



(b) Explain why the sensor signal needs to be converted into digital.

.....  
.....  
.....  
.....  
..... [2]

(c) Name a **different** sensor and describe an application that uses the named sensor.

Sensor name: .....

Description: .....

.....  
.....  
..... [2]

(d) The computer can't directly control items such as motors and heaters.

What additional hardware is needed to allow the computer to control these devices?

.....  
.....  
..... [1]

16 A customer logs on to a secure website using a code and a password. The first stage is to key in a code which is his date of birth (DDMMYY) followed by 1234. The second stage is to type in the first, third, fourth and seventh character of his password.

The customer last logged on to the website on 15th March 2010.

(a) (i) The customer's date of birth is 15th November 1985. What is the customer's code?

--	--	--	--	--	--	--	--	--	--

(ii) Why is this code not unique?

.....

.....

(iii) Suggest how this coding system could be improved.

.....

.....

..... [3]

(b) (i) The customer's password is PAULO168.

What does the customer need to type at the second stage?

1st	3rd	4th	7th
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

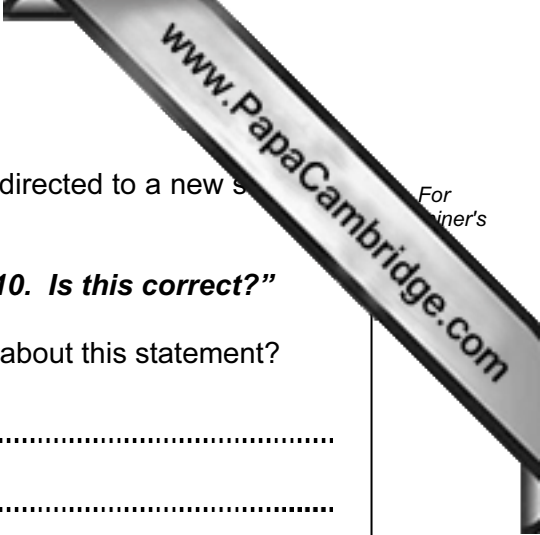
(ii) Why are passwords used?

.....

.....

..... [2]





(c) If the customer gets through the two stages above he is then directed to a new screen on the website which states:

***“You were last logged on to this website on 14th April 2010. Is this correct?”***

What could have happened to make the customer concerned about this statement?

.....

.....

..... [1]





