UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

COMPUTER STUDIES

Paper 1

0420/01

October/November 2005

2 hours 30 minutes

Candidates answer on the Question Paper.
No Additional Materials are required.

Candidate Name

Centre Number

Candidate Number

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 in the spaces provided on the Question Paper.
You may use a soft pencil for any diagrams, graphs, music or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
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.

DO NOT WRITE IN THE BARCODE.

DO NOT WRITE IN THE GREY AREAS BETWEEN THE PAGES.

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

Stick your personal label here, if provided.

For Examiner's Use

This document consists of **15** printed pages and **1** blank page.

1 Explain, using examples where appropriate, the following five computer terms:

(a) expert system .....

.....

.....[2]

(b) electronic scabbing .....

.....

.....[2]

(c) top down design .....

.....

.....[2]

(d) interrupt .....

.....

.....[2]

(e) buffer .....

.....

.....[2]

2 Give **three** advantages of buying a software package rather than writing a program.

1 .....

.....

2 .....

.....

3 .....

.....[3]

3 **(a)** Draw and label a diagram which shows a star network.

[3]

(b) State **one** device that will be needed to connect the star network to a wide area network (WAN).

.....[1]

4 **(a)** Describe **two** possible causes of computer system failure. In each case, describe how it could have been prevented.

Cause 1 .....

.....

Prevention .....

.....

Cause 2 .....

.....

Prevention .....

.....[4]

(b) Describe **two** ways of recovering from computer systems failure.

1 .....

.....

2 .....

.....[2]

5 **(a)** What is meant by batch processing?

.....

.....

.....[2]

(b) How does a real time transaction system differ from batch processing?

.....

.....

.....[1]

(c) A supermarket uses a computer system which operates in both batch mode and real time transaction mode.

(i) State **one** task which could use batch processing.

.....

.....

(ii) State **one** task which must be done in real time mode.

.....

.....
[2]

6 Booking seats on an aeroplane can be done by the Internet.

(a) Give **two** advantages of using the Internet rather than making a telephone call for this task.

1 .....

.....

2 .....

.....[2]

(b) What type of file access would be needed to make a booking? Give a reason for your choice.

Type of access .....

Reason for choice .....

.....[2]

(c) The following screen appears on the Internet booking system once the in... finished:

Name: I V Khan ***No. of passengers:*** 2

Address: PO Box 9081

Departure Airport: DAR
Destination Airport: PAP

Date of flight out: 15/12/05
Date of return flight: 30/12/05

Flight Numbers: ***OUT:*** GA 148A
RETURN: GA 148B

Credit Card No: 0123 4567 8901 2343

Give a different validation check for each of the following items:

(i) No. of passengers.....

.....

(ii) Date of flight out.....

.....

(iii) Credit Card No.....

.....[3]

7 A company keeps details of all its employees on a file. The record format for each emp[illegible]

Field:	**Name**	**Sex**	**Department**	**Location**	**Years in company**
Size:	15 characters	1 character	1 character	10 characters	2 digits

The following codes are used:

Sex:	F = female	M = male
Department:	A = administration	F = finance
	M = management	S = sales

One typical record is:

P		D	E	M	E	T	R	A	K	I	S					M	F	C	Y	P	R	U	S				0	5

(a) In which **Department** does P Demetrakis work?

.....[1]

(b) Complete the record for Miss K Schroder, who is in the sales department in Austria. She has worked in the company for 8 years.

[3]

(c) Give **two** advantages of using codes when storing data.

1 .....

.....

2 .....

.....[2]

(d) **(i)** Why is it **not** a good idea to use the field **Years in company** to store information about how long an employee has worked for the company?

.....

.....

(ii) What would be a more suitable field?

.....

.....

[2]

8 A company uses computer aided design (CAD) to help design buildings.

(a) Give **three** features of CAD which would be useful for this task.

1 .....

.....

2 .....

.....

3 .....

.....[3]

(b) Give an example of a suitable output device used when

(i) looking at and developing the design.

.....

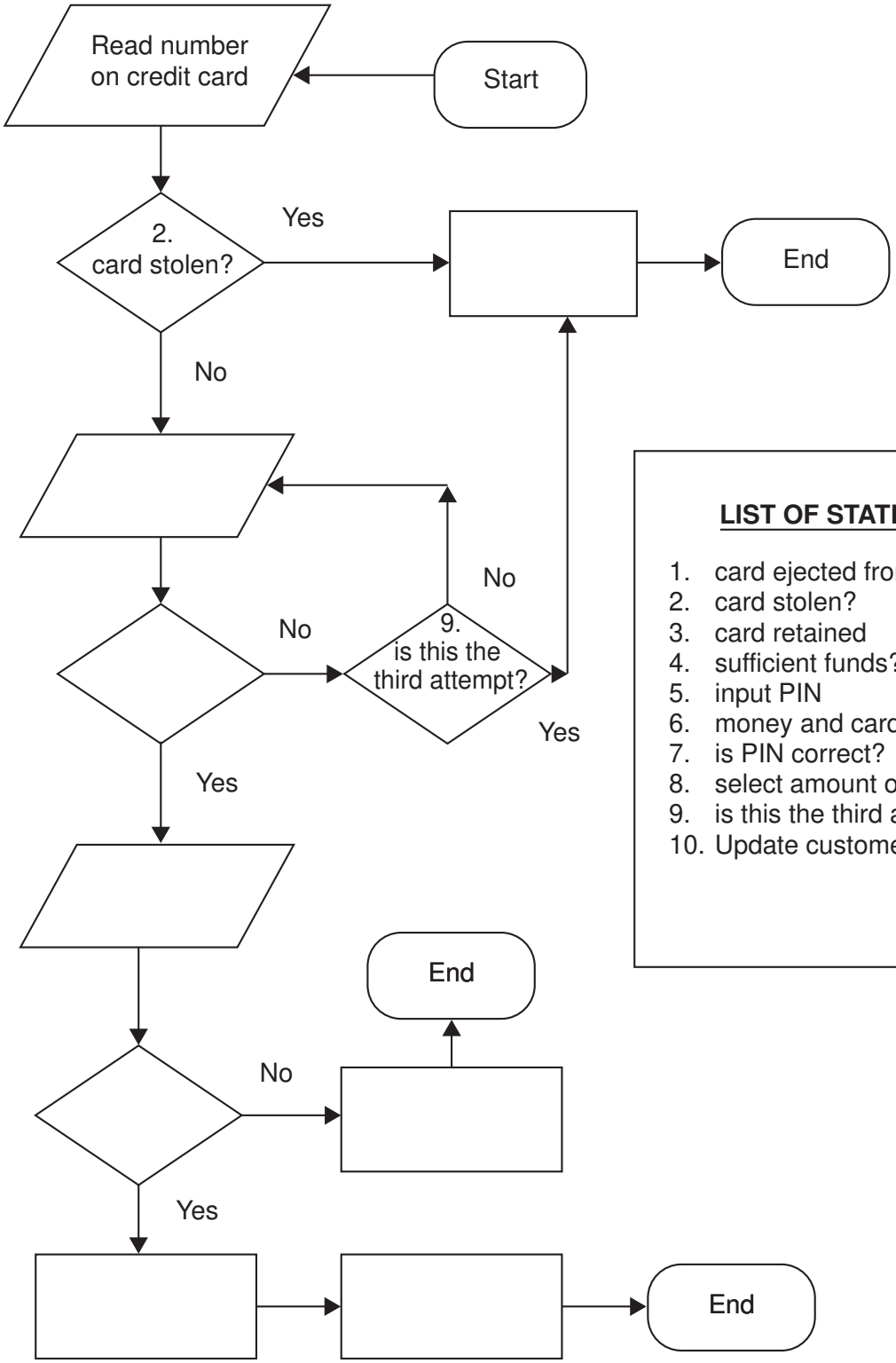
(ii) producing a very large drawing on paper.

.....

.....

[2]

9 The following flowchart shows what happens when a customer withdraws cash from an Automatic Teller Machine (ATM) using a credit card protected by a Personal Identification Number (PIN). Complete the flowchart by selecting the appropriate statement from the given list and inserting the number in its correct box (2 statements are already inserted for you).



LIST OF STATEMENTS

1. card ejected from ATM
2. card stolen?
3. card retained
4. sufficient funds?
5. input PIN
6. money and card returned
7. is PIN correct?
8. select amount of money
9. is this the third attempt?
10. Update customer files

[6]

10 Many household appliances contain microprocessors and give outputs in the form of digital displays or analogue displays.

(a) Explain the difference between a digital display and an analogue display.

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.....

.....

.....[2]

(b) Give **one** advantage of using digital displays.

.....[1]

(c) Give **one** advantage of using analogue displays.

.....[1]

(d) **(i)** Apart from computer systems, state **one** household appliance that contains a microprocessor.

.....

(ii) Describe **one** of the tasks of the microprocessor in your named appliance.

.....

.....
[2]

11 A school uses computers to teach disabled students. Describe **one** special input device and **one** special output device which could be used to help these students to learn. Give a reason for your choice of each device.

Input device .....

Reason for choice.....

.....

.....

Output device .....

Reason for choice.....

.....

.....[4]

12 A company has decided to computerise its manual sales system.

(a) Describe **two** tasks to be done at the analysis stage.

1 .....

.....

2 .....

.....[2]

(b) Describe **two** tasks to be done at the design stage.

1 .....

.....

2 .....

.....[2]

(c) Describe **two** tasks to be done at the implementation stage.

1 .....

.....

2 .....

.....[2]

13 A company has purchased some new equipment. The value of each type of equip... stored in a spreadsheet.

	A	B	C	D	E	F
1	Equipment in stock	Value in 2005 ($)	Value in 2007 ($)	Value in 2009 ($)	Value in 2011 ($)	Value in 2013 ($)
2	Computers	80000	40000	20000		
3	Office furniture	24400				
4	Cupboards	18400				
5	Video projectors	36800				
6	Telephones	6400				
7						
8	TOTALS:					

(a) Every two years the value of each type of equipment is halved. What formulae are in cells C2 and D2?

C2 .....

D2 .....[2]

(b) Explain how you would use the spreadsheet to predict the values for years 2008 and 2010.

.....

.....

.....

.....[2]

(c) What formula needs to be placed in B8 to find the total equipment value for 2005?

.....[1]

14 Computer technology has now allowed employees to work from home.

(a) Give **three** advantages to employers of allowing employees to work from home.

1 .....

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2 .....

.....

3 .....

.....[3]

(b) Give **two** advantages to the employees of working from home.

1 .....

.....

2 .....

.....[2]

(c) Describe **two** advances in computer technology which have allowed working from home to become possible.

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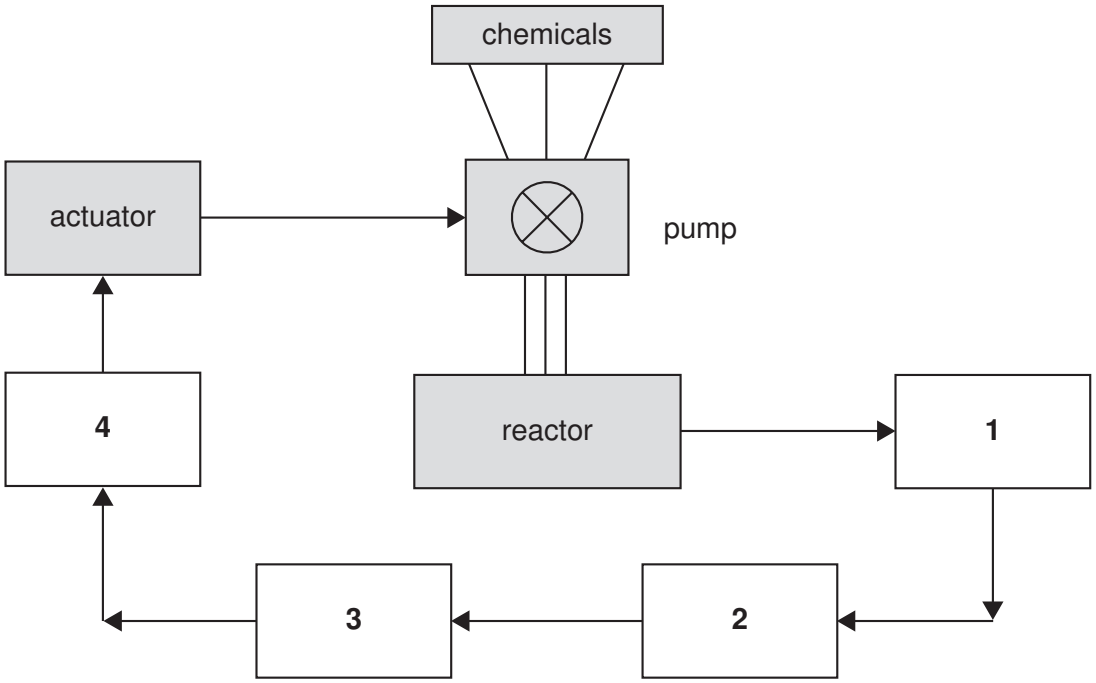
.....[2]

15 The following diagram shows a computer controlled chemical process:



(a) The following four computer terms have been missed out of the above diagram:

Analogue-to-digital converter (ADC)
Computer
Digital-to-analogue converter (DAC)
Temperature Sensor

Choose, from the above list, the correct term which should be placed in each of the numbered boxes:

1 .....

2 .....

3 .....

4 .....[3]

(b) Explain the role of feedback in the above system.

.....

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.....

.....[2]

(c) Give **two** advantages of controlling the chemical processing system using a com

1 .....

.....

2 .....

.....[2]

16 **(a)** A teacher decides to use multimedia software to develop a presentation for a lesson. Describe **three** features of the multimedia software which could be used.

1 .....

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2 .....

.....

3 .....

.....[3]

(b) Explain how this teacher could send the presentation electronically to a school in another country.

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.....[2]

17 A school uses a computer to store student marks obtained in an end of term mathe... exam. There are 150 students doing the exam and the maximum mark is 100.

Write an algorithm, using pseudocode or otherwise, which

- inputs the marks for all students
- checks if each mark is in the correct range and, if not, the mark is re-input
- outputs the smallest mark
- outputs the highest mark
- outputs the average mark for the exam.

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.....[6]

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