Centre Number	Candidate Number	Name

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

COMPUTER STUDIES **0420/01**

Paper 1

October/November 2004

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 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.

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 Using examples where appropriate, explain the following computer terms:

(a) MICR .....

.....

.....[2]

(b) batch processing .....

.....

.....[2]

(c) modem .....

.....

.....[2]

(d) virus .....

.....

.....[2]

(e) interrupt .....

.....

.....[2]

2 Give **three** advantages to a company of using barcodes on stock items.

1 .....

.....

2 .....

.....

3 .....

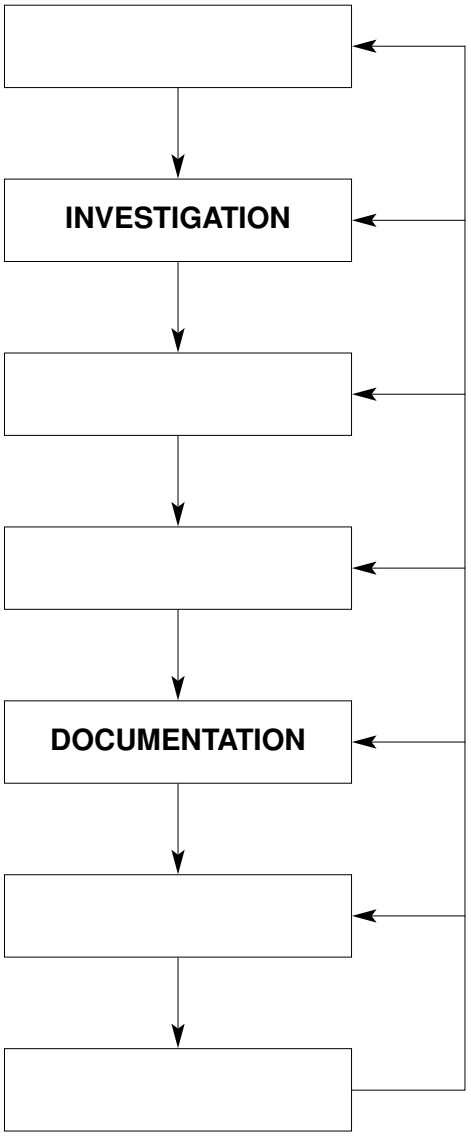
.....[3]

3 **(a)** The following five stages in Systems Analysis have been missed out of the d below.

ANALYSIS **DESIGN** **EVALUATION**

FEASIBILITY STUDY **IMPLEMENTATION**

Complete the diagram by placing these five stages in their correct position.



[3]

(b) Describe **two** tasks carried out during the design stage.

1 .....

.....

2 .....

.....[2]

4 Speed cameras are used on many roads to take photographs of cars which have ex the speed limit. Some of these cameras use microprocessor controlled chips to s information rather than photographic film.

(a) State **two** advantages of storing car details on chips rather than on film.

1 .....

.....

2 .....

.....[2]

(b) State **two** tasks which would be carried out by the microprocessor as a speeding car approaches a camera.

1 .....

.....

2 .....

.....[2]

(c) State **two** tasks which would be carried out by the microprocessor as the photograph is being taken.

1 .....

.....

2 .....

.....[2]

5 A school has some pupils who are either blind or partially sighted. Describe **three** ways in which computers could be used to help these pupils to learn.

1 .....

.....

2 .....

.....

3 .....

.....[3]

6 **(a)** Give **two** reasons why a buffer is used in a printer.

1 .....

.....

2 .....

.....[2]

(b) Give **one** advantage of increasing the size of a buffer in a printer.

.....

.....[1]

7 A shop uses a spreadsheet to keep a record of daily sales in its electrical department. A section of the spreadsheet is shown below. The number in stock is updated at the start of each day.

	A	B	C	D	E	F
1	**Item**	**No. in stock**	**No. sold**	**Price ($)**	**Stock value ($)**	**Re-order level**
2	camera	32	3	150.00		15
3	iron	80	14	82.50		20
4	kettle	151	10	49.25		30
5	fan	144	15	37.15		30

(a) The **Stock value ($)** of each item sold is given by

(**No. in stock** – **No. sold**) x **Price ($)**

Write down a formula that could be inserted in cell E2 to calculate the **Stock value ($)** of *cameras*.

.....

.....[2]

(b) Describe how the formula in E2 could be copied into cells E3 to E5.

.....

.....

.....[2]

(c) Describe how the spreadsheet could be used to predict the number of days before reach their **Re-order level**.

.....

.....

.....

.....[2]

8 **(a)** Give **two** examples of computer crime.

1 .....

.....

2 .....

.....[2]

(b) Give **three** methods used to prevent computer crime.

1 .....

.....

2 .....

.....

3 .....

.....[3]

9 Give **three** tasks done by an operating system.

1 .....

.....

2 .....

.....

3 .....

.....[3]

10 Shopping from home using the Internet is now possible.

(a) Give **two** advantages to the customer of buying items on the Internet.

1 .....

.....

2 .....

.....[2]

(b) Give **two** advantages to the shop manager of selling items on the Internet.

1 .....

.....

2 .....

.....[2]

(c) Internet shopping may not be as successful as predicted. Give **three** reasons for this.

1 .....

.....

2 .....

.....

3 .....

.....[3]

11 Write down **three** advantages of using magnetic disks for storing data rather than using magnetic tapes.

1 .....

.....

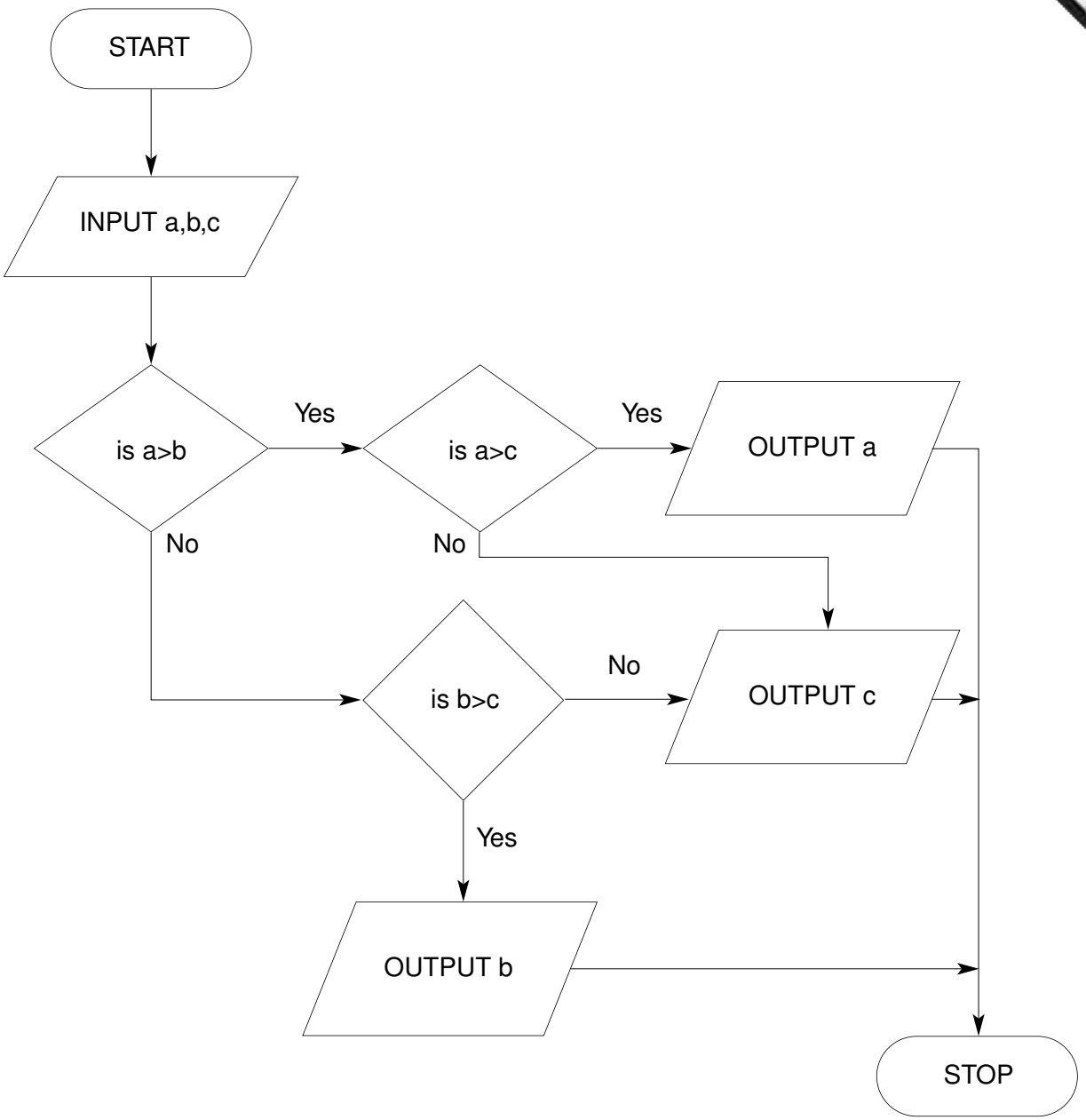
2 .....

.....

3 .....

.....[3]

12 Study the following flow diagram.



Write down the output for each of the following inputs:

INPUT			OUTPUT
a	b	c	
5	9	7	
4	1	8	
2	4	2	

[3]

13 A program has been written to process student marks in a set of tests.

(a) Describe **two** validation checks that could be made on a student name.

1 .....

.....

2 .....

.....[2]

(b) Describe **two** validation checks that could be made on a mark.

1 .....

.....

2 .....

.....[2]

14 A company has offices in several countries and uses electronic (video) conferencing and e-mail to communicate.

(a) Give **two** benefits of using electronic (video) conferencing.

1 .....

.....

2 .....

.....[2]

(b) Give **two** benefits of using e-mail.

1 .....

.....

2 .....

.....[2]

(c) Give **two** reasons why e-mail has led to a large increase in the amount of paper being used.

1 .....

.....

2 .....

[2]

15 **(a)** Describe the steps needed to produce an expert system.

.....

.....

.....

.....

.....[3]

(b) Give **two** advantages of using an expert system.

1 .....

.....

2 .....

.....[2]

(c) Give an example of an expert system.

.....[1]

16 A company uses computer aided design (CAD) software to design electronic compo

(a) Describe **two** features of the CAD software which are used to design electro components.

1 .....

.....

2 .....

.....[2]

(b) Graph plotter, graphics tablet, light pen and trackerball are all examples of input or output devices used with CAD software. Describe how each of these devices would be used.

Graph plotter .....

.....

.....

Graphics tablet .....

.....

.....

Light pen .....

.....

.....

Trackerball .....

.....

.....[4]

17 A database stores details about cars in a showroom. The format of the first three fields is shown below.

Field name	Field description	Data type	Field length
MAKE	name of manufacturer	text	30
NUMPLATE	car registration no.	alphanumeric	8
REG	date car registered	date	6

(a) State **two** more fields, one numeric and one text, and for each give the field description and the field length.

Field name (numeric) .....

Field description .....

Field length .....[2]

Field name (text) .....

Field description .....

Field length .....[2]

(b) Give a situation, in each case, where data about these cars would need to be amended, deleted and inserted.

amended: .....

.....

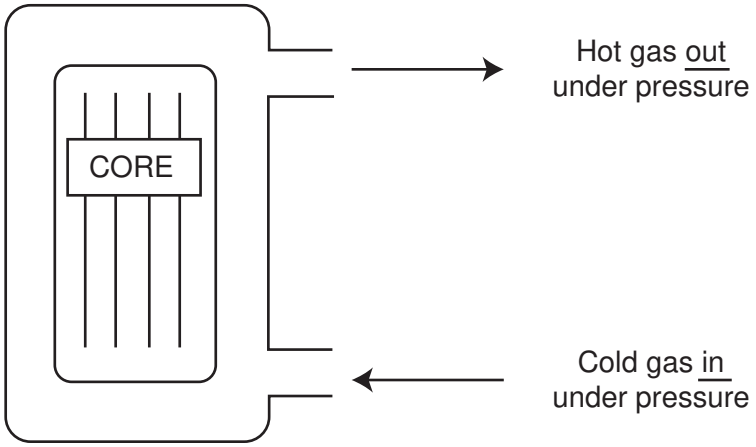
deleted: .....

.....

inserted: .....

.....[3]

18 The diagram below shows a nuclear reactor cooled by pumping a gas around the co reactor is monitored and controlled by a computer.



(a) State **two** sensors used to monitor the core.

1 .....

2 .....[2]

(b) State the device that is needed to enable the data from the sensor to be processed by the computer.

.....

.....[1]

(c) Explain how feedback is used to control the reactor.

.....

.....

.....

.....

.....[3]

(d) Give **two** advantages of using a computer system rather than a manual system to monitor and control the reactor.

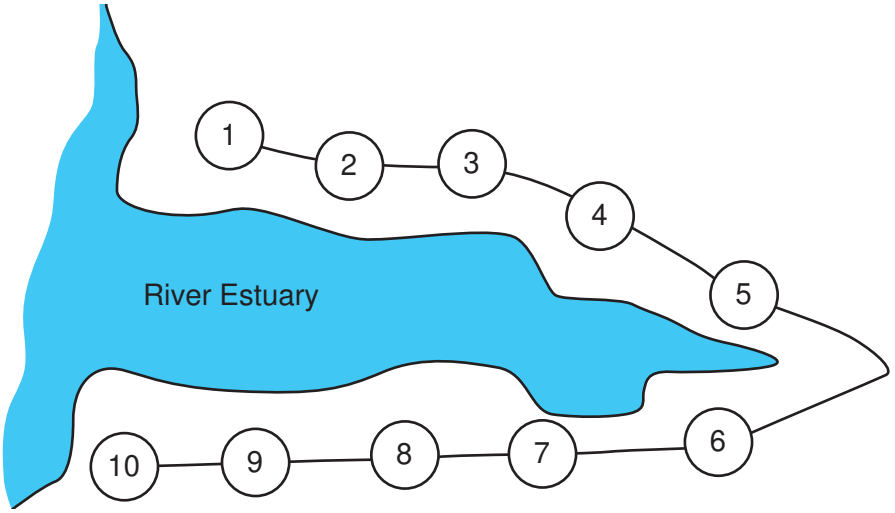
.....

.....

.....

.....[2]

19 The following diagram shows a rail network.



The rail network consists of 10 stations. The fare between each station is $2. There is a 10% discount when 3 or more passengers travel together. Tickets can be purchased at any station using automated terminals.

Using pseudocode, or otherwise, write an algorithm for the automated terminals to:

- input the starting station number, the destination station number and the number of passengers
- calculate the total fare and output the amount to be paid
- calculate the change (if any)
- issue the rail ticket(s) and change

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....[6]

BLANK PAGE