Centre Number	Candidate Number

Candidate Name _____

International General Certificate of Secondary Education
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

COMPUTER STUDIES 0420/1, 0421/1

PAPER 1

MAY/JUNE SESSION 2000 2 hours 30 minutes

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

TIME 2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces at the top of this page.
Answer **all** questions.
Write your answers in the spaces provided on the question paper.

INFORMATION FOR CANDIDATES

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

FOR EXAMINER'S USE

This question paper consists of 15 printed pages and 1 blank page.

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[Turn over

1 Explain, using examples, the meaning of these computer terms.

(a) macro .....

.....

.....[2]

(b) buffer .....

.....

.....[2]

(c) file generations .....

.....

.....[2]

(d) polling .....

.....

.....[2]

(e) systems design .....

.....

.....[2]

2 State **one** storage device used to store data permanently and describe how these data are stored.

.....

.....[2]

3 Traffic lights are controlled by a microprocessor system. State two methods of automatic collection of traffic data.

1. .....

.....

2. .....

.....
[2]

4 **(a)** State two industrial tasks that make use of robots.

1. .....

.....

2. .....

.....
[2]

(b) State two advantages and two disadvantages of using robots in industry.

advantage 1 .....

.....

advantage 2 .....

.....

disadvantage 1 .....

.....

disadvantage 2 .....

.....
[4]

5 **(a)** State **one** practical use of a virtual reality system.

.....

.....[1]

(b) For this virtual reality system state two items of special hardware required.

1. .....

2. .....
[2]

6 **(a)** A network has more than one printer attached to it. Explain how the network operating system is able to send a user's document to the correct printer.

.....

.....

.....[2]

(b) State three other file management tasks that a network operating system does for a user.

1. .....

.....

2. .....

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3. .....

.....

[3]

7 A software package is used to design a multimedia presentation for a tourist information centre.

(a) Describe how part of a large image on paper may be included in the presentation.

.....

.....

.....

.....[3]

(b) Give two types of output, other than text, that you would expect to see in a multimedia presentation.

1. .....

.....

2. .....

.....

[2]

(c) State how the data are protected against accidental corruption.

.....

.....[1]

8 Explain the function of a compiler.

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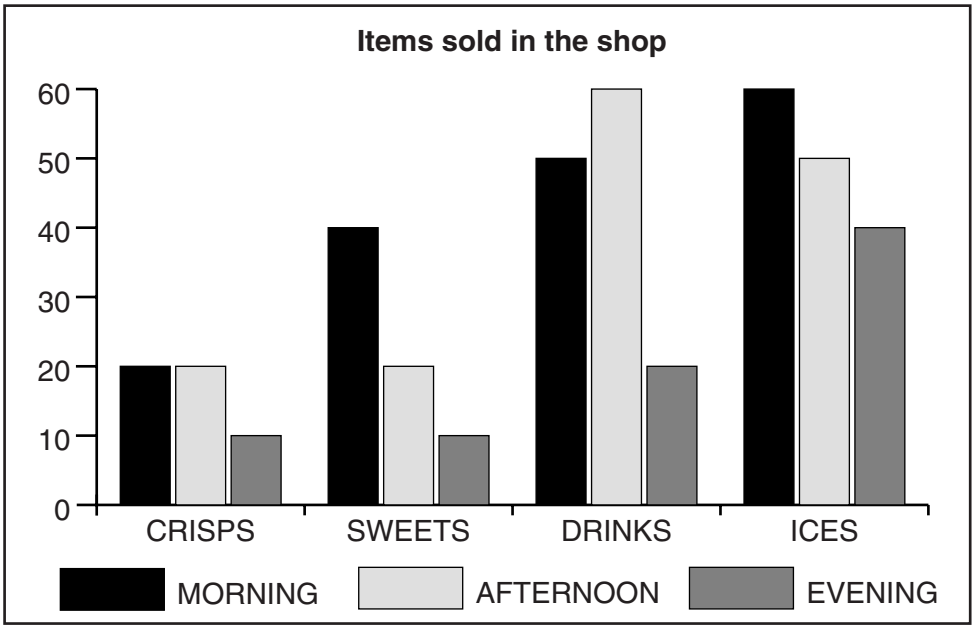
.....[3]

9 The spreadsheet chart shows details of items sold in a shop during one day. The day is divided into three time intervals: morning, afternoon and evening.



(a) On the spreadsheet, shade the cells that must be used to create this chart.

	A	B	C	D	E	F
1	ITEM	MORNING	AFTERNOON	EVENING	PRICE($)	SALES($)
2	CRISPS	20	20	10	20	1000
3	SWEETS	40	20	10	20	
4	DRINKS	50	60	20	20	
5	ICES	60	50	40	10	
6	TOTAL					

[2]

(b) A formula has been put in cell **F2** to calculate the amount of money taken for CRISPS during one day. Describe how this formula could be used to calculate the sales of the other items automatically.

.....

.....

.....[2]

(c) Write down a formula that could be put in cell **F6** to calculate the SALES($) for this day.

.....

.....[1]

(d) The data for the sales of **CHOCOLATE** need to be inserted between rows 3 and 4. Describe how this change would be made to the spreadsheet.

.....

.....

.....[2]

10 A database contains a file of houses that are currently for sale.

CODE	TYPE	BEDROOMS	NAME	PRICE($)
2123	B	2	LEE	85000
3124	A	3	JONES	70000
8125	H	8	HART	100000
2126	A	2	PHILLIPS	50000
3127	B	3	PATEL	80000
2128	H	2	CAMERON	60000

(a) Which field in the file should be used as a key field?

.....[1]

(b) Describe two validation checks that should be made on the data as new houses are entered into the file.

1. .....

.....

2. .....

.....
[2]

(c) State three more fields that could be included in this file.

1. .....

2. .....

3. .....
[3]

(d) State two reasons why the data in the **TYPE** field have been coded.

1. .....

2. .....
[2]

(e) The following search condition is input.

(**TYPE** = "B") OR (**BEDROOMS** < 4)

Write down the output using only the **CODE** field.

.....[2]

(f) Write down a set of steps to search for all the three-bedroom houses which are priced at $80,000 or more.

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.....[3]

(g) A second file contains details of possible buyers. Describe how this second file can be used with the first file.

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.....[2]

11 Read this algorithm.

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1   set Total to zero
2   set Counter to zero
3   input Number
4       repeat
5           add Number to Total
6           add one to Counter
7           input next Number
8       until Counter is ten
9   output Total
```

Rewrite the algorithm using the **While … Do … Endwhile** structure.

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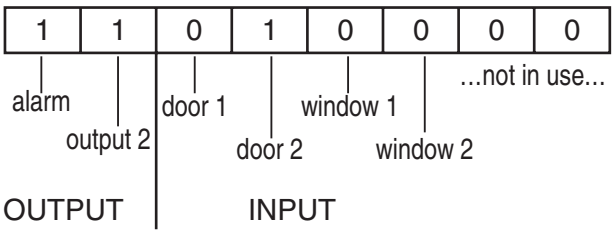
.....[3]

12 A burglar alarm system is controlled by a microprocessor. Data are collected by sensors. Each sensor gives an input to the microprocessor of 0 when no burglar is detected and 1 when a burglar is detected. The microprocessor gives output of 1 when any sensor gives an input of 1. The inputs and outputs are stored as shown.



(a) Describe what has happened to create this pattern.

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.....[3]

(b) Write down a bit pattern that could be set when a burglar enters the building through window 1.

[2]

(c) **(i)** State **one** use of output 2.

.....

(ii) The sensors for the four inputs shown are simple switches. State **one** further type of suitable sensor.

.....
[2]

13 A business uses a wide area network (Internet) for selling holidays and sending e-mail messages to and from their customers.

(a) Describe two advantages for the business of using this network for selling their holidays.

advantage 1 .....

.....

advantage 2 .....

.....

[2]

(b) Describe two benefits for the customer of using e-mail to communicate with the business.

1. .....

.....

2. .....

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[2]

(c) Describe the process used by a customer to access information on this network.

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.....[2]

(d) Payment for the holidays must be made by bank credit card. Explain why some people are unhappy about this method of payment.

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.....[2]

14 An expert system is to be created for medical diagnosis. Explain the steps needed to achieve this.

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.....[4]

15 A school is to use a data-logging system to monitor weather conditions for a week.

(a) (i) Suggest a suitable time interval for collecting the temperature data.

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(ii) Give a reason for your suggestion in **(i)**.

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.....
[2]

(b) To collect the temperature data a thermometer is used. State two other sensors which should be included in the system.

1. .....

2. .....
[2]

(c) Describe three features of the software used with this system.

1. .....

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2. .....

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3. .....

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[3]

(d) Describe how the results of the monitoring could be compared with those of the previous week.

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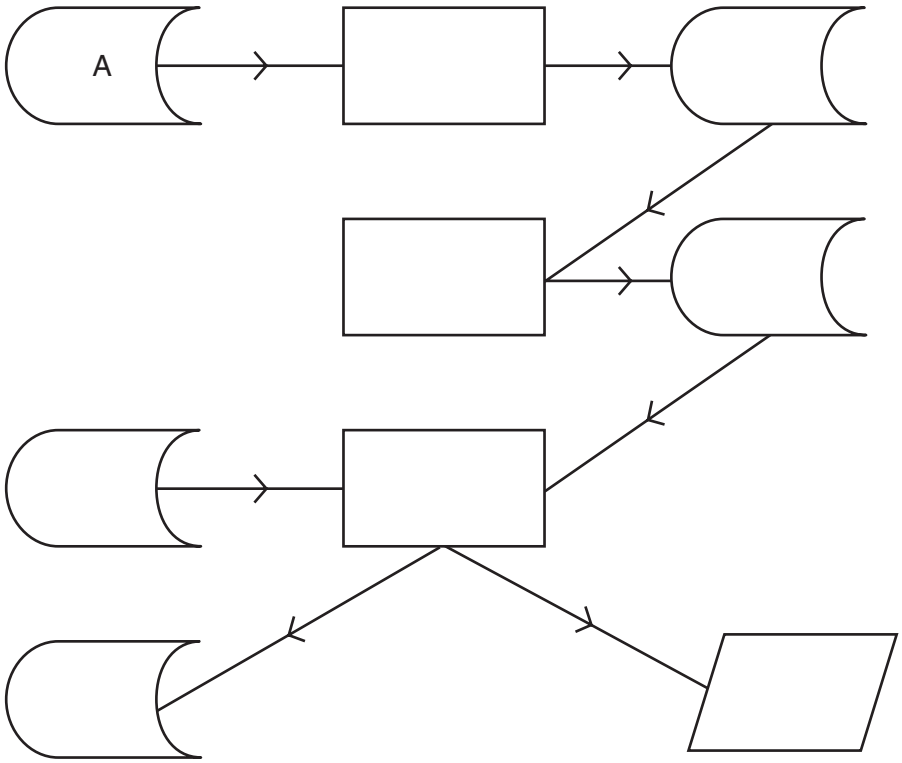
.....[2]

16 A company uses the following systems flowchart to update its master file.

Fill in the symbols by using the statements in the list below and writing the letter to indicate your choice. One has been done for you.

A current transaction file
B error report
C master file
D new master file
E sorted validated transaction file
F sort process
G update process
H validated transaction file
I validation process



[4]

17 Pupils are graded in a test based on the following marks:

DISTINCTION	70 – 100
MERIT	55 – 69
PASS	40 – 54
FAIL	0 – 39

Any other mark displays an error message.

Write an algorithm to input the marks for 20 pupils and for each pupil output either a grade or an error message.

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