UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

CANDIDATE
NUMBER

INFORMATION AND COMMUNICATION TECHNOLOGY   **0417/01**

Paper 1   **May/June 2009**

2 hours

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.

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.

For Examiner's Use

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

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

1   Name the methods used to represent information on **A**, **B**, **C**, **D** and **E** using the words from the list below.
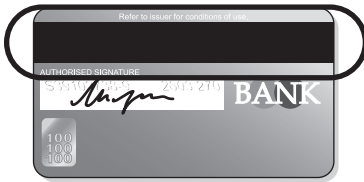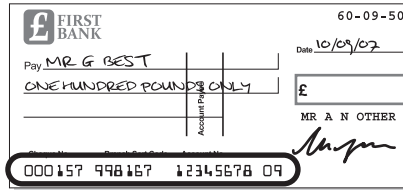
A   **B**   **C**
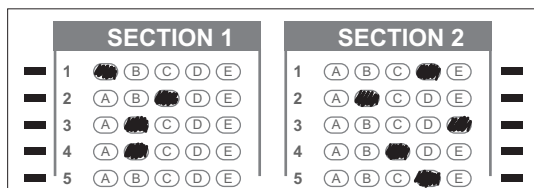
D   **E**

Bar code	Chip	DVD ROM
Flash memory	Graphics tablet	Light pen
Magnetic ink characters	Magnetic stripe	Optical marks
Optically read characters	Plotter	Remote control

A ....   B ....

C ....   D ....

E ....   [5]

2   Ring **two** items which are input devices.

Buzzer   Dot matrix printer   Graph plotter

Graphics tablet   Laser printer   Touch screen

[2]

3 Tick **TRUE** or **FALSE** next to each of these statements.

	TRUE	FALSE
Encryption prevents hackers from deleting data.		
Back up procedures prevent hackers from accessing data on a computer.		
You should regularly change your password to make it more difficult for hackers to access your data.		
You should always log off after using a networked computer.		
You should always tell a friend your password in case you forget it.		

[5]

4 Draw **five** lines on the diagram to match the software to how it could be used.

Software   Use

Desktop publisher   **suggesting medical diagnoses**

Measuring program   **storing pupil records in a school**

Spreadsheet   **producing a school magazine**

Inference engine   **monitoring temperature in a science experiment**

Database   **managing personal finance**

[5]

5 Select the most suitable data type from the list to represent:

(a) the number of children in a family   ....

(b) a line of a company's address   ....

(c) the gender of a person   ....

(d) somebody's birthday   ....

Alphanumeric   **Boolean**   **Date**

Numeric (Integer)   **Numeric (Real)**

[4]

6 A floor turtle can use the following instructions:

INSTRUCTION	MEANING
FORWARD n	Move n mm forward
BACKWARD n	Move n mm backward
LEFT t	Turn left t degrees
RIGHT t	Turn right t degrees
PENUP	Lift the pen
PENDOWN	Lower the pen

Complete the set of instructions to draw this shape by filling in the blank lines.

PEN DOWN

LEFT 90

FORWARD 35

RIGHT 90

....

....

....

....

....

....

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....

....

....

....
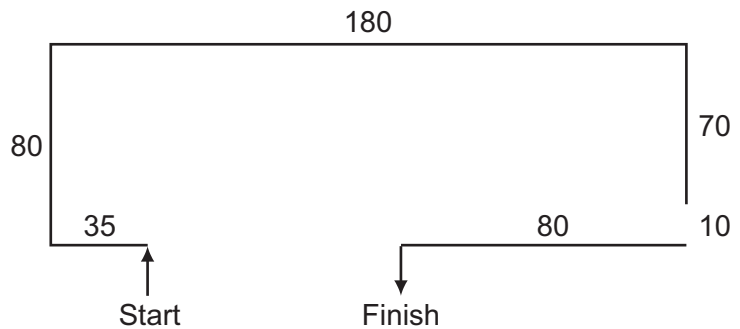
[5]

7 Two types of network topology have been combined to form a larger network.
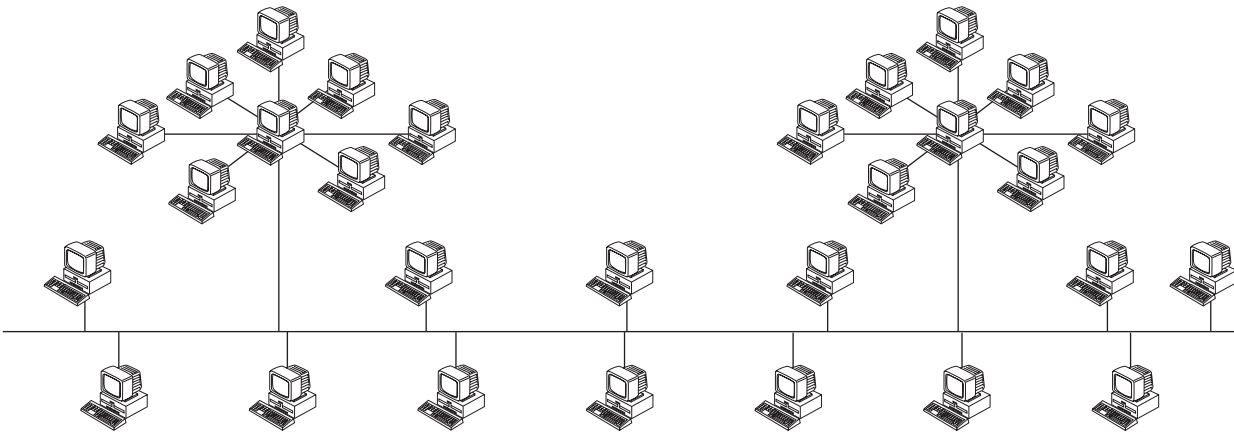
(a) Give the name of the type of the larger network topology .... [1]

(b) Give the names of the other two types of topology in this network.

1 ....

2 .... [2]

(c) Complete each sentence below using one item from the list.

A bridge	**A hub**
A proxy server	**A switch**

(i) .... does not manage any of the data traffic through it.

(ii) .... forwards data packets to computers and printers.

(iii) .... can be a major component of a firewall.

(iv) .... usually only has two ports. [4]

8 Tick **TRUE** or **FALSE** next to each of these statements which describe the use of e-mail compared to the normal postal service.

	TRUE	FALSE
E-mails can only be sent using a Post Office.		
You don't have to leave your house to send e-mail.		
It is quick to send the same message to many people using e-mail.		
It takes a long time for an e-mail to arrive.		

[4]

9   Put a tick in the column which best describes the type of processing used in the following applications.

	Real Time	Batch
A burglar alarm system.		
Producing gas bills.		
Cooking with an automatic cooker.		
Scanning OMR sheets.		

[4]

10 A book shop owner uses a spreadsheet to calculate profits. This is part of the spreadsheet.

	A	B	C	D	E	F
1	ISBN	Cost price ($)	Selling Price ($)	Profit per book ($)	Number sold	Total Profit ($)
2	0-34-080006-2	22	29	7	32	224
3	0-52-154540-4	26	35	9	45	405
4	0-74-879116-7	15	21	6	32	192
5	0-34-081639-2	33	41	8	89	712

(a) Which **row** contains labels?

.... [1]

(b) Give the cell reference of the cell that contains 0-74-879116-7.

.... [1]

(c) Give the cell reference of a cell that contains numeric data.

.... [1]

(d) Write down the formula which has been entered in cell F2.

.... [1]

(e) When the spreadsheet was created a similar formula had to go in cells F3 to F5. Tick **three** methods that could have been used to achieve this, leaving F2 unchanged.

Cut and paste	
Fill down	
Copy and paste	
Dragging the fill handle down	
Transposing the cells	
Absolute cell referencing	

[3]

11 Raquel Lopez owns a chain of car repair garages. She keeps records of all her customers. She has employed a systems analyst to recommend a new computer system for her business. The first task the analyst will undertake is to analyse the existing system.

(a) Give **four** methods of analysing the existing system.

1 ....

....

2 ....

....

3 ....

....

4 ....

.... [4]

(b) Details of each customer need to be entered into the computer. Give **one** reason why this data will need to be verified.

....

.... [1]

(c) Name and describe **one** method of verification.

....

....

....

.... [2]

(d) The systems analyst decides that the system needs to have a screen input form to enter all the details of each customer. Name **four** data items that would be included in such a form.

1 ....

2 ....

3 ....

4 .... [4]

(e) Describe **four** features that would help a user to navigate between input forms.

1 ....

....

2 ....

....

3 ....

....

4 ....

.... [4]

(f) The systems analyst now designs the file structure. Tick **three** items which would need to be designed as part of the file structure.

Field names	
Input screen	
Print format	
Validation routines	
Field lengths	
Hardware and software required	

[3]

(g) Name **three** methods of implementing this new system.

1 ....

2 ....

3 .... [3]

(h) After the system is implemented it will be evaluated. Tick **three** items which should be present in the evaluation.

Printouts of the results of queries	
The appropriateness of the solution	
Comparing the solution with the original task requirements	
Program listing	
Any improvements which can be made to the system	
System flowcharts	

[3]

12 Companies in the nuclear industry often use simulations because to experiment with nuclear material would be too dangerous.

(a) Give **two** other examples of computer modelling which are used to minimise danger.

1 ....

....

2 ....

.... [2]

(b) Other than minimizing danger, give **three** reasons why computer models are used rather than the real thing.

1 ....

....

2 ....

....

3 ....

.... [3]

13 Tick **four** items which must be part of an expert system.

Bar code reader	
Spreadsheet	
Dot matrix printer	
Inference engine	
Interactive input screen	
Knowledge base	
Rules base	
Search engine	

[4]

14 The prolonged use of computers can lead to health and safety problems.

(a) Tick **two** health problems that may be caused by prolonged use of computers.

RSI	
Influenza virus	
Blood poisoning	
Headaches	

[2]

(b) Tick **two** ways of preventing health problems.

Sit far away from the monitor	
Sit in a comfortable chair	
Take regular breaks	
Put a screen filter in front of the monitor	

[2]

(c) Tick **two** safety problems that may be caused by the use of computers.

Back problems	
Electrocution	
Fire	
Hacking	

[2]

(d) Tick **two** ways of preventing safety problems.

Don't overload electrical sockets	
Make sure there are no bare wires	
Use an expert system	
Use anti-virus software	

[2]

15 Computers are used to manage data in libraries. Name the different methods used to input data about books and borrowers and discuss the advantages and disadvantages of these.

....

....

....

....

....

....

....

....

....

....

.... [6]

16 A hospital uses computers to monitor the health of patients.

(a) Give **three** advantages of using computers rather than nurses to do this.

1 ....

....

2 ....

....

3 ....

.... [3]

(b) Explain why analogue to digital conversion is needed when computers are used in monitoring and measuring.

....

....

....

....

....

....

....

.... [4]

17 Many companies use video conferencing instead of face-to-face conferencing. Discuss the advantages and disadvantages of this.

....

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....

....

....

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....

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....

....

.... [6]

18 Describe **four** advantages that the use of chip and pin systems have over a magnetic stripe system.

1 ....

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2 ....

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3 ....

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4 ....

.... [4]

19 A company wants all its offices to be able to communicate using ICT systems. They are considering using fax, e-mail and bulletin boards. Discuss the advantages and disadvantages of these methods.

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.... [8]

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