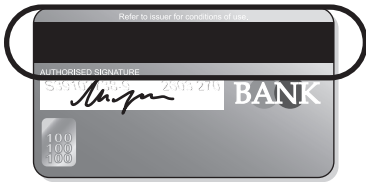
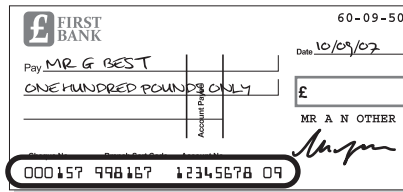
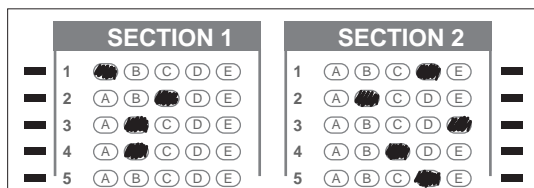


- 1 Name the methods used to represent information on **A**, **B**, **C**, **D** and **E** using the words from the list below.

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

For
Examiner's
Use

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

PEN DOWN

LEFT 90

FORWARD 35

RIGHT 90

.....

.....

.....

.....

.....

.....

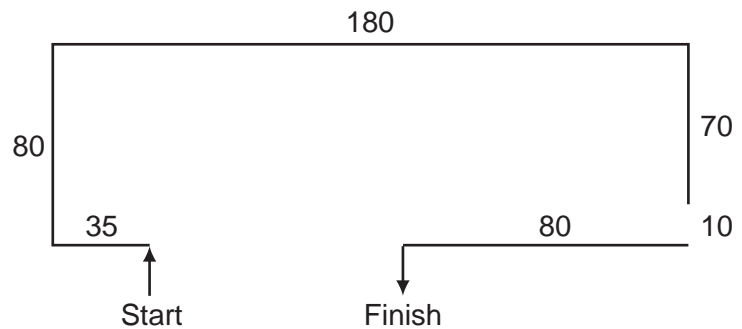
.....

.....

.....

.....

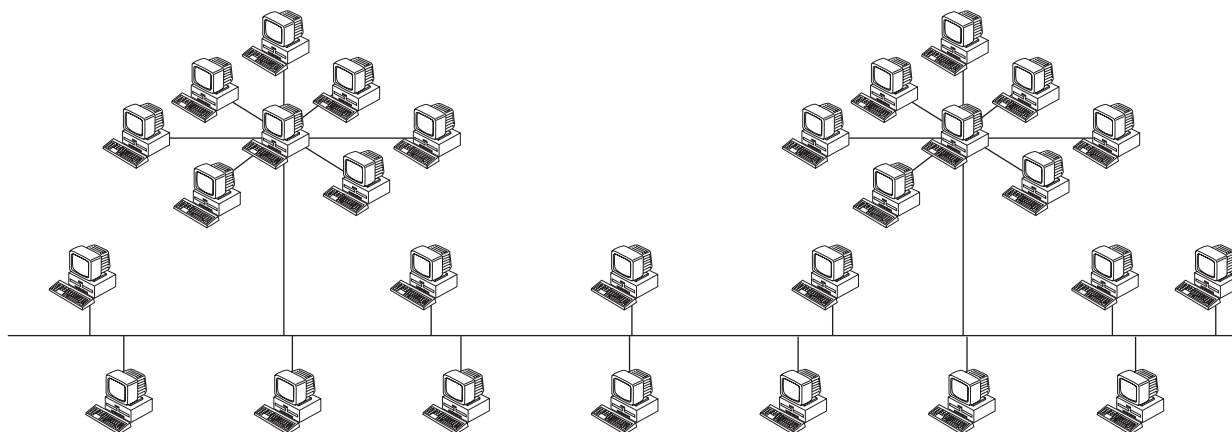
.....



[5]

- 7 Two types of network topology have been combined to form a larger network.

For
Examiner's
Use



(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]

For
Examiner's
Use

- (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]

For
Examiner's
Use

- 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]

- [6]

[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]

- [6]

- | | |
|---|--|
| 1 | |
| 2 | |
| 3 | |
| 4 | |

- [8]

Page 2	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – May/June 2009	0417	01

- 1 **A** Magnetic stripe (1)
 B Magnetic ink characters (1)
 C Chip (1)
 D Optical marks (1)
 E Bar code (1) [5]

- 2 Graphics tablet (1)
 Touch screen (1) [2]

- 3 F (1)
 F (1)
 T (1)
 T (1)
 F (1) [5]

- 4 Desk top publishing → producing a school magazine (1)
 Measuring program → monitoring temperature in a science experiment (1)
 Spreadsheet → managing personal finance (1)
 Inference engine → suggesting medical diagnoses (1)
 Database → storing pupil records in a school (1) [5]

- 5 **(a)** Numeric (Integer) (1)

(b) Alphanumeric (1)

(c) Boolean (1)

(d) Date (1) [4]

6

Forward	80
Right	90
Forward	180
Right	90
Forward	70
Penup	
Forward	10
Pendown	
Right	90
Forward	80
(Left	90)

Pendown and Right 90 are interchangeable

1 mark for each pair of statements [5]

Page 3	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – May/June 2009	0417	01

- 7 (a)** Hybrid/tree (1) [1]
- (b)** Star (1)
Bus (1) [2]
- (c) (i)** A hub (1)
- (ii)** A switch (1)
- (iii)** A proxy server (1)
- (iv)** A bridge (1) [4]
- 8** F (1)
T (1)
T (1)
F (1) [4]
- 9** Real Time (1)
Batch (1)
Real Time (1)
Batch (1) [4]
- 10 (a)** 1 [1]
- (b)** A4 [1]
- (c)** Any cell in the range B2 to F5 [1]
- (d)** (=) D2*E2 [1]
- (e)** Fill down (1)
Copy and paste (1)
Dragging the fill handle down (1) [3]

Page 4	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – May/June 2009	0417	01

- 11 (a)** Questionnaires (1)
Interviews (1)
Examination of documents (1)
Observation (1) [4]
- (b)** To detect typing errors/data entry errors/transcription errors [1]
- (c) Either:**
Visual verification (1)
Typed in data is visually compared with original data (1)
Or
Double entry (1)
Date is typed in twice and computer compares the two versions (1) [2 max]
- (d) Four from:**
Name
Title/gender
Customer number/id
Address
Post code
(Work/Mobile) phone number
(Home/Mobile) phone number
Email address
Car registration number(s) [4]
- (e) Four from:**
Button to close form
Button to first record/form
Button to end of file/new record
Button to previous record/form
Button to next record/form
Submit/continue button
Space to enter required record number
Search facility/engine
Button to go to sub forms [4]
- (f)** Field names (1)
Validation routines (1)
Field Lengths (1) [3]
- (g) Three from:**
Parallel running
Pilot running
Phased implementation
Direct changeover [3]
- (h)** The appropriateness of the solution (1)
Comparing the solution with the original task requirements (1)
Any improvements which can be made to the system (1) [3]

Page 5	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – May/June 2009	0417	01

- 12 (a) Two from:**
 Flight/pilot simulation/training
 Large scale chemical experiments
 Design of fairground rides
 Design of large buildings/bridges
 Traffic control
 Building fire simulation
 Car driving simulation
 Drug trials [2]
- (b) Three from:**
 Real thing may be too expensive to build
 Real thing requires too large a time scale
 Real thing would be too wasteful of materials
 Real thing is too vast a scale
 Real thing may occur too rarely
 Rate of change can be adjusted for human eye to detect
 Corrections can be made if mistakes in real thing/amendments are easier in a model [3]
- 13 Inference engine (1)**
 Interactive input screen (1)
 Knowledge base (1)
 Rules base (1) [4]
- 14 (a) RSI (1)**
 Headaches (1) [2]
- (b) Take regular breaks (1)**
 Put a screen filter in front of the monitor (1) [2]
- (c) Electrocution (1)**
 Fire (1) [2]
- (d) Don't overload electrical sockets (1)**
 Make sure there are no bare wires (1) [2]
- 15 Three from:**
 Keyboard/typing in data
 A bar code (reader)
 A magnetic stripe (reader)
 Touch screen
- Three from:**
 Scanning bar codes/swiping magnetic stripes/touch screen gives fast data entry/keying in data can be slow
 Scanning bar codes/swiping magnetic stripes/touch screen reduces errors/keying in data can lead to data errors
 Keyboards/touch screens are robust/bar codes can be flimsy
 Magnetic stripes are more robust than bar codes [6]

Page 6	Mark Scheme: Teachers' version	Syllabus	Paper
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16 (a) Three from:

Reduced cost of wage bill
Computer readings are more accurate/human errors are reduced
Readings can be taken more frequently/continuously
Nurses can get tired and forget to take readings
Nurses are so busy they might not be able to take readings regularly
Nurses won't be exposed to contagious diseases
Automatic warnings can be generated
Graphs can be produced automatically
Nurses can be freed up to do other tasks

[3]

(b) Four from:

Sensors are used (to generate data)
Data are then sent to computer
Sensors read analogue data
Computers work with digital data only
Data needs to be converted so computers can process/understand data

[4]

17 Six from:

Advantages

Workers can use own office so documents do not get lost in transit/bulky documents/equipment do not have to be carried around
Company can call meeting at short notice
Employees can work from home
Company does not have to pay travelling expenses
Company does not have to pay hotel expenses
Company does not have to pay for conference room facilities
Travelling time is saved
Might be dangerous to fly/travel
Disabled people may find it difficult to travel

Disadvantages

Takes time to train employees
Difficult to call international meetings because of time differences
Initial cost of hardware
Equipment can break down
Strength of signal/bandwidth/lipsync can be a problem/connection can be lost/power cuts
Loss of personal/social contact
Takes time for workers to learn new technology
Can't sign documents

Max. 4 advantages/disadvantages

One mark available for reasoned conclusion

[6]

Page 7	Mark Scheme: Teachers' version	Syllabus	Paper
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18 Four from:

- Data more difficult to copy
- Extra layer of security with PIN number
- Even if stolen card cannot be used unless thief knows PIN number
- Larger amount of information can be stored
- Disabled people find it easier than signing
- Reduces disputes at checkouts over validity of signature/
- Saves time at checkouts
- Not affected by magnetic fields

[4]

19 Eight from:

Fax

Advantages

- Can be used as a legal document
- Documents can be very long

Disadvantages

- Cannot be certain if correct person has received it
- Very slow transmission rates
- Not very good quality
- Documents cannot be edited easily
- Cannot send multimedia files
- Won't be received if line is busy/receiving fax machine switched off/out of paper
- Wastes/expense of ink/paper

Email

Advantages

- Can be confident message will only go to the correct person (if addressed correctly)
- Fast transmission times
- Attachments can be downloaded and edited
- Easier to send large documents

Disadvantages

- Can be slow turnaround times
- Some systems have limits to size of attachments
- Addresses more difficult to remember than phone numbers
- Description of how phishing can occur
- Description of how viruses can be transmitted

Bulletin boards

Advantages

- You don't need an ISP
- Messages can be moderated
- Automatically creates an archive

Disadvantages

- Lack of privacy (every member of the group can see every message)
- In older systems only one person can be online at one time
- Doesn't alert you to incoming messages
- One mark available for reasoned conclusion

[8]