INFORMATION AND COMMUNICATIONS TECHNOLOGY B
PAPER 2 (UNIT 2380)
FOUNDATION TIER

1995

Specimen Paper 2003

Additional materials: none

Candidates answer on the question paper.

TIME 1 hour

Candidate Name	Centre Number	Candidate Number

INSTRUCTIONS TO CANDIDATES

- Write your name in the space above.
- Write your Centre number and Candidate number in the boxes above.
- Answer all the questions.
- Write your answers, in blue or black ink, in the spaces provided on the question paper.
- Read each question carefully and make sure you know what you have to do before starting your answer.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is 100.

1 **(a)** Look at the list below that outlines the output and input devices used for Electronic Point of Sale systems in a shop.

For each piece of equipment, state whether it is an **input** or **output** device.

Equipment	Input or Output device
Digital display	
Keyboard	
Barcode scanner	
Credit/debit card reader	
Printer	

[5]

(b) Explain why the system gives an **audible sound**, or beep, when an item has been scanned.

_____

_____

_____

_____

[3]

2 **(a)** Explain **what a barcode is**, its **purpose**, and **how it is read**.

_____

_____

_____

_____

[4]

(b) Suggest **four** reasons why shops often have a keyboard linked to the barcode reader.

_____

_____

_____

_____

[4]

(c) Explain how the introduction of barcodes has **reduced** the need for a large number of checkout points in shops.

_____

_____

_____

_____

[3]

3   Retail outlets use a range of methods to enter data into their computer systems. Document readers are a vital part of these systems. Three types of document readers are used:

Optical mark reading (OMR)
Optical character recognition (OCR)
Magnetic ink character recognition (MICR)

(a)   State the main features of an **OMR** system.

_____

_____

_____

_____

[4]

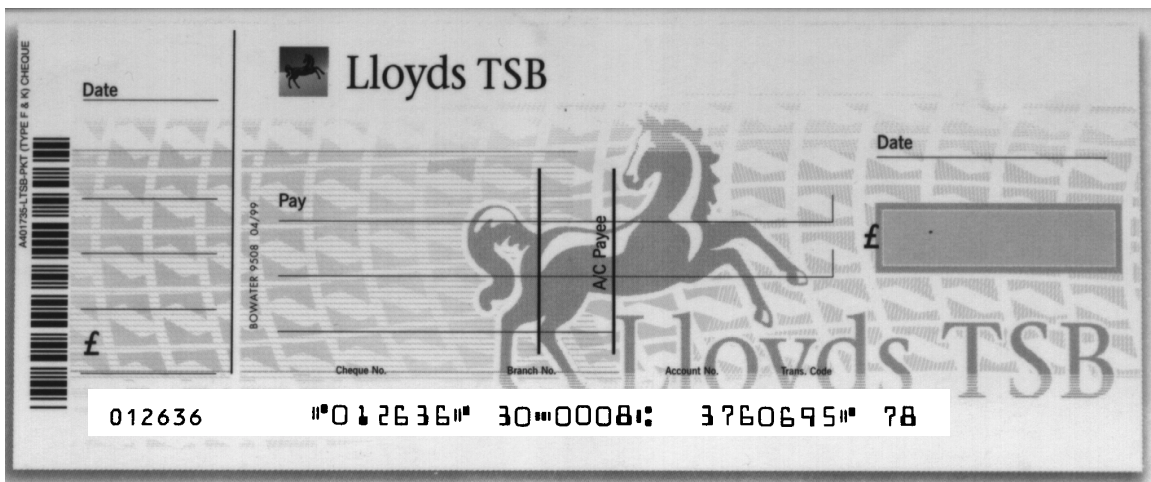**(b)**   State the main features of an **OCR** system.

_____

_____

_____

_____

[4]

(c)   The cheque below uses a Magnetic Ink Character Recognition system(MICR). Characters are recognised by the strength of the magnetism. All major British banks use MICR at the bottom of their cheques to show the cheque number, branch number of the bank and the customer account number.

List **two** advantages and **two** disadvantages of a MICR system.

Advantage 1

[1]

Advantage 2

[1]

Disadvantage 1

[1]

Disadvantage 2

[1]

(d) Explain how credit cards store data electronically.

[4]

(e) What is the purpose of an electronic tag fixed to clothes for sale in a store?

[4]

4 **(a)** In the context of a shop selling clothes, describe **two disadvantages** of moving from a cash based system to a computerised electronic fund transfer system using credit and debit cards.

[4]

(b) In the context of a shop selling clothes, describe **two advantages** of moving from a cash based system to a computerised electronic fund transfer system using credit and debit cards.

[8]

5 A customer takes seven items of clothing to the check out. The items are scanned, individual and total values are displayed, payment is made by credit card and the printer prints out the itemised bill. Draw a flow chart to describe the operation of a shop stock control and customer payment system as described.

[10]

6 **(a)** Briefly describe **two advantages** to a shop of recording the names and addresses of regular customers.

Advantage 1 _____

_____ [1]

Advantage 2 _____

_____ [1]

(b) What other information might a shop want to record about its customers?

_____

_____

_____

_____

_____

[4]

(c) **(i)** To comply with the Data Protection Act, what **step** must a shop take when it keeps data on its customers?

_____

_____

_____

[1]

(ii) List **four** guiding principles of the Data Protection Act.

Principle 1_____

_____ [1]

Principle 2_____

_____ [1]

Principle 3_____

_____ [1]

Principle 4_____

_____ [1]

7 A shop has put all of its data on a computerised system. They are concerned that the data will be lost, destroyed, corrupted, incorrectly modified or copied by someone who should not have access to it.

(a) State **two** ways that data can be lost.

Way 1 _____[1]

Way 2 _____[1]

(b) State **two** ways that data can be destroyed.

Way 1 _____[1]

Way 2 _____[1]

(c) State **two** ways that data can be corrupted.

Way 1 _____[1]

Way 2 _____[1]

(d) State **two** ways that data can be incorrectly modified.

Way 1 _____[1]

Way 2 _____[1]

(e) What is the name given to someone obtaining access to a computer system without authority?

_____[1]

(f) Describe **three** methods used by retailers to ensure that data is not lost or destroyed.

_____

_____

_____

_____

_____

[4]

8 **(a)** **(i)** Modern shops use TV monitors in a number of ways. Suggest **three** ways that a TV monitor can be used.

Way 1

_____ [1]

Way 2

_____ [1]

Way 3

_____ [1]

(ii) How can stores earn **extra** money from in-store TV monitors?

_____ [1]

(b) Describe how the Internet has benefited shoppers and shops.

_____

_____

_____

_____

_____

[4]

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9 (a) The receipt below is taken from Tesco. It shows a large amount of information that is stored on the shops computer system. List five pieces of information, **other than products and prices,** shown on the receipt indicating with an arrow where it is shown.

```
                TESCO.
              ▰ ▰ ▰ ▰ ▰
   ----------------------------------
                                £
   BAG FOR LIFE    *          0.10
   LUXURY T/TISS   *          3.55
   FANTA ORANGE    *          1.09
   VALUE TOMATOES             0.09
   LILT            *          1.09
 **MULTISAVER**    (-0.55)
   FRESH MILK                 0.83
   CARROTS  1KG
 REDUCED PRICE                0.45
   LGE SPLIT TIN              0.49
   BANANAS LOOSE
   1.550 kg @    £0.99/ kg    1.53

   SUB-TOTAL                  9.22
   ----------------------------------
   MULTISAVER SAVING         -0.55
              -------------
   TOTAL SAVINGS             -0.55
   ----------------------------------
   TOTAL TO PAY               8.67




 THE NEXT ITEM IS CANCELLED
 MANUAL WEIGHT
   BANANAS LOOSE
   1.550 kg @    £0.99/ kg   -1.53
   BANANAS LOOSE
 REDUCED PRICE
   1.550 kg @    £0.55/ kg    0.85

   TOTAL                      7.99
   VISA DEBIT                17.99
   CASH DUE                  10.00
 ===================================
    CLUBCARD  STATEMENT
 ===================================
 CLUBCARD NUMBER 63400400018483335*
 POINTS THIS VISIT             14
 INCLUDES :
   BONUS POINTS                 7
 TOTAL UP TO 26/04/00         751
 TOTAL INCLUDES :
   APRIL SPEND :              182
   ----------------------------------
 CLUBCARD DEAL KEYS THIS VISIT   0
 KEYS TOTAL UP TO 26/04/00      54
 ===================================
    CONGRATULATIONS!!!

        YOU  ARE  A

    ▨▨▨▨▨▨▨▨▨▨▨▨▨▨▨▨
       KEY  HOLDER
    ▨▨▨▨▨▨▨▨▨▨▨▨▨▨▨▨
   ----------------------------------
     CONGRATULATIONS

   YOU HAVE QUALIFIED FOR THE APRIL OFFER

   LOOK OUT FOR YOUR TUSSAUDS VOUCHERS

        IN YOUR MAY MAILING
```

[10 marks]

(b) Why is each item purchased shown separately on the receipt?

_____

_____

[4]

Oxford Cambridge and RSA Examinations

General Certificate of Secondary Education

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MARK SCHEME

Specimen Paper 2003

1	a	Digital display - output Keyboard - input Barcode scanner - input Credit/debit card reader - input Printer – output	[5 marks] AO3
1	b	The saves the checkout worker having to look at the screen; the beep only sounds when the item has been scanned correctly. It saves time and also tells the customer the item has been scanned once, correctly.	[3 marks] AO3
2	a	1 mark for what a barcode is then marks will be awarded for each valid point, related to purpose and use, that uses correct terminology, up to a maximum of 3 marks. Markers should indicate valid points with a tick. Sample answer with valid points in bold: A barcode consists of a number of parallel **lines of different widths**, marked on each item for sale. Each bar represents a **number which in turn reflects a code for the item**. As each item is scanned by passing it **over a scanner** which, using an **infrared laser beam**, reads the barcode.	[4 marks] AO3
2	b	1 mark for each valid reason, that uses correct terminology, up to a maximum of 4 marks. Markers should indicate valid reasons with a tick. Sample answer with valid points in bold: Sometimes **barcodes will not scan**. Where items are **reduced**, manual entry of codes is necessary. Some items, such as fresh bakery goods, **may not have barcodes** and have to be entered manually. Labels may be **lost or missing**	[4 marks] AO3
2	c	1 mark for each valid point, that uses correct terminology, up to a maximum of 3 marks. Markers should indicate valid reasons with a tick. Sample answer with valid points in bold: As there is **no need for anyone to input the data** using keyboard or mouse, the operation of data entry is **speeded up considerably**, enabling checkout staff to process **more customers** more **accurately**.	[3 marks] AO5
3	a	1 mark for each valid point, that uses correct terminology, up to a maximum of 4 marks. Markers should indicate valid reasons with a tick. Sample answer with valid points in bold: An OMR system **reads lines or marks** which have been made in **exactly the right** positions on a card or document. Usually a card or document has **empty boxes** to take the marks which are usually made in **pencil**. The data is usually simple because the user can only **make marks and cannot write information**. There has to be a **large number** of documents produced to justify designing and printing them	[4 marks] AO3
3	b	1 mark for each valid point, that uses correct terminology, up to a maximum of 4 marks. Markers should indicate valid reasons with a tick. Sample answer with valid points in bold: An OCR system recognises **characters and letters** from their **shape**. Some OCR systems can even read **hand written characters**, provided that they have been written **clearly**. OCR systems are far more **versatile** than OMR but sometimes **fail to recognise people's handwriting**. An OCR system works by **measuring light** reflected from paper and ink.	[4 marks] AO3

3	c	MICR is very difficult to forge; documents can still be read when folded, written on or even when the numbers are totally covered. MICR readers and encoders are very expensive to buy; the system can only accept a few characters.	[4 marks] AO4
3	d	1 mark for each valid point, that uses correct terminology, up to a maximum of 4 marks. Markers should indicate valid reasons with a tick. Sample answer with valid points in bold: Most credit cards have a short length **of magnetic coating** printed on the surface of the card. Retailers **swipe the card** by moving it through a **reader** that takes the data from the magnetic strip. Some of the newer credit cards have a **microchip** that enables them to hold far more information.	[4 marks] AO4
3	e	1 mark for each valid point, that uses correct terminology, up to a maximum of 4 marks. Markers should indicate valid reasons with a tick. Sample answer with valid points in bold: The tag alerts shop staff if someone **tries to take an item out of the shop** before the tag has been **removed.** It must be removed by **a sales assistant** when the item is paid for.	[4 marks] AO5
4	a	1 mark for each valid point that uses correct terminology, up to a maximum of 4 marks for disadvantages with expanded reasons. Example answers: a large number of people do **not have bank accounts**; a number of people **prefer to pay by cash**; cards are not practical **for buying small**, **inexpensive** items; both **buyer** and **seller** have **to pay charges** for most card services.	[4 marks] AO4
4	b	1 mark for each valid point, that uses correct terminology, up to a maximum of 4 marks for advantages with expanded reasons. Markers should indicate valid reasons with a tick. Sample answer with valid points in bold: There is **increased security** from theft because neither **buyer** nor **seller** need to have **large amounts of cash**; **transfer of money** between bank accounts is simple	[4 marks] AO4
5		Start Scan item Process code Update stock database Send decoded information to VDU and printer VDU displays item and price Printer stores item information Scan next item If there are no more items in this transaction, scan credit card Check credit Print itemised bill End of process Scanner ready for next customer transaction Stop	[10 marks] AO4

6	a	1 mark for each valid point, that uses correct terminology, up to a maximum of 2 marks for advantages. Markers should indicate valid reasons with a tick. Sample answers with valid points in bold: This gives the shop details of **customer names and addresses** for **direct promotions** and **advertising**. The shop can remember the names of its regular customers and be friendlier	[2 marks] AO4
6	b	1 mark for each valid point, that uses correct terminology, up to a maximum of 2 marks for advantages. Markers should indicate valid reasons with a tick. Sample answer with valid points in bold: The shop might want to record what people buy and offer points or coupons to encourage customers to **continue shopping** at the shop because they want to build up points. It would also allow the shop to look at **individual customer buying preferences** and to **tailor stock** more accurately to **customer demand**.	[4 marks] AO5
6	ci	The retail outlet must register with the Data Protection Act bureau that it has a loyalty card scheme.	[1 mark] AO5
6	cii	1 mark for each valid principle, that uses correct terminology, up to a maximum of 4 marks. Markers should indicate valid answers with a tick. Sample answers: Data must be accurate; data may only be used or disclosed in the way in which it was registered; data must be obtained fairly and lawfully; people must be able to have information about them disclosed if they request it; the retailer must protect data held.	[4 marks] AO5
7	a	1 mark for each valid way, that uses correct terminology, up to a maximum of 2 marks. Markers should indicate valid answers with a tick. Sample answers: by loosing the disks or tape, because the files have not been named properly, because data was stored in the wrong place.	[2 marks] AO5
7	b	1 mark for each valid way, that uses correct terminology, up to a maximum of 2 marks. Markers should indicate valid answers with a tick. Sample answers: by fire or floods, by accidental deletion.	[2 marks] AO5
7	c	1 mark for each valid way, that uses correct terminology, up to a maximum of 2 marks. Markers should indicate valid answers with a tick. Sample answers: by faulty equipment. By interference during communication, by software problems such as crashes, by power surges.	[2 marks] AO4
7	d	1 mark for each valid way, that uses correct terminology, up to a maximum of 2 marks. Markers should indicate valid answers with a tick. Sample answers: by being unintentionally written over, for malicious reasons such as fraud, by being updated with incorrect data.	[2 marks] AO4
7	e	Hacker	[1 marks] AO5
7	f	1 mark for each valid point, that uses correct terminology, up to a maximum of 4 marks. Markers should indicate valid answers with a tick. Sample answers with key points in bold: Retailers often use a backup system; passwords are used to ensure that only authorised people have access to data; regulators are used to ensure continuous, steady flow of power; backup generators and standby systems can operate when necessary	[4 marks] AO5

8	ai	1 mark for each valid point, that uses correct terminology, up to a maximum of 1 mark. Markers should indicate valid answers with a tick. Sample answers with key points in bold: **Display monitors** carrying advertising videos and text messages; **touch screens** for customers to price and order their own purchases - **computerised ordering terminals**; **video cameras and TV screens** for security;	[3 marks] AO4
8	aii	By advertising goods for their supplies and charging them for it	[1 mark] AO4
8	b	1 mark for each valid point, that uses correct terminology, up to a maximum of 4 marks. Markers should indicate valid answers with a tick. Sample answers with key points in bold: The internet can reach a **wider range of customers** all around the world; You don't need shops and you and the **shop can be located anywhere** you want. **Large numbers of buyers** can increases buying power and therefore **bring down prices**.	[4 marks] AO4
9	a	See sheet below	[10 marks] AO4
9	b	To enable the customer to check the prices and make sure the system is correct.	[1 marks] AO3

Answer for question 9a

```
          TESCO

------------------------------------
                              £
  BAG FOR LIFE    *          0.10
  LUXURY T/TISS   *          3.55
  FANTA ORANGE    *          1.09
  VALUE TOMATOES              0.09
  LILT            *          1.09
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1.550 kg @     £0.99/ kg     1.53

  SUB-TOTAL                  9.22
------------------------------------
  MULTISAVER SAVING         -0.55
                   ------------
  TOTAL SAVINGS             -0.55
------------------------------------
  TOTAL TO PAY               8.67




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  BANANAS LOOSE
REDUCED PRICE
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  TOTAL                      7.99
  VISA DEBIT                17.99
  CASH DUE                  10.00
====================================
  CLUBCARD  STATEMENT
====================================
CLUBCARD NUMBER 63400400018483335*
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TOTAL INCLUDES :
  APRIL SPEND :              182
------------------------------------
CLUBCARD DEAL KEYS THIS VISIT  0
KEYS TOTAL UP TO 26/04/00     54
====================================
  CONGRATULATIONS!!!

      YOU  ARE  A

      KEY  HOLDER

------------------------------------
  CONGRATULATIONS

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      IN YOUR MAY MAILING
```

Multi-saver Item where you buy more than one item ang get a discount

Manually corrected amount – there must have been an error

Visa payment – credit taken direct from Bank account

Cash back – the customer has asked for some cash from the till

Loyalty points scheme to encourage shoppers and give special discounts

The supermarket has the customers address and is going to direct market them

Assessment Grid

Question		AO3	AO4	AO5
1	a	5		
	b	3		
2	a	4		
	b	4		
	c			3
3	a	4		
	b	4		
	c		4	
	d		4	
	e			4
4	a		4	
	b		4	
5			10	
6	a		2	
	b			4
	ci			1
	cii			4
7	a			2
	b			2
	c		2	
	d		2	
	e			1
	f			4
8	ai		3	
	ii		1	
	b		4	
9	a		10	
	b	1		
Totals		**25**	**50**	**25**