Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

General Certificate of Secondary Education
June 2005

INFORMATION AND COMMUNICATION TECHNOLOGY   **3521/H**
(SPECIFICATION A)(FULL COURSE)
Higher Tier

AQA
ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Monday 23 May 2005 1.30 pm to 3.00 pm

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No additional materials are required.
You may use a calculator.

Time allowed: 1 hour 30 minutes

Instructions
- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.

Information
- The maximum mark for this paper is 80.
- Mark allocations are shown in brackets.

For Examiner's Use	
Number	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
TOTAL	
Examiner's Initials	

3521/H

Answer **all** questions in the spaces provided.

1   Each piece of hardware in the table below is either an input, output or storage device. For **each** put a tick in the correct box. As an example, an inkjet printer is an output device and so a tick is placed in the Output column.

Device	Input	Output	Storage
Inkjet printer		✓	
CD-R drive			
Digital camera			
Floppy disk drive			
Graphics digitiser			
Laser printer			
Light pen			
Plotter			
Scanner			
Speakers			

(9 marks)

9

2 A college connects its computers together to form a local area network (LAN).

   (a)   Choose **three** advantages from the list below of connecting computers together in a LAN rather than using standalone machines.

	Tick **three** boxes only
It is cheaper as printers can be shared	
Network computers use cheaper monitors	
Data can be quickly and easily transferred between computers	
Work cannot be lost or corrupted	
Users can access the Internet	
Users can communicate directly with each other	

(3 marks)

   (b)   Give **one** disadvantage of connecting computers together in a LAN rather than using standalone machines.

   ....

   ....

(1 mark)

   (c)   What does the abbreviation WAN stand for?

   ....

(1 mark)

   (d)   Give **two** differences between a LAN and a WAN.

   Difference 1 ....

   ....

   Difference 2 ....

   ....

(2 marks)

7

TURN OVER FOR THE NEXT QUESTION

Turn over ▶

3 A school uses a spreadsheet to help calculate the profit made by its tuck shop. Part of the spreadsheet that calculates the profit made in one day is shown below.

	A	B	C	D	E	F
1	**Product name**	**Cost per item**	**Selling price per item**	**Profit per item**	**Number sold**	**Profit**
2						
3	Chocolate bar	£0.15	£0.25	£0.10	50	£5.00
4	Toffee bar	£0.10	£0.20	£0.10	40	£4.00
5	Strawberry chews	£0.05	£0.10	£0.05	60	£3.00
6	Plain crisps	£0.12	£0.25	£0.13	25	£3.25
7	Cheese crisps	£0.12	£0.25	£0.13	40	£5.20
8	Cola drink (can)	£0.15	£0.25	£0.10	60	£6.00
9	Orange squash (carton)	£0.14	£0.20	£0.06	30	£1.80
10						
11					**Total profit**	£28.25

(a) Which cell contains the selling price of one packet of plain crisps?

	Tick **one** box only
B6	
B7	
C6	
C7	

(1 mark)

(b) Some of the cells in this spreadsheet contain text, number, currency or a formula.
State which **one** of these is contained in the following cells.

(i) B3 ....

(ii) E4 ....

(iii) F4 ....

(3 marks)

(c) Tick **two** boxes to show advantages to the school of using this software package to help them work out the profit rather than using a calculator, pen and paper.

	Tick **two** boxes only
The tuck shop will make more profit	
Time can be saved by replication of formulae	
Changes are automatically re-calculated in totals	
The sweets, crisps and drinks will arrive faster	
More people will use the tuck shop	

(2 marks)

(d) Describe **one** possible disadvantage to the school of using this software package to help them work out the cost rather than using a calculator, pen and paper.

....

....

(1 mark)

7

TURN OVER FOR THE NEXT QUESTION

Turn over ▶

4 A computer system is used to control a crane that puts boxes on to ships. A grip at the end of the crane is used to pick up and put down the boxes.
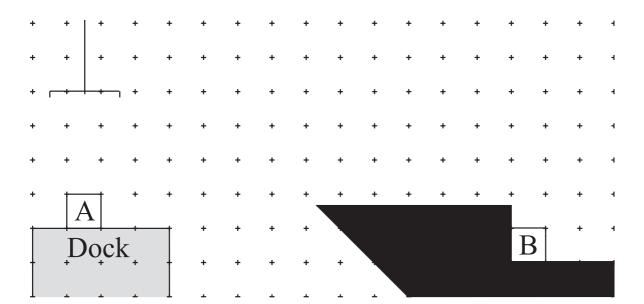
The grip is moved by typing commands into the computer system.

The commands which are used to move the grip are as follows:

RIGHT 2	Move the grip right 2 units
LEFT 3	Move the grip left 3 units
UP 4	Move the grip up 4 units
DOWN 5	Move the grip down 5 units
CLOSE	Close the grip to pick up the box
OPEN	Open the grip to release the box.

Using only commands from the list below, write down the instructions needed for the grip to pick up box A and place it on the ship's deck next to box B. The grip must then return to its original starting position.

Command List
RIGHT 14
LEFT 14
UP 4
UP 3
DOWN 3
DOWN 4
CLOSE
OPEN

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....

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(6 marks)

6

Turn over ▶

5 The definitions given below are all related to data logging and control systems. From the list given, choose the term which best matches the definition in the left-hand column of the table below. Write your answers in the spaces provided.

actuator	feedback	modem
calibrate	graphing	period of logging
data logging	logging interval	sensor
encryption	multiplexer	web browser

Definition	Term which best matches the definition
An input device used to measure environmental conditions	
Collecting and storing of data at regular, fixed intervals over a period of time	
The time taken between the first reading being taken and the last reading being taken	
The time between one reading being taken and the next reading being taken	
To correlate the readings of a sensor against those of a known standard	
The modification or control of a process or system by its results or effects	

(6 marks)

6

6 Fill in the blanks in each of the sentences below. Choose the correct words from the following list.

Analysis   A mouse
Compression   OMR
Encryption   A password
A field   A transaction file
A key field   Validation
A keyboard   Verification
A local area network   A virus
A megabyte

(i)   .... can be of fixed or variable length.

(ii)   .... is used to make a file fit in a smaller space in backing store.

(iii)   .... is used to prevent use of stolen data.

(iv)   .... is used to limit access to data.

(v)   .... infects computer systems and can damage data.

(vi)   .... needs to be sorted before merging with a master file.

(6 marks)

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6

TURN OVER FOR THE NEXT QUESTION

7 (a) Which **three** of the following tasks are carried out by all operating systems?

    A transferring data to a printer
    B replicating data in a spreadsheet
    C changing the text size in a word processing document
    D allocating CPU time
    E accepting keyboard input
    F copying a drawing on screen

Write the correct letters in the spaces below.

Answers ....   *(3 marks)*

(b) Outline an additional task which would have to be carried out by a multi-user operating system.

....

....

(1 mark)

(c) Outline an additional task which would have to be carried out by a multi-tasking operating system.

....

....

(1 mark)

5

8 A music store has recently bought a database to help with its stock control.

Part of the file design for the stock control system is shown below.

Field Name	Data Type	Validation Rule
Product code	Number	Number must be between 1 and 10,000
Product description	Text	Must contain between 5 and 50 characters
Stock level	Number	Number must be greater than or equal to 0 and less than 50
Re-order level	Number	Number must be greater than or equal to 5 and less than 30
Price	Currency	Must be greater than £0.50 and less than £50.00
Product type	Text	Must be from the list CD, DVD, Cassette, Record or Video

(a) Which field is the key field? ....

(1 mark)

(b) Explain what is meant by the term "data validation"..

....

....

(2 marks)

(c) Use the data validation rules given in the file design above to decide whether the following would be accepted or rejected. Put a tick in the correct box of the table below. The first one has been done for you.

Field	Value	Accept	Reject
Product code	4517	✓	
Product description	Double cassette		
Stock level	80		
Reorder level	30		
Price	£10.00		
Product type	DVD		

(5 marks)

(d) When the music shop bought the database package they also received some user documentation. Tick **two** boxes to show the sections that should be in this documentation.

	Tick **two** boxes only
Price list for the CDs	
List of customers	
Details of how to install the database	
Troubleshooting guide	
How many videos the shop has	

(2 marks)
Turn over ▶

9 A vet's practice stores information about its customers on a database. As a data user, the vet's practice must register under the 1998 Data Protection Act.

(a) Give **three** responsibilities the act places on data users.

Responsibility 1 ....

....

Responsibility 2 ....

....

Responsibility 3 ....

....

(3 marks)

(b) Give **two** rights the Data Protection Act gives to the customers.

Right 1 ....

....

Right 2 ....

....

(2 marks)

10 A sports centre has installed a computer system. It will be used to store information about the centre's members on a database.

(a) Explain what is meant by the following terms. You may find it helpful to give examples.

(i) Record ....

....

(ii) Field ....

....

(2 marks)

(b) Give **two** advantages to the sports centre of using a database rather than storing the information on paper in filing cabinets.

Advantage 1 ....

....

Advantage 2 ....

....

(2 marks)

(c) Which **two** of the following would be disadvantages to the sports centre of using a database rather than storing the information on paper in filing cabinets?

	Tick **two** boxes only
The staff may need training to use the computers	
Access to the Internet may be slow	
Access to the Internet may be expensive	
There is a potential danger from hackers	
Details cannot be changed	

(2 marks)

(d) The database contains the members' names, addresses and telephone numbers.
Give **three** other fields which the sports centre may reasonably include in the database.

Field 1 ....

Field 2 ....

Field 3 ....

(3 marks)

Turn over ▶

11 A chain of pizza shops is about to develop its own website. Describe a range of issues that need to be considered in the design, implementation and testing stages of a high quality website.

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(10 marks)

THERE ARE NO QUESTIONS PRINTED ON THIS PAGE