

Surname		Other Names	
Centre Number			Candidate Number
Candidate Signature			

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General Certificate of Secondary Education
June 2003



INFORMATION AND COMMUNICATION TECHNOLOGY 3522/H
(SPECIFICATION B)
(FULL COURSE)
HIGHER TIER

Friday 20 June 2003 1.30 pm to 3.30 pm

H

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

<p>No additional materials are required. You may use a calculator.</p>

Time allowed: 2 hours

Instructions.

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

Information

- The maximum mark for this paper is 120.
- Mark allocations are shown in brackets.

Answer **all** questions in the spaces provided

- 1 An Asian restaurant uses a spreadsheet to record sales.
This is part of the spreadsheet.

	A	B	C	D
1	Meal	Price	Quantity Sold	Takings
2	Meat Bhuna	£4.50	2	£9.00
3	Chicken Tandoori	£5.00	5	£25.00
4	Lamb Balti	£6.50	3	£19.50
5	Vegetable Curry	£3.25	4	£13.00
6				
7			Total Takings =	£66.50

- (a) (i) The cells in the spreadsheet contain different types of information.
Using words from the list, complete the sentences below.

text
a formula
a model
a menu
a number
a date

Cell A3 contains

Cell C4 contains

Cell D3 contains

(3 marks)

- (ii) Tick **one** box to show the format of cell B2.

	Tick one box
currency	
number	
general	
percentage	
time	

(1 mark)

- (b) (i) Write down the formula in cell D4.

.....

(1 mark)

- (ii) Write down the formula in cell D7.

.....

(2 marks)

(c) The price of Vegetable Curry is increased to £4.00.

(i) Describe how the spreadsheet must be edited.

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(2 marks)

(ii) When the spreadsheet has been edited, the values in some cells change automatically. Identify **two** cells which change automatically.

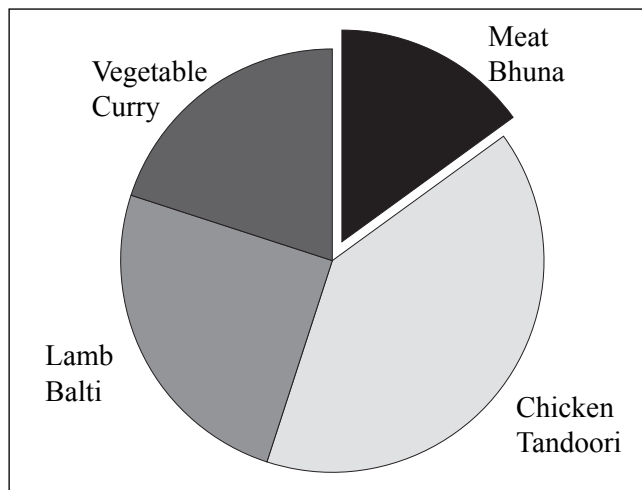
Cell 1:

Cell 2:

(2 marks)

(d) A spreadsheet can generate different types of graph. For each of the following, write down the type of graph shown.

(i) **Takings for meals**

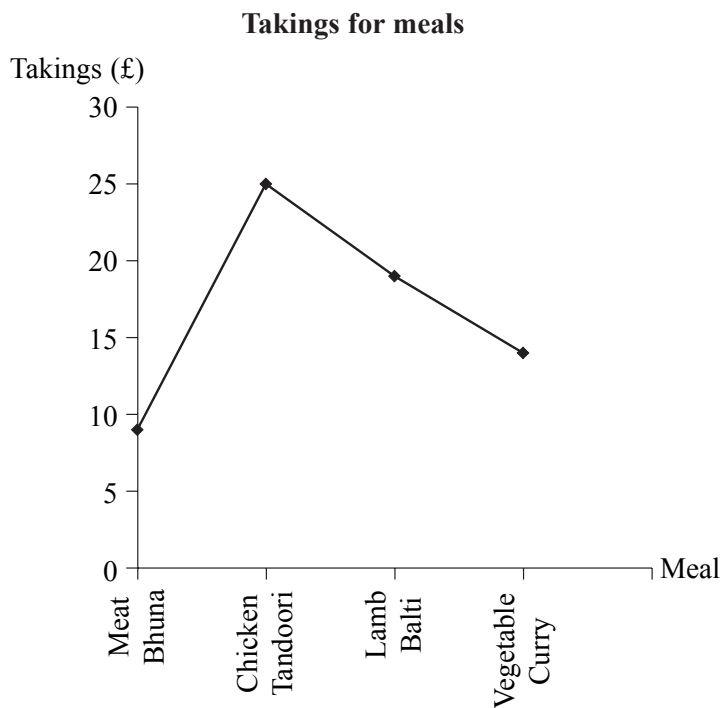


Type of graph.....

QUESTION 1 CONTINUES ON THE NEXT PAGE

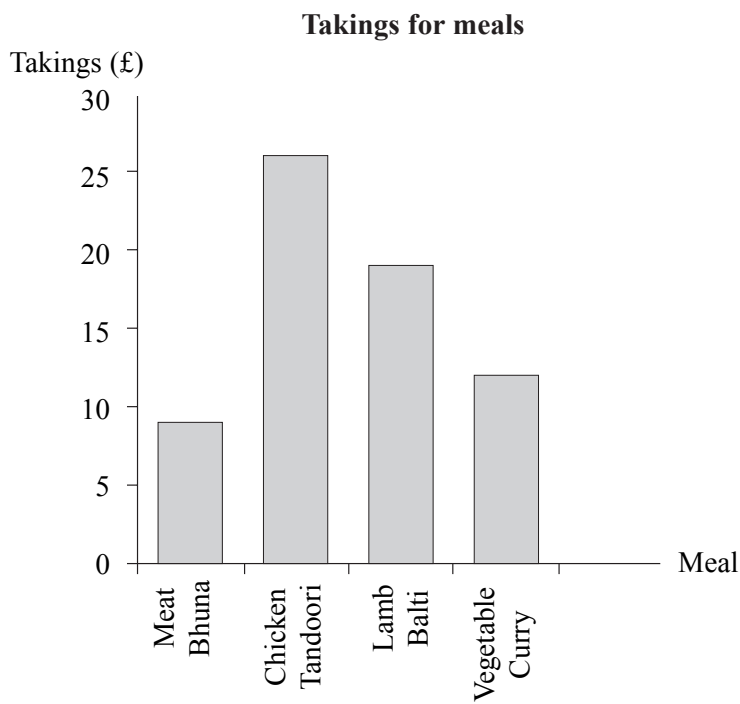
Turn over ▶

(ii)



Type of graph.....

(iii)



Type of graph.....

(3 marks)

(e) Write down the type of graph that **should** be used to illustrate the *Takings for meals*.

.....

Explain why this type of graph should be used.

.....

.....

(1 mark)

15

TURN OVER FOR THE NEXT QUESTION

Turn over ▶

- 2 The NANOTEX manufacturing company keeps personal information about its employees on a database on a computer.
This is part of the database.

Employee Number	Name	Job Title	Weekly Wage (£)
09834	Jones	Fitter	250
01834	Hood	Packer	200
08374	Habib	Packer	200
19774	Clarke	Supervisor	5000
03452	Cook	Electrician	250
18973	Casey	Packer	200

- (a) Write down the name of the *key field*.

.....
(1 mark)

- (b) Data in one **Weekly Wage** field is probably incorrect.
Describe in full a validation check that the computer could use to detect this error.

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.....
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.....
(3 marks)

- (c) (i) Write down the name(s) of the employee(s) whose record(s) are selected using this search condition.

Search condition: **Name** begins with C AND **Job Title** is Packer

Records selected:
(1 mark)

- (ii) Write down the name(s) of the employee(s) whose record(s) are selected using this search condition.

Search condition: **Employee Number** begins with 1 OR **Job Title** is Packer

Records selected:
.....
(1 mark)

(iii) Write down the name(s) of the employee(s) whose record(s) are selected using this search condition.

* is a wild card.

Search condition: **Name** is H*

Records selected:

(1 mark)

(d) This search condition is used to search the database.

Search condition: **Weekly Wage** is less than 500 AND **Employee Number** is 03452

Write down a more efficient search condition.

.....

.....

(1 mark)

(e) NANOTEX collects information about its employees using an Optical Mark Recognition (OMR) form.

The OMR form is input to the computer.

Design the section of the OMR form used to collect information about an employee's **Job Title**.

(2 marks)

QUESTION 2 CONTINUES ON THE NEXT PAGE

Turn over ▶

(f) Discuss the advantages and disadvantages of using an OMR form to input information to a computer compared to using voice recognition.

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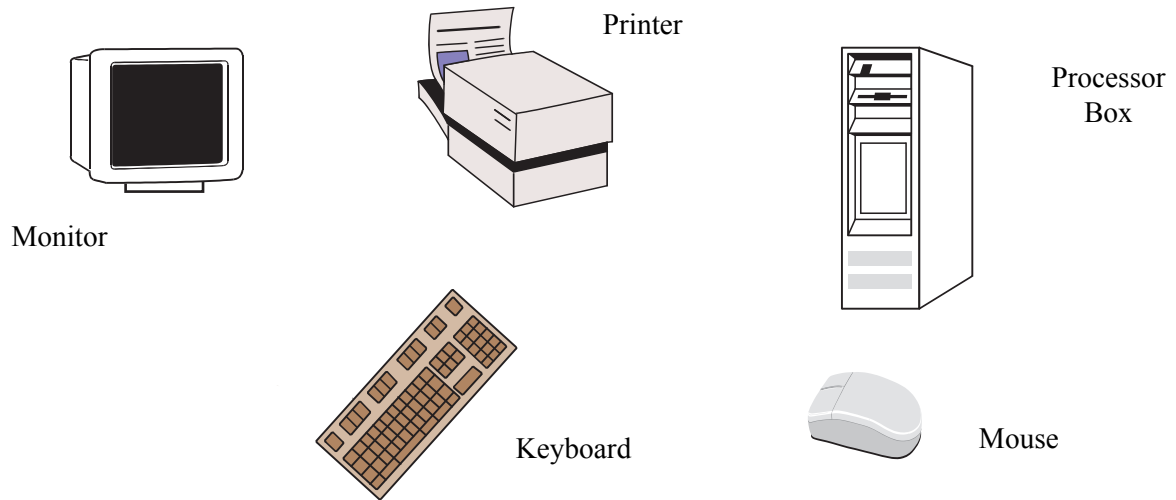
.....

(5 marks)

15

- 3 (a) A school technician is setting up a new computer system that has just been delivered.

The computer system has these component parts.



Cables are used to connect the parts when the computer system is set up.
Draw lines on the diagram to show the cables that connect the parts.

(2 marks)

- (b) The computer is connected to a Local Area Network (LAN).

- (i) State what **must** be installed in the Processor Box so that the computer can be connected to a LAN.

.....
(1 mark)

- (ii) Draw a labelled diagram of a LAN that shows the hardware that would be connected to it. This should include the connections between at least three computers and a file server.

(2 marks)

QUESTION 3 CONTINUES ON THE NEXT PAGE

Turn over ►

- (c) Some people wrongly think that a computer’s Random Access Memory (RAM) and its hard disk are the same.

Describe **three** ways a computer’s RAM and its hard disk are **not** the same.

Way 1:

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Way 2:

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Way 3:

.....

(3 marks)

- (d) The computer will be used in school to access a distance learning course on the Web.
The course is for GCSE English.
This course can also be accessed using a computer from home.

- (i) Describe **three** pieces of software that must be installed on a computer in order to access the distance learning course on the Web.

Piece of software 1:

.....

Piece of software 2:

.....

Piece of software 3:

.....

(3 marks)

- (ii) Give **two** advantages to a pupil of distance learning compared with traditional classroom based learning in schools.

Advantage 1:

.....

Advantage 2:

.....

(2 marks)

- (iii) Give **two** disadvantages to a pupil of distance learning compared with traditional classroom based learning in schools.

Disadvantage 1:

.....

Disadvantage 2:

.....

(2 marks)

15

TURN OVER FOR THE NEXT QUESTION

Turn over ▶

4 A weather station is located next to a country road on the edge of a large city.

- (a) The weather station has a sensor which is used to record the temperature. The temperature is only recorded at midday every day. The council uses this temperature to predict when the roads will be icy so that it can grit them. The council finds the roads are often not icy when it predicts they will be, and it wastes grit.

Describe how the council could improve the accuracy of the prediction that the roads will be icy.

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(3 marks)

- (b) Describe **three other** types of information that sensors on the weather station might be used to record.

Type of information 1:

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Type of information 2:

.....

Type of information 3:

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(3 marks)

The weather station photograph is not reproduced here due to third-party copyright constraints. The full copy of this paper can be obtained by ordering 3552H from AQA Publications Tel: 0161 953 1170

QUESTION 4 CONTINUES ON THE NEXT PAGE

Turn over ▶

- (c) A person used to visit the weather station to collect the information recorded.
The weather station is now connected to the council’s computer.
The council’s computer collects the information recorded.

Discuss the advantages and disadvantages in using the council’s computer instead of a person to collect the information recorded.

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(4 marks)

- (d) A closed circuit television camera (CCTV) is mounted on the weather station.
There are CCTV cameras in other places.
The CCTV cameras send pictures to a control centre.

Some people are concerned about the widespread use of CCTV cameras.
Explain why people might be concerned about the widespread use of CCTV cameras.

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(5 marks)

5 VideoNow is a video rental shop.

(a) VideoNow is going to install a new ICT system.

These are some of the tasks VideoNow is going to do.

Label	Task
A	Produce instructions that tell users how to operate the ICT system
B	Purchase the hardware and software to be used
C	Check that the ICT system works
D	Produce a flowchart of the new ICT system
E	Train users to operate the new ICT system

Write down the label of the task which is a part of systems design.

.....

Write down the label of the task that is a part of writing documentation.

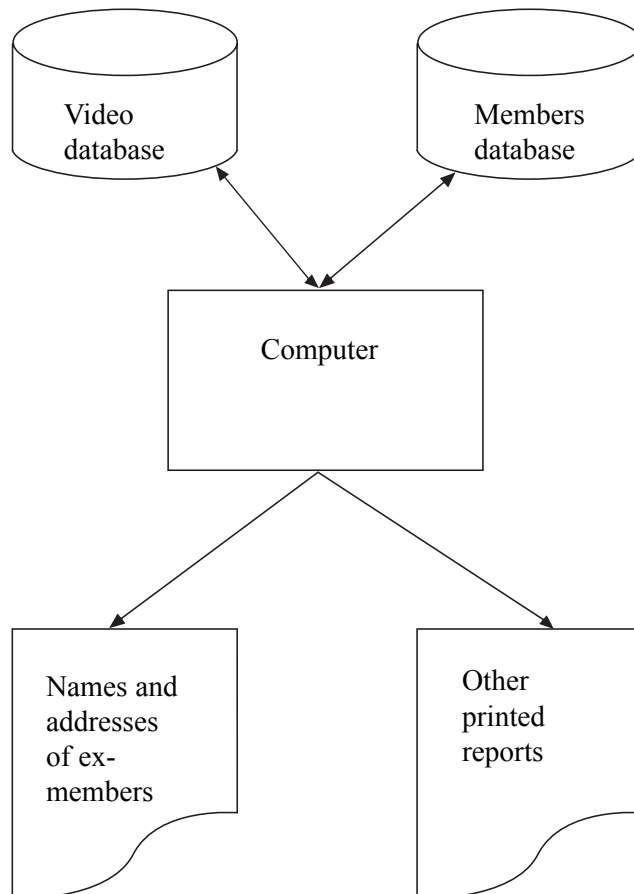
.....

Write down the label of the task that is a part of testing.

.....

(3 marks)

(b) This is a diagram of the new ICT system.



- (i) Tick **three** boxes to show the lists that the new ICT system could be expected to print.

	Tick three boxes
A list of current members.	
A list showing the bank balance of each member.	
A list of all the videos that are in stock.	
A list showing what type of house each member lives in.	
A list of the videos each member has borrowed.	
A list of all the videos rented from another video rental shop.	

(3 marks)

- (ii) VideoNow prints a list of the names and addresses of ex-members. VideoNow is going to send ex-members a letter to encourage them to visit the shop again. A member of staff writes the names and addresses onto the letters. Describe a better method of doing this using a wordprocessor.

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(3 marks)

- (c) (i) This is part of the user documentation for the new ICT system.
This is not good user documentation.

If you don't see the Database Wizard on the Data menu it may not be installed. You will need to install the add-in. Click the Tools menu, click Add-Ins, click to select the Database Wizard check box, click OK, and then click Yes to install the Database Wizard. Click Next to continue, and Click Finish to end. Data in existing databases can be added to the Database Wizard's database. Before including data, make sure the location of the fields in the existing database matches the locations of the cells selected as data fields. Click Yes, Include option if you want to add information from existing databases, or click the No, Skip option if you don't want to add any data.

Give **three** reasons why this is **not** good user documentation.

Reason 1:

.....

Reason 2:

.....

Reason 3:

.....

(3 marks)

- (ii) Documentation can be made available on a CD-ROM,
State **three other** ways documentation is made available.

Way 1:

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Way 2:

.....

Way 3:

.....

(3 marks)

15

TURN OVER FOR THE NEXT QUESTION

Turn over ▶

6 ConLev installs and maintains computer-controlled central heating systems.
The computer can turn a heater on or turn it off.

(a) A ConLev engineer sets up the computer that controls the central heating system.

(i) The engineer writes a control program to make the computer keep the temperature at 19 °C.

Complete the program by writing an instruction on line 5.

Line 1:	LEVEL = 19
Line 2:	REPEAT LINES 3 TO 5 UNTIL INTERRUPTED
Line 3:	INPUT THE TEMPERATURE
Line 4:	IF TEMPERATURE IS LESS THAN LEVEL THEN TURN HEATER ON
Line 5:

(3 marks)

(ii) The engineer wants to keep the temperature at 20 °C.

Write down the number of the line that must be changed.

.....

Write down the new instruction.

.....

(2 marks)

(b) Gregory House is a large building.

The owner of Gregory House contracts ConLev to install and maintain a computer-controlled central heating system.

A ConLev engineer installs and maintains the computer-controlled central heating system.

Discuss the advantages and disadvantages to the owner of Gregory House because the engineer is employed by the contractor, ConLev.

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(3 marks)

(c) The computer controlled central heating system has these features:

Label	Feature
A	the software and hardware are easy to maintain
B	the appearance of the hardware is designer styled
C	the software and hardware are reliable
D	the software and hardware are protected from damage by hackers and vandals
E	the software plays a tune when the computer is switched on
F	the software has not been tested

Write down the labels of the **three** features ConLev would want the most.

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(3 marks)

(d) Discuss the advantages and disadvantages to the environment when a computer is used to control a central heating system.

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(4 marks)

TURN OVER FOR THE NEXT QUESTION

- 7 A WebCam is a small video camera connected to the Web.
Any computer connected to the Web can display live video pictures as they are taken by a WebCam.

(a) Tick **three** boxes to show what can be done using a WebCam.

	Tick three boxes
A baby asleep in an upstairs bedroom can be watched by its parents downstairs.	
People in the UK can watch the Prime Minister all day every day.	
Pupils in a science lesson can look at close-ups of the inside of the Sun.	
People all over the world can watch the space shuttle taking off as it happens.	
People can watch the evolution of alien life forms in other galaxies.	
Pupils in a geography lesson can watch a volcano erupting at the other side of the world.	

(3 marks)

(b) Discuss the advantages and disadvantages of using a WebCam.

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(4 marks)

- (c) Describe **two** security threats when a computer is connected to the Internet, and describe how these could be prevented.

Security threat 1:

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How this could be prevented:

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Security threat 2:

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How this could be prevented:

.....

(4 marks)

- (d) Describe **four** ways to prevent the theft or damage of hardware.

Way 1:.....

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Way 2:.....

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Way 3:.....

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Way 4:.....

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(4 marks)

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TURN OVER FOR THE NEXT QUESTION

Turn over ▶

8 (a) Discuss the advantages and disadvantages to a customer of Internet banking and on-line shopping.

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(8 marks)

- (b) Internet banks and on-line shops collect personal information about their customers. They know where their customers live and what they buy. Sometimes they give this personal information to other companies.

Discuss the advantages and disadvantages to a customer because Internet banks, on-line shops and other companies know this personal information.

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(4 marks)

- (c) Describe **three** principles of data protection that protect customers from companies misusing their personal information.

Principle 1:

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Principle 2:

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Principle 3:

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(3 marks)

15

END OF QUESTIONS