Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

General Certificate of Secondary Education
June 2005

**INFORMATION AND COMMUNICATION TECHNOLOGY   3522/F
(SPECIFICATION B)(FULL COURSE)
Foundation Tier**

AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Monday 23 May 2005   1.30 pm to 3.00 pm

F

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

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** the questions in the spaces provided.

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

3522/F

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

1 This is a diagram of a desktop computer system.
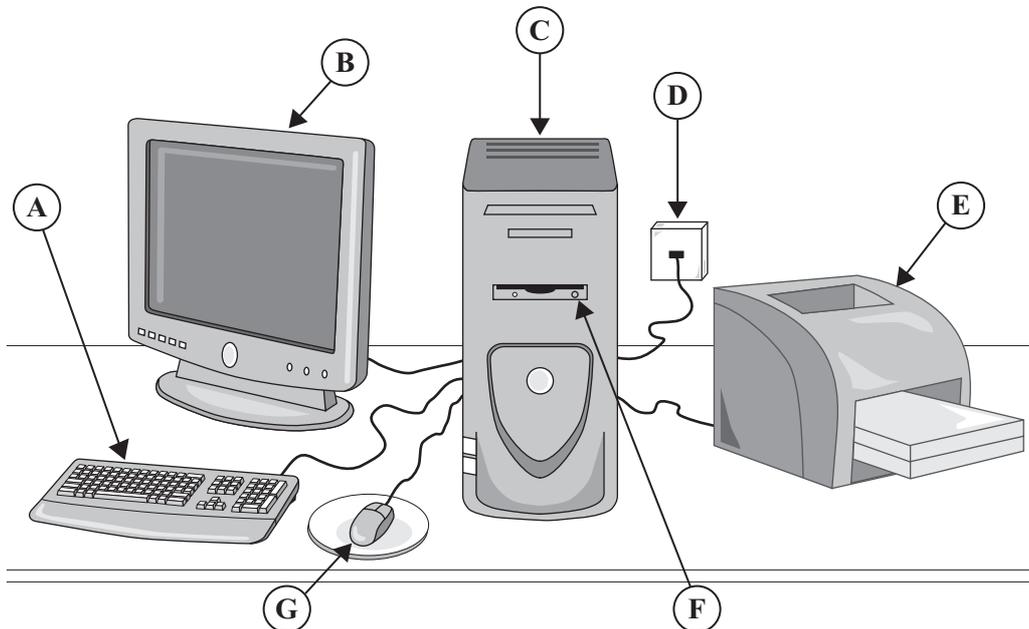
(a) Write down the name of each part of the computer system. One has been done for you.

Part of the computer		Name
	A	
	B	
	C	Processor Box
	E	
	G	

(4 marks)

(b) Join each part of the computer system to a task it is used for. One join has been done for you.

Part of the computer　　　　　　　　　　　**Task**

C　•　　　　　　　　　　　　　　　　　　•　selects from a menu

D　•　　　　　　　　　　　　　　　　　　•　contains the processor, memory and hard disk

E　•　　　　　　　　　　　　　　　　　　•　reads a floppy disk

F　•　　　　　　　　　　　　　　　　　　•　connects to the Internet

G　•　　　　　　　　　　　　　　　　　　•　prints letters and other documents

(4 marks)

(c)   The computer has this software.

      Operating System
      Spreadsheet
      Web browser
      Wordprocessor
      Database
      E-mail

From the list, write down the type of software that is most likely to be used to:

(i)   write a letter;

....
(1 mark)

(ii)   send pictures to relatives in Australia;

....
(1 mark)

(iii)   work out a budget;

....
(1 mark)

(iv)   buy a book or CD on-line.

....
(1 mark)

(d)   A floppy disk has just been formatted.
Tick **three** boxes to show which statements are true.

	Tick **three** boxes
The only file remaining on the floppy disk is a search engine	
There are no files on the floppy disk	
You can store up to 1.44 Mbytes on a 3.5 inch floppy disk	
There are no viruses on the floppy disk	
There are no folders on the floppy disk	
You can store up to 1.44 Gbytes on a 3.5 inch floppy disk	

(3 marks)

15

Turn over ▶

2 A local supermarket has eight checkouts.

The manager uses a spreadsheet model to find out the average time customers have to queue.
This is a screen display from the model.

	A	B	C
1	Total number of customers waiting	32	
2	Number of checkouts in use	4	
3	Average number of customers at each checkout	8	
4	Time to process a customer at a checkout	3	minutes
5	The average time customers have to queue	24	minutes

(a) (i) It has been decided to open more checkouts.
Write down the cell reference of the cell that would be edited.

....
(1 mark)

(ii) Two cells change automatically as a result.
Write down their cell references.

Cell reference 1: ....

Cell reference 2: ....
(2 marks)

(iii) Tick **one** box to show the formula that would be in cell B3.

	Tick **one** box
=AVERAGE(B1:B2)	
=B4	
=B1/B2	
=SUM(B1+B2)	
=B1*B2	

(1 mark)

(iv) Write down the formula that would be in cell B5.

....
(1 mark)

(v) The manager wants to shorten the average time customers have to queue.
Tick **three** boxes to show what would help achieve this.

	Tick **three** boxes
Make one checkout for customers with less than 10 items	
Fit more checkouts in the supermarket	
Put experienced staff that can process customers faster on all the checkouts	
Make one checkout for customers who want to pay in cash	
Advertise the supermarket to increase the number of customers	
Improve the speed at which the checkout technology works	

(3 marks)

(vi) Describe how the model could be modified so that it warns the manager if the average time customers have to queue is more than 10 minutes.

....

....

(1 mark)

(b) The checkouts are connected to the computer in the manager's office.
Some of the data input to the model could be collected using either a manual or an automatic method.

Describe **one** manual and **one** automatic method of collecting the following data.

(i) Data to be collected: Number of checkouts being used

Manual method: ....

....

Automatic method: ....

....

(2 marks)

(ii) Data to be collected: Time to process a customer at a checkout

Manual method: ....

....

Automatic method: ....

....

(2 marks)

(c) The computer in the manager's office can run the model and software for stock control and payroll processing at the same time.

Tick **two** boxes to show features of the operating system used.

	Tick **two** boxes
On-line	
Real time	
Data logging	
Multi-tasking	
Multimedia	

(2 marks)

Turn over ▶

3 XLOG organises international parcel post.

It has offices in London, Manchester, Leeds, Liverpool and Sheffield.

XLOG uses a database to track parcels in transit. This is a part of the database.

Parcel_Number	Customer	Content	Posted_At	Destination
0092	Jones	Clothes	Manchester	Auckland
0297	Patel	CDs	London	Sydney
0453	Bowman	Books	Sheffield	Dijon
0870	Patel	Telephones	Leeds	Berne
0521	Rooney	CDs	Manchester	Toronto
0115	Afzal	Files	Liverpool	Chicago
0033	Delker	CDs	Sheffield	Amsterdam
0676	Rooney	Books	Leeds	Hong Kong

(a) (i) State the name of the key field...

(1 mark)

(ii) Tick **one** box to show why a key field is used.

	Tick **one** box
The key field is coded so that you know what is in the parcel	
The key field is the most important field in a record	
Customers find it hard to remember the **Parcel_Number**	
The key field identifies the parcel	
It is easier to type in the key field than type in the customer's name	

(1 mark)

(b) (i) An employee tries to add this incorrect record to the database.

Parcel_Number	Customer	Content	Posted_At	Destination
0297	Farthing	CDs	Manchester	Berne

Explain why the database should reject this record.

....

....

(1 mark)

(ii) Tick **one** box to show a method of avoiding this problem.

	Tick **one** box
The database should generate the key field	
XLOG should reject all parcels containing CDs	
The Manchester branch of XLOG should be closed	
Customers should choose their own key field	
Parcels going to Berne should be X-rayed	

(1 mark)

(c) An employee tries to add this incorrect record to the database.

Parcel_Number	**Customer**	**Content**	**Posted_At**	**Destination**
0047	Kapila	Manchester	Medicines	Delhi

(i) Explain why the database should reject this record.

....

....

(1 mark)

(ii) Tick **one** box to name a type of check that would detect that this record was incorrect.

	Tick **one** box
Digit	
Validation	
Forensic	
Spelling	
Content	

(1 mark)

(iii) Tick **one** box to show how the database could be set up to detect that this record was incorrect.

	Tick **one** box
Use a table look-up on the **Posted_At** field	
Use a check digit on the **Posted_At** field	
Use a table look-up on the **Customer** field	
Use a range check on the **Destination** field	
Use a frame check on the **Customer** field	

(1 mark)

(iv) Tick **one** box to show an effect of storing incorrect data in a database.

	Tick **one** box
The records selected by a search condition will always have some records missing	
The database software will run faster	
The database will need more space on the hard disk	
The database software will not run	
Sometimes records that should be selected by a search condition will not be selected	

(1 mark)

QUESTION 3 CONTINUES ON THE NEXT PAGE

Turn over ▶

(d)   This is the same part of XLOG's database.

Parcel_Number	Customer	Content	Posted_At	Destination
0092	Jones	Clothes	Manchester	Auckland
0297	Patel	CDs	London	Sydney
0453	Bowman	Books	Sheffield	Dijon
0870	Patel	Telephones	Leeds	Berne
0521	Rooney	CDs	Manchester	Toronto
0115	Afzal	Files	Liverpool	Chicago
0033	Delker	CDs	Sheffield	Amsterdam
0676	Rooney	Books	Leeds	Hong Kong

Write down the **Customer(s)** selected using each of these search conditions.

(i)   Search Condition: **Posted_At** is Leeds

Customer(s) selected: ....

....

(1 mark)

(ii)   Search Condition: **Content** is NOT CDs

Customer(s) selected: ....

....

(1 mark)

(iii)   Search Condition: **Content** is CDs AND **Posted_At** is Manchester

Customer(s) selected: ....

....

(1 mark)

(iv)   Search Condition: **Posted_At** is London OR **Destination** is Amsterdam

Customer(s) selected: ....

....

(1 mark)

(e)   Every day, several hundred parcels are posted at the XLOG offices.
Tick **three** boxes to show which features of the database would make it suitable for XLOG.

	Tick **three** boxes
The database can store information about thousands of parcels	
The database accepts MICR (Magnetic Ink Character Recognition) input	
Information about a parcel can be found very quickly	
The database can be programmed to manage a CD library	
The database can be updated using the Web	
The database can be linked to school pupil record keeping databases	

(3 marks)

4 (a) A teacher uses wordprocessing software to edit this document.

You do not need to read this document.

Information and Communication Technology									
GCSE ICT	A	B	C	D	E	F	G	U	Number entered
Percentage awarded each grade	15%	20%	20%	20%	15%	5%	4%	1%	150

A

Pupils make very good progress in ICT lessons in Key Stage 4 and good progress in Key Stage 3. They listen carefully, work independently, and show interest and sustained concentration. In ICT lessons in Key Stage 3, pupils work through well structured worksheets that ensure they keep records of stage 4, pupils make very good progress with GCSE coursework tasks that are demanding, and they produce substantial and detailed work. In lessons in Key Stage 3, most pupils co-operate effectively, working in pairs and sharing a computer most of the time. GCSE pupils almost always have sole example, in Key Stage 3, pupils understanding of the logic of a flowchart to control the temperature in a greenhouse is developed through challenging, step-by-step questioning by the teacher. The atmosphere in the classroom is relaxed, and teachers support and encourage their pupils.

B

Complete the sentences using words from this list.

space
table
column
line
paragraph

There should always be a .... between one word and the next.

When typing text into a wordprocessor, you should press the <RETURN> key at the end of a

....

Label **A** points to the GCSE ICT results. These are displayed in a ....

The text that label **B** points to is displayed in three ....s.

(4 marks)

(b)

	word A	**word B**
	Technology	**Technology**

Tick **three** boxes to show which statements are true.

	Tick **three** boxes
Word B is underlined whereas word A is not	
Words A and B are both in italic	
Words A and B have different fonts	
Words A and B have different sizes of text	
Word A is in bold whereas word B is not	
Word A has been produced by a wizard whereas word B has not	

(3 marks)

QUESTION 4 CONTINUES ON THE NEXT PAGE

Turn over ▶

(c) This object is inserted in a document.

Complete the sentence using a word from this list.

    space
    pie chart
    word art
    font
    style

This is a .... object.

(1 mark)

(d) The teacher is using presentation software.
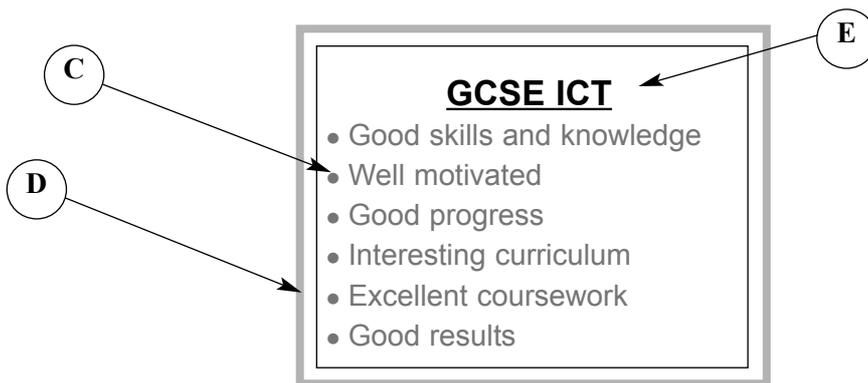
Complete the sentences using words from this list.

    right justified
    bullet
    wizard
    underlined
    border
    centred

Label **C** points at a ....

Label **D** points at a ....

Label **E** points at the heading which is .... and

....

(4 marks)

(e)   **Screen A**   **Screen B**

Information and Communication Technology

GCSE ICT	A	B	C	D	E	F	G	U	Number entered
Percentage awarded each grade	15%	20%	20%	20%	15%	5%	4%	1%	150

Pupils make very good progress in ICT lessons in Key Stage 4 and good progress in Key Stage 3. They listen carefully, work independently, and show interest and sustained concentration. In ICT lessons in Key Stage 3, pupils work through well structured worksheets that ensure they keep records of

stage 4, pupils make very good progress with GCSE coursework tasks that are demanding, and they produce substantial and detailed work. In lessons in Key Stage 3, most pupils co-operate effectively, working in pairs and sharing a computer most of the time. GCSE pupils almost always have sole example, in Key Stage

3, pupils understanding of the logic of a flowchart to control the temperature in a greenhouse is developed through challenging, step-by-step questioning by the teacher. The atmosphere in the classroom is relaxed, and teachers support and encourage their pupils.

GCSE ICT

- Good skills and knowledge
- Well motivated
- Good progress
- Interesting curriculum
- Excellent coursework
- Good results

(i)   Give **one** reason why **Screen B** is better than **Screen A** for presentations to a large audience.

....

....
(1 mark)

(ii)   Give **one** reason why **Screen A** is better than **Screen B** for a handout to people in the audience.

....

....
(1 mark)

(f)   A printed document looks like this.

You do not need to
read this document.

Information and Communication Technology

GCSE ICT	A	B	C	D	E	F	G	U	Number entered
awarded each grade	15%	20%	20%	20%	15%	5%	4%	1%	150

Pupils make very good progress in ICT lessons in Key Stage 4 and good progress in Key Stage 3. They listen carefully, work independently, and show interest and sustained concentration. In ICT lessons in Key Stage 3, pupils work through well structured worksheets that

ensure they keep records of stage 4, pupils make very good progress with GCSE coursework tasks that are demanding, and they produce substantial and detailed work. In lessons in Key Stage 3, most pupils co-operate effectively, working in pairs and sharing a

computer most of the time. GCSE pupils almost always have sole example, in Key Stagood progress in Key Stage 3. T1 and sustained concentration. In ICT lessons in Key Stage 3, pupils work through well structured worksheets that ensure they keep

Tick **one** box to show the orientation of the printed document.

	Tick **one** box
landscape	
picture	
painting	
seaview	
portrait	

(1 mark)

5 A robot vacuum cleaner (R) can move around a room cleaning the carpet.
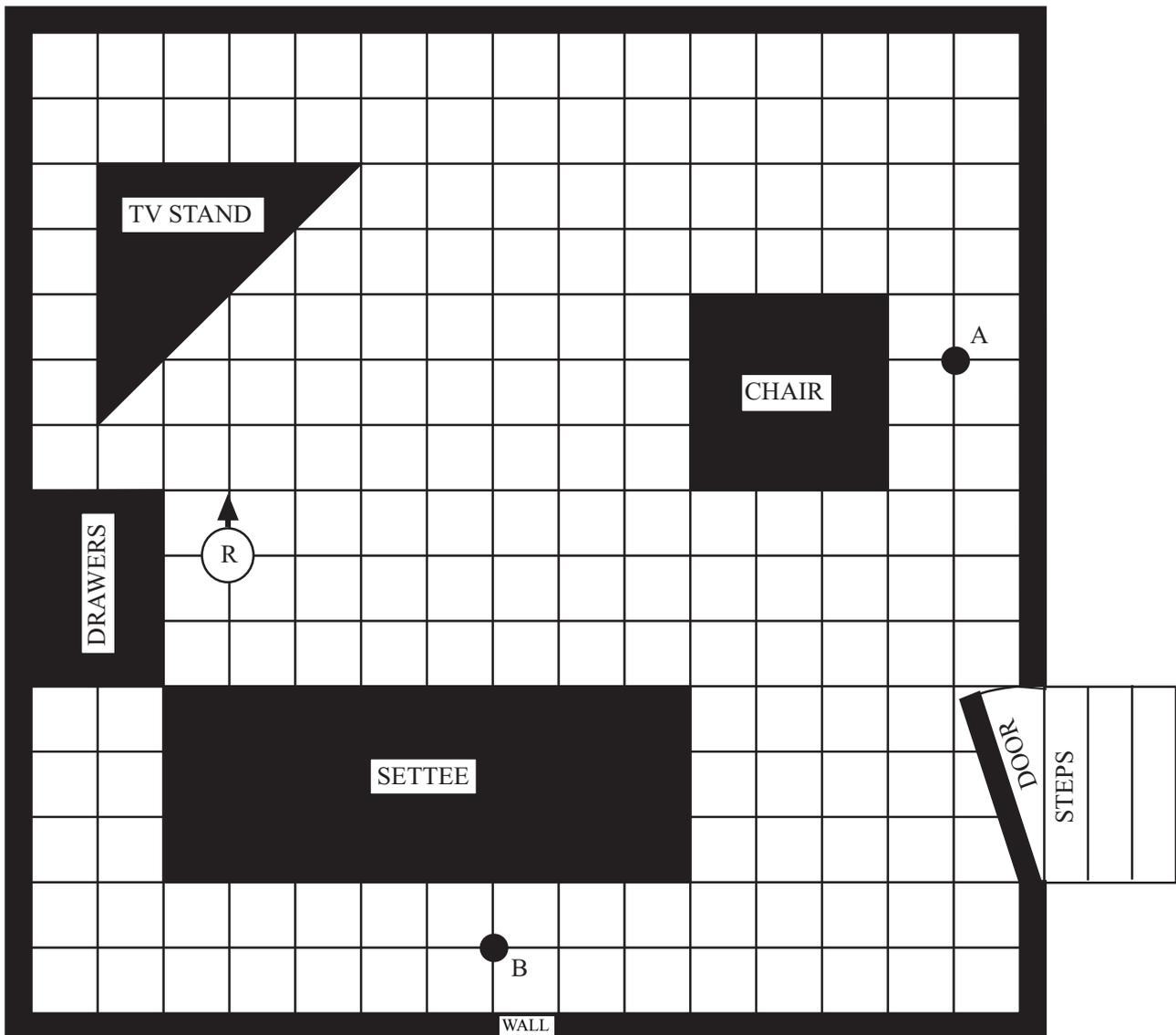
(a) The robot vacuum cleaner can be operated manually from a remote control unit by entering instructions. These are examples of the instructions that can be entered.

Instruction	What the robot vacuum cleaner does
F3	Moves forward 3 squares only
F	Moves forward indefinitely
B2	Moves backwards 2 squares only
L	Turns to the left through 90 degrees
R	Turns to the right through 90 degrees

The robot vacuum cleaner is pointing in the direction shown by the arrow.
These instructions would move the robot from the position shown to point A.

R
F11
L
F3

Write the instructions to move the robot from the position shown to point B.

....

....

....

....

....

....

....

....

(2 marks)

QUESTION 5 CONTINUES ON THE NEXT PAGE

Turn over ▶

(b) The robot vacuum cleaner can operate automatically. It should clean the whole carpet.
The robot vacuum cleaner begins by running this instruction:

F

The robot vacuum cleaner has been programmed so that when it bumps into an object it runs
these instructions:

B1
R
F

(i) On the diagram, draw the path the robot vacuum cleaner will take.
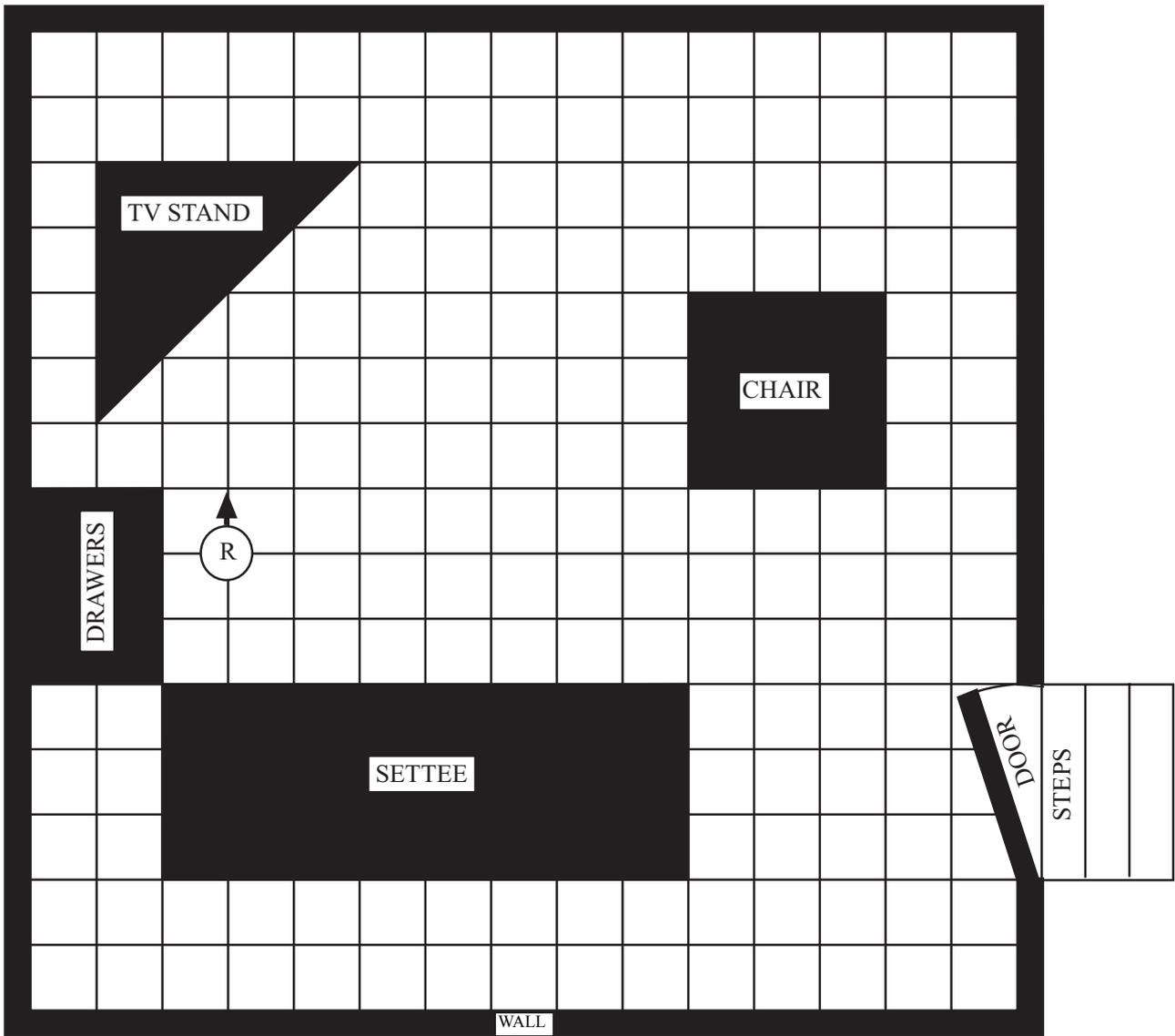
(3 marks)

(ii) Explain why this is a design fault.

....

....

(1 mark)

(c) (i) Tick **one** box to show a type of sensor the robot vacuum cleaner could use to detect an object it bumps into.

	Tick **one** box
Touch	
Sand	
Moisture	
Heat	
Output	

(1 mark)

(ii) This is a diagram showing the robot vacuum cleaner from the side.
Put a cross on the diagram to show where the sensor must be.

Moves in this direction

Floor
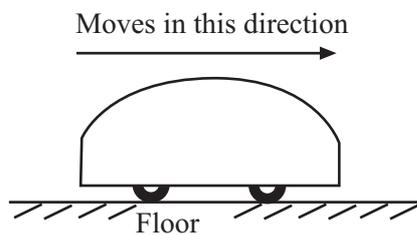
(1 mark)

(iii) Tick **one** box to show a type of actuator the robot vacuum cleaner must use.

	Tick **one** box
Light bulb	
Electric motor	
Petrol motor	
Heater	
Pressure sensor	

(1 mark)

(d) When the door is left open, the vacuum cleaner can go through it and fall down the steps.

(i) On the diagram, put a cross where you would locate a sensor to detect if there were steps.

Moves in this direction
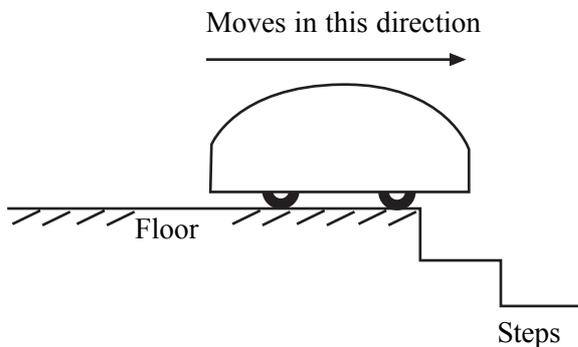
Floor

Steps

(1 mark)

QUESTION 5 CONTINUES ON THE NEXT PAGE

Turn over ▶

(ii) Tick **one** box to show the type of sensor that should be used to detect the steps.

	Tick **one** box
Heat	
Dust	
Moisture	
Floor	
Light	

(1 mark)

(iii) Describe what the robot should do if steps are detected.

....

....

(1 mark)

(iv) The robot uses feedback to avoid the steps.
Describe what is meant by feedback.

....

....

....

....

....

....

(3 marks)

15

6 (a) (i) Tick **two** boxes to show the names of input devices.

	Tick **two** boxes
printer	
keyboard	
mouse	
hard disk	
speakers	

(2 marks)

(ii) Tick **two** boxes to show the names of output devices.

	Tick **two** boxes
printer	
keyboard	
mouse	
hard disk	
speakers	

(2 marks)

(b) Tablet computers and PDAs (Personal Digital Assistants) have touch screens.

(i) Describe **one** way in which a touch screen and a standard monitor screen are different.

....

....
(1 mark)

(ii) Describe **one** way in which a touch screen and a standard monitor screen are similar.

....

....
(1 mark)

(c) A backing storage device has a capacity of 100 Gbytes.
Tick **one** box to show which device this is most likely to be.

	Tick **one** box
DVD	
Digital camera	
CD-ROM	
Hard disk	
Floppy disk	

(1 mark)

QUESTION 6 CONTINUES ON THE NEXT PAGE

Turn over ▶

(d) (i) A student is wordprocessing a document on a computer connected to a LAN (Local Area Network).
The student clicks the print button.
Next, the student closes the wordprocessor.
Some time later, the document is printed on the laser printer which is connected to the network.

Tick **three** boxes to show why this can happen.

	Tick **three** boxes
The student clicked the multimedia button by mistake	
The computer is set to print in background mode	
The operating system is multi-user	
The document is output to the buffer in the printer before it is printed	
The student is using a wizard	
The document is placed in the printer queue on the server before it is printed	

(3 marks)

(ii) Draw a diagram of a LAN showing a file server and at least three computers connected to the network.
You should show on your diagram other networked and local hardware.

(4 marks)

(e)   Tick **one** box to show which of these statements is true.

	Tick **one** box
A floppy disk has a bandwidth of 3 ½ inches	
Bandwidth has no effect on the speed of the network	
If bandwidth is narrow, Internet access using the network is likely to be very slow when there are a large number of users	
Bandwidth is measured in millimetres	
If bandwidth is narrow, the network is very fast when there are a large of users	

(1 mark)

15

TURN OVER FOR THE NEXT QUESTION

Turn over ▶

7 A council wants to charge motorists when they take their cars into the city centre.
The charge will depend on the length of time a car stays in the city centre.
The council is thinking of using an ICT system to do this.

(a) Complete the sentences using words from this list.

> Monitoring and Evaluation
> Testing
> Systems Analysis and Design
> A Feasibility Study
> Implementation

.... is carried out to see if an ICT system could be used.

.... is the production of a detailed plan of the proposed ICT system.

.... is making sure the ICT system works as it should before it is used.

.... includes installing all the hardware and software.

.... is making sure the ICT system works as it should when it is in use.

(5 marks)

(b) To show how the ICT system would calculate the charge for a car, write the labels of the actions in the order they would be carried out.

Labels may be used more than once.

Label	Action
A	Record the time
B	Identify the car as it enters the city centre
C	Send the motorist the bill
D	Calculate the charge
E	Calculate the time the car has been in the city centre
F	Identify the car as it leaves the city centre

Label

(4 marks)

(c) (i) Tick **two** boxes to show the advantages to the community of this ICT system.

	Tick **two** boxes
There will be more traffic in areas around the city centre	
There will be fewer convictions for speeding	
More people will use public transport	
Bills can be sent automatically to motorists	
The ICT system will use solar power and shut down if there is not enough sunshine	

(2 marks)

(ii) There is likely to be less congestion in the city centre.
State **one** other advantage to a motorist.

....

....

(1 mark)

(iii) Tick **two** boxes to show the disadvantages to the community of this ICT system.

	Tick **two** boxes
Shops in the city centre will have fewer customers	
Fewer people will use public transport	
If you buy a car in the city centre you will never have to pay congestion charges	
The ICT system will not work in fine weather	
The ICT system will be expensive to set up	

(2 marks)

(iv) Motorists may have to pay large bills if they take their cars into the city centre.
State **one** other disadvantage to a motorist.

....

....

(1 mark)

15

Turn over ▶

8 The Internet gives access to large volumes of information, and this is often uncensored.
Some countries welcome access to the Internet, but also want to preserve their traditional ways of life.
They are concerned about the impact the Internet could have on their ways of life.

(a) (i) Tick **three** boxes to show how access to the Internet can undermine traditional ways of life in some countries.

	Tick **three** boxes
The Internet will not always work as power supplies are unreliable	
Chat rooms on the Internet allow people in different countries to discuss ideas and beliefs that are different from their own	
Information on the Internet can highlight differences between cultures, for example different attitudes to marriage	
Access to on-line shopping can make poor people dissatisfied because they cannot afford the goods they see	
All the languages of the world are on the Internet	
The Internet encourages harmony	

(3 marks)

(ii) Describe **one** other means by which the Internet can undermine traditional ways of life.

....

....

(1 mark)

(iii) Describe **one** advantage of the Internet to people who feel isolated or lonely.

....

....

(1 mark)

S05/3522/F

(b) Some countries allow use of the Internet for business, but also want to preserve their traditional ways of life.

(i) Tick **two** boxes to show how this might be achieved.

	Tick **two** boxes
National firewalls can make it difficult to access undesirable Web sites	
Everyone can be disconnected from the Internet	
People can ignore it and it will go away	
Nothing has to change if you do not want it to	
Only allow businesses access to the Internet, but not people in their homes	

(2 marks)

(ii) Tick **two** boxes to show why this might **not** be achieved.

	Tick **two** boxes
Their ICT resources are out-of-date and need to be brought up to modern standards	
They have access to on-line banking	
There are so many different ways to connect to the Internet that national firewalls can be avoided	
Restricting the number of people who have access to the Internet does not prevent those who have access looking at restricted information	
People always welcome new technology	

(2 marks)

(c) Some countries do not enforce software copyright legislation.
Tick **two** boxes to show the effects of this.

	Tick **two** boxes
Companies are discouraged from developing software	
You can try out shareware at no charge, but if you continue to use it, you must pay for it	
Companies may not pay for software	
Public domain software is free	
The distribution of hyperware on the Web is reduced	

(2 marks)

QUESTION 8 CONTINUES ON THE NEXT PAGE

Turn over ▶

(d)   The Internet and the Web are part of a trend towards globalisation.
      Discuss the advantages **and** disadvantages of globalisation to an individual country.

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....
                                                                                                                (4 marks)

END OF QUESTIONS

15