Surname		Other Names	
Centre Number			Candidate Number				
Candidate Signature									

Leave blank

General Certificate of Secondary Education
June 2005

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

Higher Tier

Monday 23 May 2005 1.30 pm to 3.30 pm

H

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

Time allowed: 2 hours

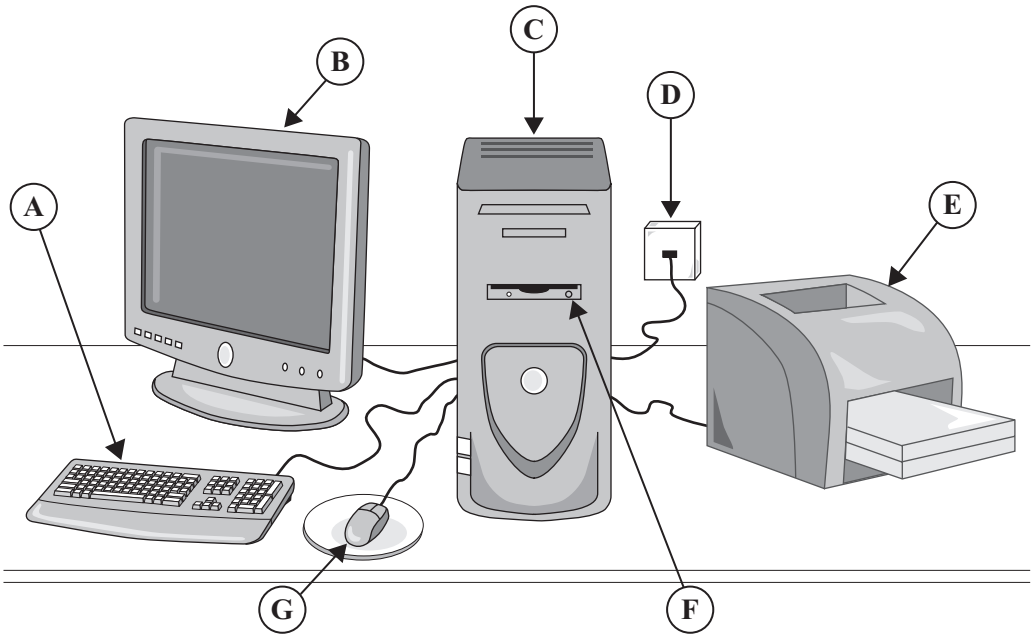
Instructions.
- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** the questions in the spaces provided.

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

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

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

1 This is a diagram of a desktop computer system.



(a) 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**
D •	• selects from a menu
E •	• contains the processor, memory and hard disk
C •	• connects to the Internet
G •	• prints letters and other documents

(3 marks)

(b) 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) send pictures to relatives in Australia;

.....

(1 mark)

(ii) work out a budget;

.....

(1 mark)

(iii) buy a book or CD on-line;

.....

(1 mark)

(iv) format a floppy disk.

.....

(1 mark)

(c) 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)

QUESTION 1 CONTINUES ON THE NEXT PAGE

(d) Describe what must be done to prevent loss or corruption of the data on a hard disk.

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(5 marks)

15

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) The manager wants to shorten the average time customers have to queue.
The number of checkouts in use is increased to eight.
Complete the diagram of the screen display to show the effect of this.

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

(2 marks)

(ii) Write down the formula that would be in cell B3.

.....

(1 mark)

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

.....

(1 mark)

(iv) The manager wants to shorten the average time customers have to queue.
Describe **two** ways to achieve this.

Way 1: .....

.....

Way 2: .....

.....

(2 marks)

(v) 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)

QUESTION 2 CONTINUES ON THE NEXT PAGE **Turn over ▶**

(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)

(d) Describe how this model could be used to help design a new supermarket.

.....

.....

.....

.....

(2 marks)

15

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) Explain why a key field is used.

.....

.....

(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.

.....

.....

.....

.....

(2 marks)

(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)

QUESTION 3 CONTINUES ON THE NEXT PAGE

(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) Describe how the database could be set up to detect that this record was incorrect.

.....

.....

(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)

(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: **Content** is CDs AND **Posted_At** is Manchester

Customer(s) selected: .....

(1 mark)

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

Customer(s) selected: .....

(1 mark)

(iii) * is a wild card
Search Condition: **Posted_At** is M* AND **Destination** is NOT T*

Customer(s) selected: .....

(1 mark)

(e) Every day, several hundred parcels are posted at the XLOG offices.
Describe **one** feature of a database that would make it suitable for XLOG.

.....

.....

(1 mark)

QUESTION 3 CONTINUES ON THE NEXT PAGE

(f) The database has been sorted.

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

Complete the sentence using words from this list.

Ascending
Descending
Condescending
Customer
Posted_At
Parcel_Number

The database has been sorted into .....……...……. order on the

…….……..…….....… field.

(2 marks)

15

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

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.

A

B

Complete the sentences using words from this list.

space
table
column
line
paragraph

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.

(2 marks)

(b) Describe **three** differences between word A and word B.

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

Difference 1: .....

.....

Difference 2: .....

.....

Difference 3: .....

.....

(3 marks)

QUESTION 4 CONTINUES ON THE NEXT PAGE

(c) This object is inserted in a document.

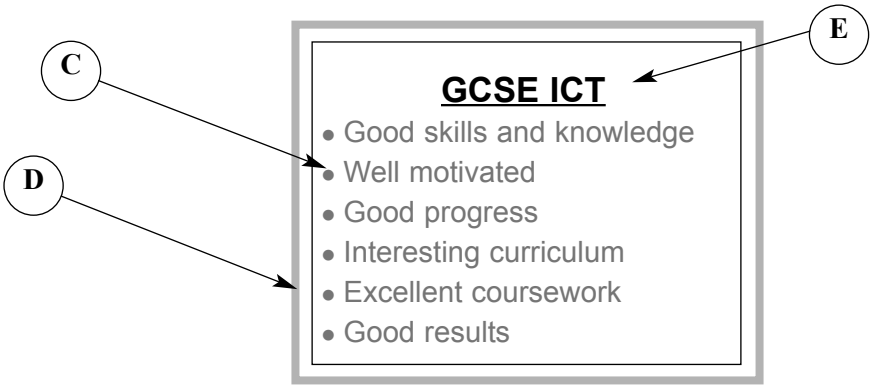
Complete the sentence using a word from this list.

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
border
centred

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

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

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

(3 marks)

(e)

Screen A

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.

Screen B

GCSE ICT

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

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

Reason 1: .....

.....

Reason 2: .....

.....

(2 marks)

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

Reason 1: .....

.....

Reason 2: .....

.....

(2 marks)

(f) The orientation of a printed document can be landscape or portrait.
Describe the differences between landscape and portrait, illustrating your answer with a diagram if necessary.

.....

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.....

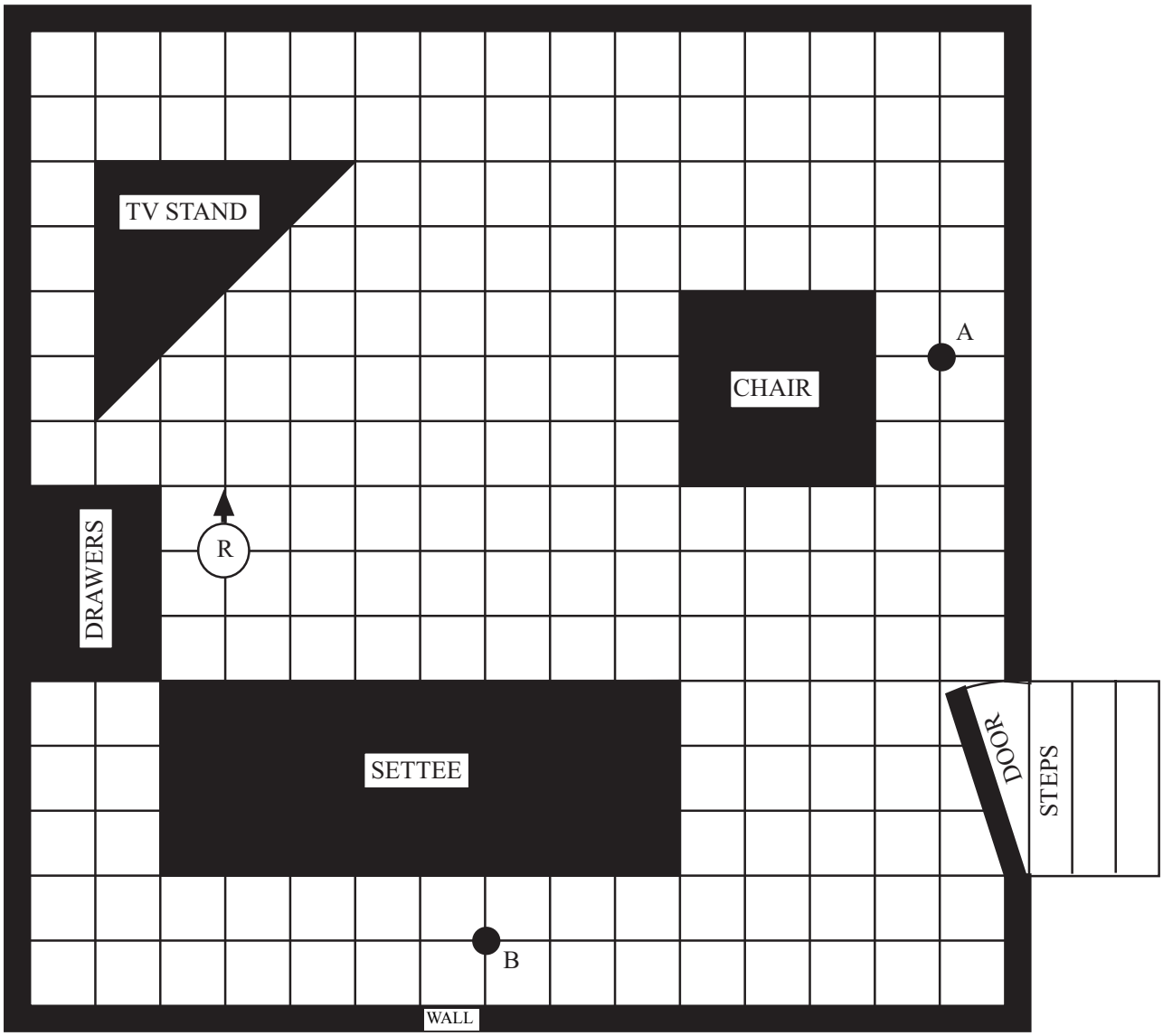
.....

(2 marks)

15

TURN OVER FOR THE NEXT QUESTION

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.

.....

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.....

(2 marks)

QUESTION 5 CONTINUES ON THE NEXT PAGE

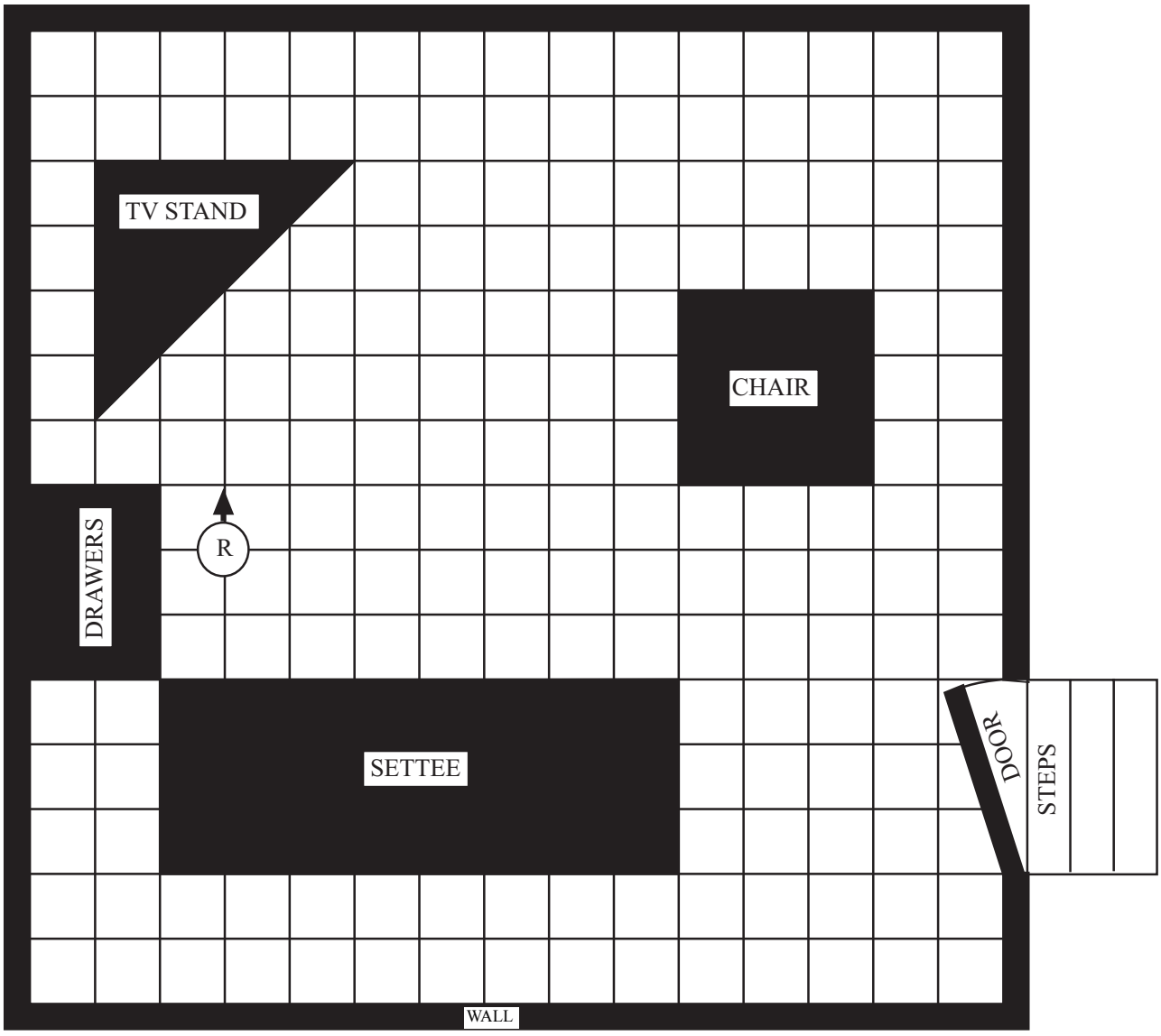
(b) The robot vacuum cleaner can operate automatically. It should clean the whole carpet. The robot vacuum cleaner begins by running this instruction:

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.

.....

.....

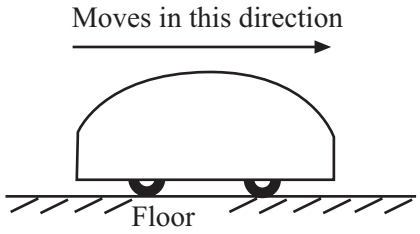
(1 mark)

(c) (i) State a type of sensor the robot vacuum cleaner could use to detect an object it bumps into.

.....

(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.



(1 mark)

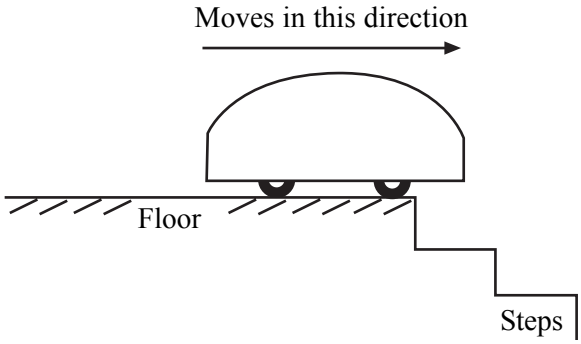
(iii) State a type of actuator the robot vacuum cleaner must use.

.....

(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.



(1 mark)

(ii) State the type of sensor that should be used to detect the steps.

.....

(1 mark)

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

.....

.....

(1 mark)

QUESTION 5 CONTINUES ON THE NEXT PAGE

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

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(3 marks)

15

6 (a) (i) Tick **one** box to show the name of an input device.

	Tick **one** box
processor	
floppy disk	
mouse	
hard disk	
speakers	

(1 mark)

(ii) Tick **one** box to show the name of an output device.

	Tick **one** box
processor	
floppy disk	
mouse	
hard disk	
speakers	

(1 mark)

(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) (i) A backing storage device has a capacity of 100 Gbytes.
State the type of backing storage this is most likely to be.

.....

(1 mark)

(ii) A backing storage device has a capacity of 700 Mbytes.
State the type of backing storage this is most likely to be.

.....

(1 mark)

QUESTION 6 CONTINUES ON THE NEXT PAGE

(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.

Give **three** reasons why this can happen.

Reason 1: .....

.....

Reason 2: .....

.....

Reason 3: .....

.....

(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) Describe how bandwidth affects the performance of a network.

.....

.....

.....

.....

(2 marks)

15

TURN OVER FOR THE NEXT QUESTION

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 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.

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

(3 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) Discuss the advantages **and** disadvantages to the council, businesses and the community of using this ICT system.

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(8 marks)

15

TURN OVER FOR THE NEXT QUESTION

8 The Internet and the Web give 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) Some countries believe that the impact on their traditional ways of life can be avoided, while taking advantage of the business opportunities. They try to achieve this by allowing Internet access only in businesses, but not in people's homes.
Discuss the reasons why this might or might not work.

.....

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(4 marks)

(b) Some countries do not enforce software copyright legislation.
Describe **two** effects of this.

Effect 1: .....

.....

.....

.....

Effect 2: .....

.....

.....

.....

(2 marks)

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

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(9 marks)

15

END OF QUESTIONS

THERE ARE NO QUESTIONS PRINTED ON THIS PAGE