London Examinations IGCSE

Information and Communication Technology

Paper 2H

Higher Tier

Monday 14 May 2007 – Morning

Time: 1 hour 30 minutes

Materials required for examination   **Items included with question papers**
Nil   Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature.
The paper reference is shown at the top of this page. Check that you have the correct question paper.
Answer **ALL** the questions in the spaces provided in this question paper.

Information for Candidates

There are 16 pages in this question paper. All blank pages are indicated.
The total mark for this paper is 100. The marks for the various parts of questions are shown in round brackets: e.g. **(2)**.

Advice to Candidates

You are reminded of the importance of clear English and careful presentation in your answers.
Include diagrams in your answers where these are helpful.

Turn over

Answer ALL questions

1. Fans of a popular television programme have set up a number of web sites. The sites are designed to attract other fans of the programme.

   (a) When fans enter one of the sites they are greeted by a clip from a recent programme. Describe **three other** design features that the web site developers could use to make the sites attractive to fans.

   Feature 1 ....

   ....

   Feature 2 ....

   ....

   Feature 3 ....

   ....

   (3)

   (b) The sites have several Internet services which attract fans to them. For example, the sites belong to a web ring that enables fans to move easily between programme-related sites. State **three other** Internet services that would attract fans. In each case, describe how fans would use the service.

   Service 1 ....

   Use ....

   ....

   Service 2 ....

   Use ....

   ....

   Service 3 ....

   Use ....

   ....
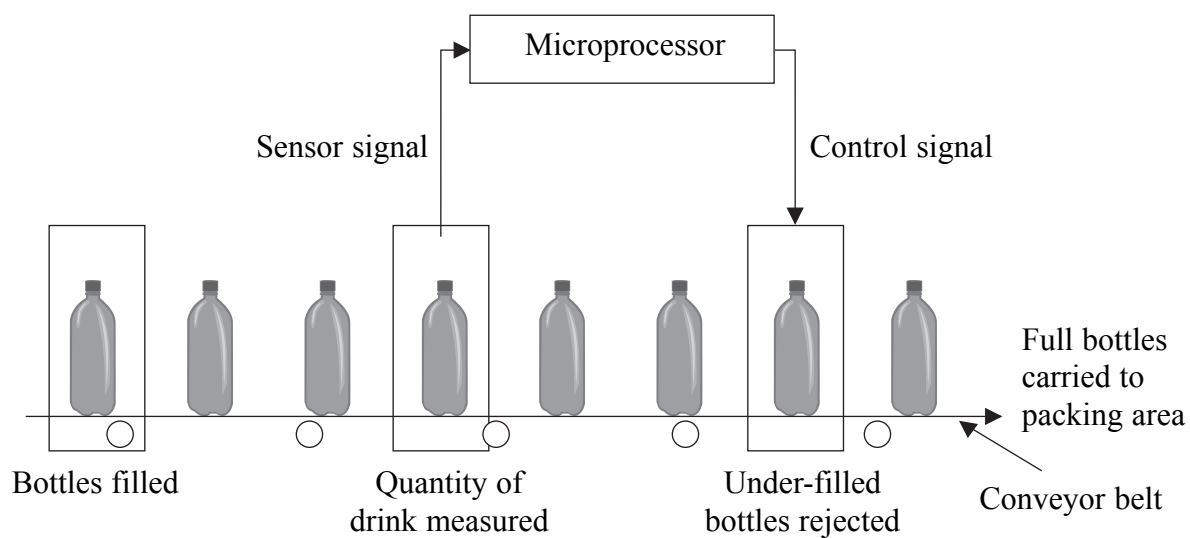
   (6)

   (Total 9 marks)

2. A soft drinks company has an automatic bottling machine. Part of it is shown in the diagram below. The bottles move from left to right.

(a) State a suitable sensor for measuring the quantity of drink in each bottle.

....

(1)

(b) Describe a suitable mechanism for removing under-filled bottles from the conveyor belt.

....

....

....

(2)

(c) Describe the processing that must take place for the microprocessor to decide whether to reject a bottle.

....

....

....

(3)

(d) State **one** essential piece of information that is needed to ensure the correct bottle is rejected after an under-filled bottle is detected.
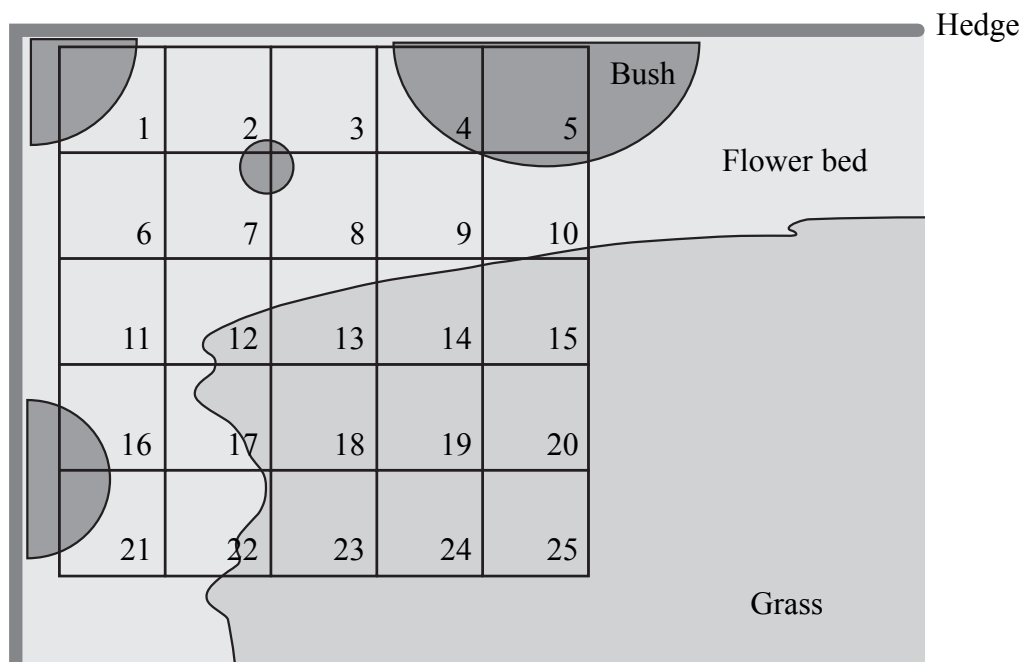
....

(1)

Q2

(Total 7 marks)

3. Twenty-five biology students are given the task of recording the position of snails in a square patch of garden. The patch measures five metres by five metres and is divided by lengths of string into 25 one-metre squares. The layout is shown below.

Garden showing one-metre grid squares

There are four different types of snail in the garden. Each student is given one square and must record how many snails of each type are present in that square.
The task will be repeated every two hours throughout the day.

(a) Design a data collection form for a student to use.

(5)

(b) The data is encoded for storage on a computer. Give **three** reasons why the data is encoded.

Reason 1 ....

Reason 2 ....

Reason 3 ....

(3)

(Total 8 marks)

4. Some PC manufacturers include fingerprint scanners in their machines. These are used to log on instead of entering user names and passwords.

    (a) The fingerprint scanner may be bypassed, so that a user can log on using the keyboard. Give **two** reasons why this facility is needed.

    Reason 1 ....

    ....

    Reason 2 ....

    ....

    (2)

    (b) State **two** other biometric methods that could be used to log on to a PC.

    Method 1 ....

    ....

    Method 2 ....

    ....

    (2)

    (c) Once logged on, a user may still not be allowed to view the contents of a file. Encryption is one method of preventing a user from viewing a file's contents.

        (i) Explain what is meant by **encryption**.

        ....

        ....

        ....

        (2)

        (ii) State **one** other method of preventing a logged-on user from viewing a file's contents.

        ....

        ....

        (1)

(Total 7 marks)

5. The manager of a shoe shop uses a spreadsheet to help her with stock control. Part of the spreadsheet is shown below.

Each cell is named by a column letter and a row number. For example, the word Black is in the cell named A2.

	A	B	C	D	E	F	G
1	Ladies court shoe	Stock code	Size (cm)	Current stock	Re-order level	Maximum stock	Required order
2	Black	CRTBL01	18-20	11	8	25	
3		CRTBL02	21-23	16	8	25	
4		CRTBL03	24-26	13	8	25	
5		CRTBL04	25-29	9	8	25	
6	Red	CRTRD01	18-20	16	6	20	
7		CRTRD02	21-24	14	6	20	

(a) When the manager first filled in the sheet, she found that cell C2 displayed '-2' when she typed in the size 18-20. Suggest how she could make the shoe sizes in column C display as shown in the table.

....

....

....

(2)

(b) The spreadsheet is linked to a database which holds more details about each shoe type.

(i) State which cell or cells would be used for the link.

....

(1)

(ii) Explain your choice.

....

....

....

(2)

At the end of each day, the manager uses the spreadsheet to calculate how much stock needs to be ordered.

For example, if she sells 5 pairs of black shoes, size 18-20, the Current stock in D2 will change from 11 to 6.

This is below the Re-order level of 8, and a Required order of 19 will appear in G2.

Nineteen pairs of shoes are required to bring the Current stock up to the Maximum stock level.

(c) The number in cell G2 is calculated by an IF function.
   The IF function takes the form of IF (condition / true / false)

   (i)   State the formula used in the **condition** part of the function.

   ....

   (2)

   (ii) State the formula used in the **true** part of the function.

   ....

   (2)

   (iii) State what would be in the **false** part of the function.

   ....

   (1)

   (Total 10 marks)

Q5

6. Mr James bought a new laptop, connected it to a broadband Internet connection and started using it. After a week, he noticed that it was slowing down.

Mr James called a service engineer who told him that the laptop had been infected by three dialers, two viruses, ten pieces of spyware and a mail worm.

The engineer told Mr James that a dialer was a program which would try to stop his Internet connection and then reconnect through a more expensive telephone number. He advised Mr James to install a firewall to prevent dialers from working.

State what the engineer should say about the following, and how to avoid them.

(a) Viruses.

....

....

....

....

(3)

(b) Spyware.

....

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....

....

(3)

(c) Mail worms.

....

....

....

....

(3)

(Total 9 marks)

Q6

N 2 6 2 6 0 A 0 9 1 6

7. A graphical user interface (GUI) uses windows, icons, menus and pointers.

(a) Using the context of a word processor, give an example of each to show how it would be used.

Windows

....

....

....

Icons

....

....

....

Menus

....

....

....

Pointers

....

....

....

(4)

(b) Name and briefly describe **two** other types of user interface.

Interface 1 ....

....

Interface 2 ....

....

(4) Q7

(Total 8 marks)

8. Flash memory devices which hold 1 Gb or more of data are now common and usually cost less than the equivalent size of random access memory (RAM) chips.

(a) Explain why PC manufacturers do **not** use flash memory instead of RAM chips for the computer's main memory.

....

....

(2)

(b) Assuming that the problems with using flash memory as main memory could be overcome, explain the advantage that flash memory would have over RAM chips.

....

....

(2)

(Total 4 marks)

9. An electronics company keeps its stock on rows of racks in a warehouse. The warehouse manager uses a database to record where each item is kept. Part of the database is shown below.

Name	Bar code	Stock code	Row	Rack	Stock level
36-inch plasma TV	5010654776657	TVP36-PA	5	7	54
42-inch plasma TV	5010654477626	TVP42-PA	5	9	26
24-inch CRT TV	5010654472978	TVC24-PA	4	4	46
16-inch combined TV / DVD	3629879565664	TVD16-SS	6	7	22
18-inch combined TV / DVD	3629879565546	TVD18-SS	6	8	24
19-inch lcd TV	3934345266759	TVL19-FS	3	3	44
21-inch lcd TV	3934345266792	TVL21-FS	3	4	35

(a) Items may be identified by their bar code or their stock code. Suggest why the manager needs to have both of these in the database.

....

....

....

(3)

(b) Using an example from the database, suggest how information is encoded in the stock code.

....

....

....

....

(3)

(c) The table shows the stock level. At the end of the day, the manager must re-order items when there are fewer than 30 left in stock. State the search condition that he would use.

....

....

(2)

(d) The manufacturer who makes the combined TV / DVDs also makes a 20-inch model. The warehouse manager places an initial order for 50 units. They are stored next to the 16-inch and 18-inch models. The manufacturer's model number for the 20-inch TV is 565728.
Write the new record that should be added to the database.

Name	Bar code	Stock code	Row	Rack	Stock level

(4)

Q9

(Total 12 marks)

10. A company sells kitchen equipment. Customers may place an order by using one of the following methods:

Method 1 – completing a form on the company web site

Method 2 – posting an order form from a catalogue

Method 3 – telephoning a sales line

Payment is made by credit card in each case.

(a) State which of the methods the company might prefer. Give **two** reasons for your choice.

Method ....

Reason 1 ....

....

Reason 2 ....

....

(2)

(b) For **each** of the other methods, give **two** reasons why the company would prefer **not** to use them.

Method ....

Reason 1 ....

....

Reason 2 ....

....

Method ....

Reason 1 ....

....

Reason 2 ....

....

(4)   Q10

(Total 6 marks)

N 2 6 2 6 0 A 0 1 3 1 6

11. A copy of this examination paper is held in a computer's memory in binary. Binary is represented as bits and bytes.

(a) The text characters are held in the form of ASCII or unicode. State **two** differences between ASCII and unicode.

Difference 1 ....

....

Difference 2 ....

....

(2)

(b) Describe how the diagram in Question 3 would be held in a computer's memory while it is being edited on the screen.

....

....

....

(2)

(c) A graphics card can display 16-bit colour or 32-bit colour. Explain what this means.

....

....

....

(2)

(d) Older processors were 16-bit, while modern processors are 64-bit. Explain one limitation of a 16-bit processor compared to a 64-bit processor.

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....

....
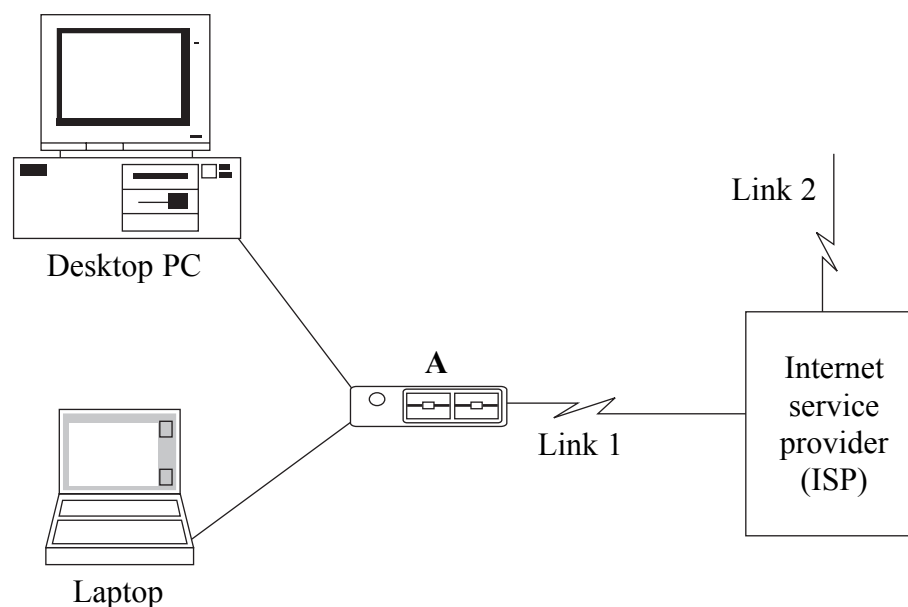
(2) Q11

(Total 8 marks)

12. The diagram shows a home network which is connected to an Internet service provider (ISP) by Link 1. Both computers can connect to the ISP at the same time and can also access each other's hard drives.

(a) Box **A** combines the functions of three separate items of equipment. One of them is a modem. State what the other **two** are.

Item 1 ....

Item 2 ....
(2)

(b) Link 2 is a fibre optic cable which goes from the ISP to the Internet. Explain why a fibre optic cable is required.

....

....

....
(2)

(c) State the item of information that will be needed to make a connection to the ISP's home page.

....
(1)

(Total 5 marks)

Q12

13. A school network has two servers. The first server holds the staff and students' work files. The second server holds backup files.

(a) The work files occupy 10 Gb of disk space and are backed up to the second server. Explain the factors that should be taken into account when designing a backup strategy for the work files.

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....

....

(5)

(b) The first server also holds the school's clip art collection. It occupies 2 Gb of disk space. Describe a suitable backup system for the clip art. Give a reason for your answer.

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....

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....

(2)

Q13

(Total 7 marks)

TOTAL FOR PAPER: 100 MARKS

END