

Centre No.							Paper Reference						Surname	Initial(s)
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Paper Reference(s)

**4385/2H**

Examiner's use only

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# London Examinations IGCSE

Team Leader's use only

## Information and Communication Technology

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Paper 2H

### Higher Tier

Monday 21 June 2010 – Morning

Time: 1 hour 30 minutes

Question Number	Leave Blank
1	
2	
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11	
<b>Total</b>	

**Materials required for examination**  
Nil

**Items included with question papers**  
Nil

#### Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature. Check that you have the correct question paper. Answer **ALL** the questions. Write your answers in the spaces provided in this question paper. Do not use pencil. Use blue or black ink.

#### Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2). There are 11 questions in this question paper. The total mark for this paper is 100. There are 20 pages in this question paper. Any blank pages are indicated.

#### 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.

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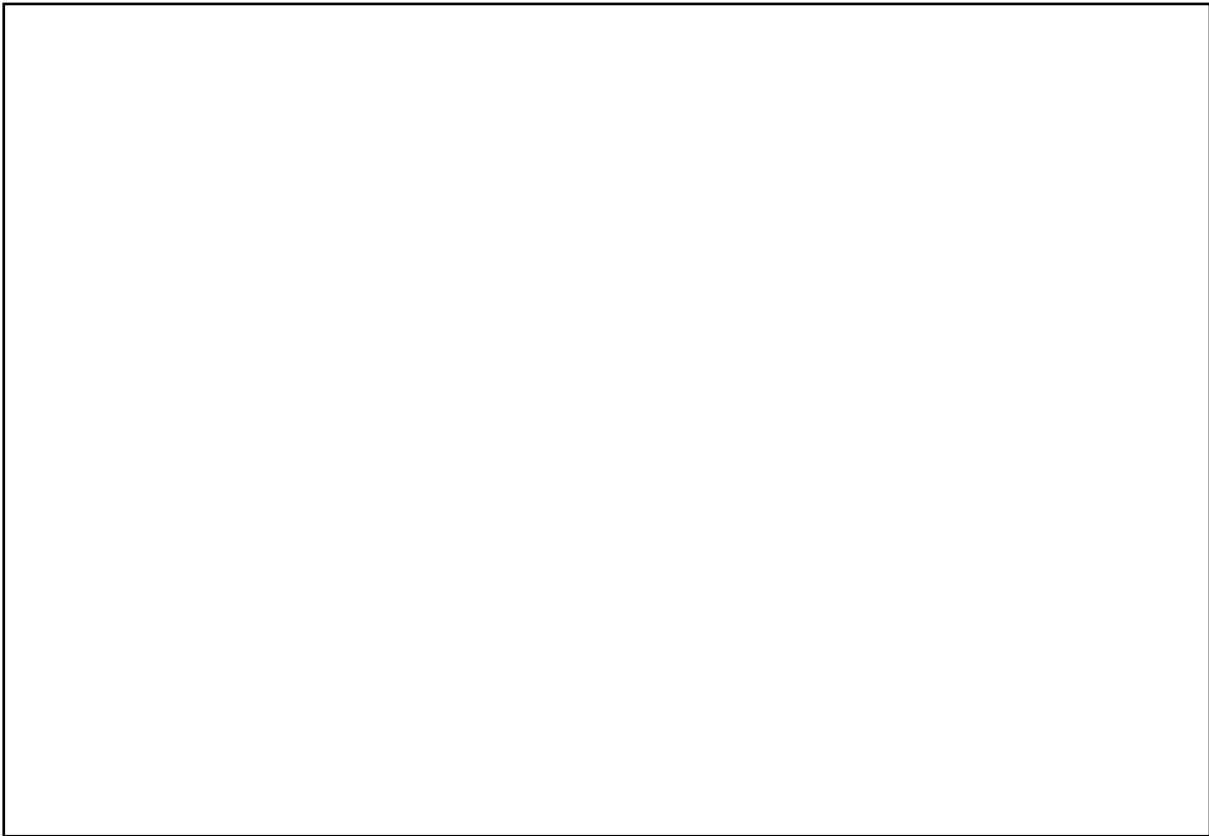
**Answer ALL questions**

1. The 'Electric Music Company' sells music downloads over the Internet. People who wish to purchase a music download must first complete an on-line registration form.

The form contains input fields for:

- the person's identity and email address
- details about the method of payment to be used
- the person to give a password for the account
- the person to repeat the password to confirm it.

- (a) Use the box to design a suitable on-line form for this application.



**(8)**

- (b) (i) Explain why the person must give a password.

.....  
**(1)**

- (ii) Explain why the person must confirm the password.

.....  
**(1)**

**(Total 10 marks)**

**Q1**

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2. Mr Brown wants to have a broadband Internet connection and home network in his house. He has a choice of three methods of connection:

- copper cable
- fibre-optic cable
- WiFi.

(a) State which of these:

(i) has the greatest bandwidth.

..... (1)

(ii) is least prone to interference.

..... (1)

(iii) will be the easiest to adapt when expanding the home network at a later date.

..... (1)

(b) Mr Brown’s Internet Service Provider (ISP) gives him a free email account and 5 gigabytes of web storage space.

State **three** other services that the ISP is likely to provide for Mr Brown.

Service 1 .....

Service 2 .....

Service 3 .....

(3)

(c) Mr Brown signed up for a fibre-optic connection. His ISP gave him a simple modem which converts between electrical and optical signals. The ISP has said that Mr Brown will have to purchase a router if he wants to connect more than one computer to the modem.

A router allows two or more computers to connect to the Internet at the same time.

Describe **one** other function of a router.

.....  
.....  
.....

(2)

(Total 8 marks)

Q2



3. An insurance company keeps the records of 100,000 customers in a database. You are the company's database manager and responsible for backup and security.

(a) You need to plan a new backup system for the database. You should consider several factors when creating the plan.

The table shows the storage requirement and how you take account of it. Complete the table to show **three** other factors that you should consider and state how you would take account of them.

Factor	How you take account of the factor
Storage requirement	If each customer entry uses 1 Kb of storage space, 100,000 customers will need about 100 Mb of space.

(6)

(b) The customer records are confidential.

(i) Describe **two** methods for preventing unauthorised employees from viewing customer information.

Method 1.....

.....

Method 2.....

.....

(4)



Leave blank

(ii) Describe **one** method of preventing unauthorised people from viewing customer information via the company's Internet connection.

.....

.....

.....

.....

(2)

Q3

(Total 12 marks)

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4. A researcher for a TV quiz show needs to compile a set of questions about 1960's British pop music. She puts

1960's music

into a search engine which returns over two million responses.

(a) Explain **three** methods by which the researcher could refine her search to produce fewer and more relevant responses.

Method 1 .....

.....

Method 2 .....

.....

Method 3 .....

.....

**(6)**

(b) The researcher also looks at a music wiki, where anyone may write articles about music and display them on a specialist web site.

(i) State **two** other sources of on-line information that the researcher could use.

Source 1 .....

Source 2 .....

**(2)**

(ii) Explain why the researcher should be cautious about the information she finds in the music wiki.

.....

.....

.....

.....

**(2)**

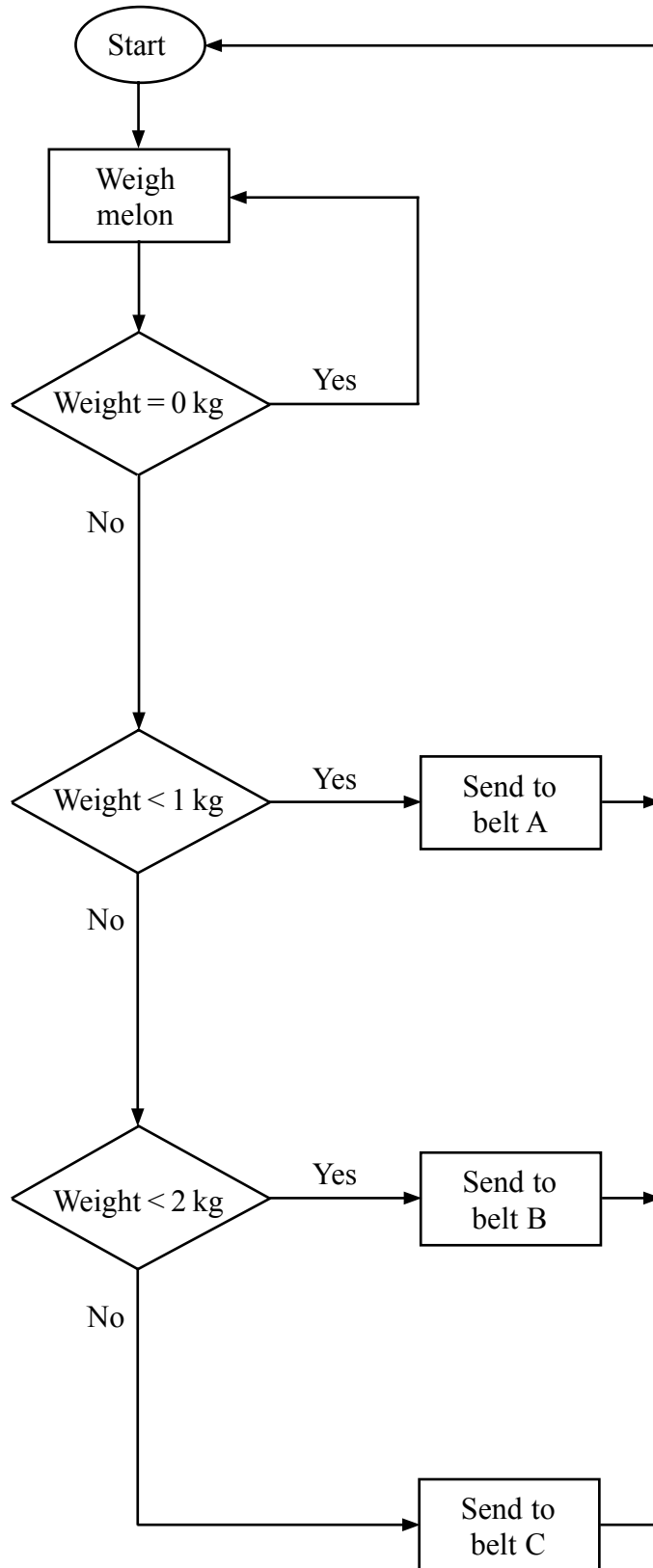
**Q4**

**(Total 10 marks)**

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5. The flowchart shows part of a control program that operates a machine that weighs melons. The melons pass over a weight sensor and are sent to one of three conveyer belts, depending on their weight.





The system needs to be tested. Known weights can be placed on the weight sensor to see which belt they will be sent to. The system will be tested with five weights, representing typical and extreme data.

(a) State, with reasons, which five weights you would use for this purpose.

- Weight 1.....
- Weight 2.....
- Weight 3.....
- Weight 4.....
- Weight 5..... **(5)**

(b) Explain why the use of invalid test data would not be appropriate for this application.

- .....
- .....
- .....
- ..... **(2)**

(c) The machine may be stopped in an emergency by pulling a lever. This causes the weight sensor to register a weight of more than 10 kg.

Insert additional lines, words, and symbols to amend the flowchart to show the emergency stop system. **(3)**

**(Total 10 marks)**

**Q5**

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6. A web developer has created an on-line form for customers to use when applying for membership of a sports club. The developer writes a computer programme which validates the entries that customers make on the form.

Name and describe, using an example, **three** validation checks that would be suitable for use with this form.

Check 1 .....

Example .....

Check 2 .....

Example .....

Check 3 .....

Example .....

Q6

**(Total 6 marks)**



7. James has just started a computer repair business. He has a computer, a colour laser printer, and a broadband Internet connection.

James' own computer has a range of software installed, including:

- a database
- a spreadsheet
- a desk top publisher
- a web site writer
- an art package
- a multi-media presentation package

For each piece of software, briefly describe a task that James could perform to improve his business.

database.....

.....

spreadsheet.....

.....

desk top publisher.....

.....

web site writer .....

.....

art package.....

.....

multi-media presentation package.....

.....

**(Total 6 marks)**

Q7



8. Oliver owns a business that supplies paper to offices. He uses a database to help him to keep track of his stock. The table shows part of the database.

Product name	Product code	Paper weight	Price	Paper quality	Recommended use
President white A4	PRW412	120 gsm	£27.99	premium	laser, inkjet
Executive white A4	EXW410	100 gsm	£23.99	premium	inkjet, copier
Sovereign white A4	SOW409	90 gsm	£15.99	standard	laser, inkjet, copier
Imperial white A4	IMW408	80 gsm	£12.99	standard	inkjet, copier
Embassy white A4	EMW408	80 gsm	£6.99	budget	inkjet, copier
Embassy green A4	EMG408	80 gsm	£7.99	budget	inkjet, copier

(a) State the most suitable key field for the database and explain why it is the most suitable.

Key field .....

Explanation .....

.....  
 .....  
 .....

(4)

(b) The data in the Product code column is encoded from other fields in the table. One reason for using a code is to make data entry faster. Give **two** other reasons for encoding data.

Reason 1 .....

Reason 2 .....

(2)

(c) Oliver decides to stock a new type of budget white A4 paper that is suitable for laser printers. The paper is called Ambassador, weighs 80 gsm, and costs £6.99. State the product code that Oliver should use.

Code .....

(2)



(d) When Oliver searches for copier paper in the database he does not always find the results he expects. State what the cause of the problem is and explain how the database should be altered to solve the problem.

.....

.....

.....

.....

(4)

Q8

(Total 12 marks)

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9. Lyndy’s Lunches sells meals to companies. Workers can choose a meal from one of six menus and companies place orders during the morning. Lyndy’s Lunches prepares and delivers the meals by lunchtime.  
 Lyndy uses a spreadsheet to record the orders. Each company has an account number. This is today’s page of the spreadsheet.

	A	B	C	D	E	F	G	H
1		Meals ordered today						
2	Account No.	Menu 1	Menu 2	Menu 3	Menu 4	Menu 5	Menu 6	
3	BC0109	2	2	5	4	1	5	
4	TW0045	1	5	2	4	3	7	
5	BA2231	2	3	6	3	3	6	
6	SW0025	3	3	5	6	2	7	
7	ED1107	2	4	4	4	2	5	
8	AD0224	3	7	8	5	3	9	
9								
10	Total meals ordered from each menu	13	24	30	26	14	39	
11	Profit on each meal	£2.60	£2.16	£2.26	£2.10	£2.65	£2.30	Total profit
12	Total profit per menu	£33.80	£51.84	£67.80	£54.60	£37.10	£89.70	£334.84

- (a) (i) State the function that will be in cell B10..... **(1)**
- (ii) State the formula that will be in cell B12 ..... **(1)**



(b) Lyndy wants the spreadsheet to tell her which menu is most popular. She puts a function in cell H9 which gives the highest number from row 10.

(i) State the function that Lyndy should put in cell H9.

.....  
.....  
**(2)**

(ii) Having found the most popular menu, Lyndy now wants the highest number from row 10 to change colour. Explain how she should do this.

.....  
.....  
.....  
.....  
**(4)**

(c) The spreadsheet contains a graph showing profits for each day over a period of a week. Lyndy wants to put a copy of this graph into a word processed document. The graph must automatically update whenever the document is opened. Explain how she should do this.

.....  
.....  
.....  
**(2)**

**(Total 10 marks)**

**Q9**

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10. A hard drive can store recorded television programmes. Each recorded programme is given a number. The number is held in a single byte of storage.

- (a) Assuming there is enough space on the hard drive, state the maximum number of programmes that the hard drive can store at one time. Explain your answer.

.....  
.....

(2)

- (b) The hard drive stores 40 megabytes of data for each second of a programme. The hard drive holds 40 gigabytes of data.

- (i) Estimate how much programme time the hard drive can hold. State any assumptions that you make about the size of a gigabyte.

.....  
.....  
.....

(2)

- (ii) Explain how the 40-gigabyte hard drive can hold 20 hours of recorded programmes at one time.

.....  
.....

(2)

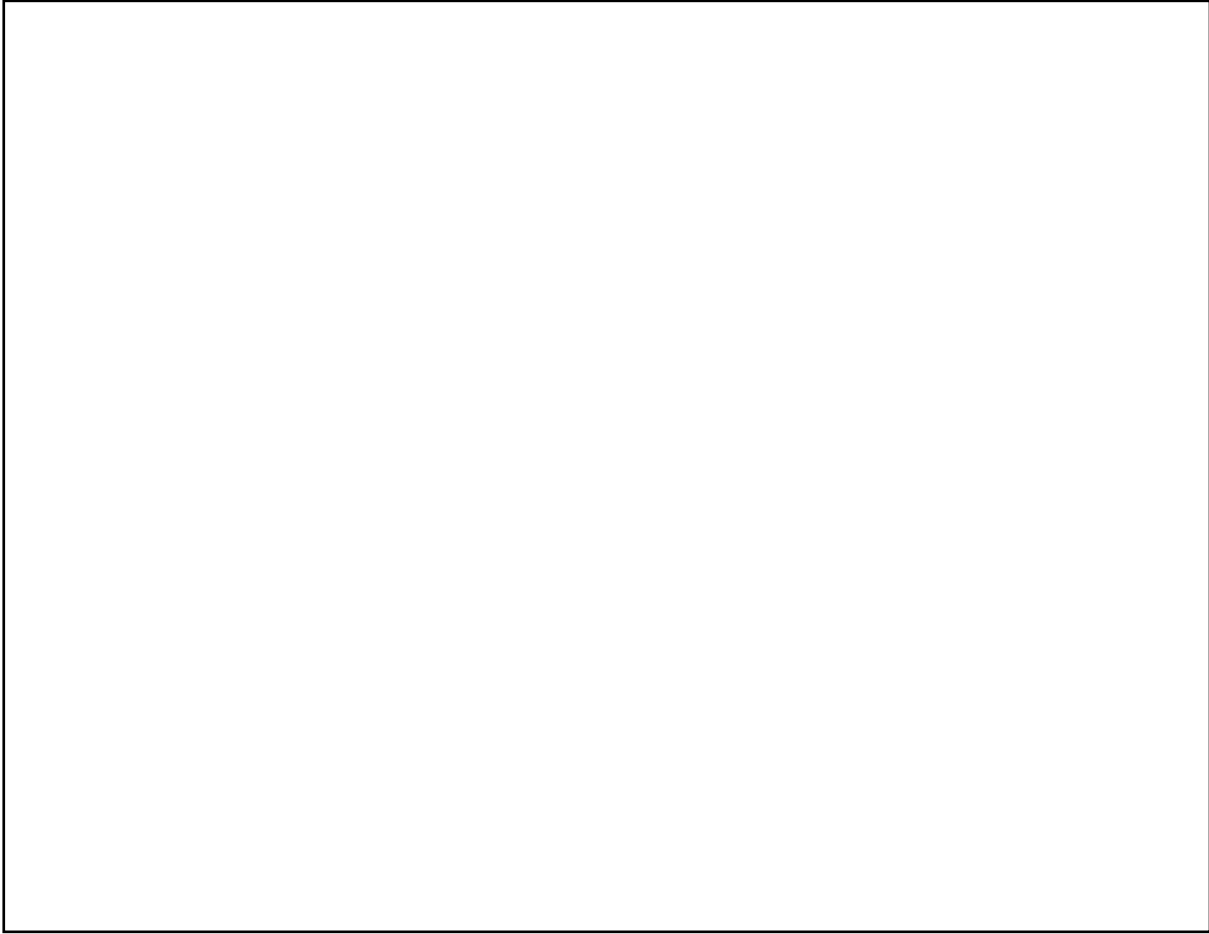
(Total 6 marks)

Q10



11. An employment agency uses a local area network (LAN) in its head office building. The LAN has five computers and a server and uses cables to connect them.

- (a) The LAN uses star topology. Draw, in the box provided, a labelled diagram of this LAN. Do not show rooms or equipment locations.



(4)



(b) The agency has offices in many other towns. These are connected by a wide area network (WAN). The agency saves money by using the WAN to enable a centralised backup system. Without the WAN, the agency would need backup systems in each office.

(i) State **two** other ways in which the agency can save money by using the WAN. Explain your answer in each case.

1 .....

.....

2 .....

.....

**(4)**

One problem with using the WAN to enable a centralised backup system is keeping the data secure while it is transferred.

(ii) State **one** other problem with using the WAN to enable a centralised backup system. Give a solution to that problem.

Problem.....

Solution.....

.....

**(2)**

**Q11**

**(Total 10 marks)**

**TOTAL FOR PAPER: 100 MARKS**

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