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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS General Certificate of Education Ordinary Level

CANDIDATE NAME			
CENTRE NUMBER		CANDIDATE NUMBER	
COMPUTER S	TUDIES		7010/12
Paper 1			May/June 2013
			2 hours 30 minutes
Candidates ans	swer on the Question Paper.		

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in. Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working. Do not use staples, paper clips, highlighters, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer all questions.

No marks will be awarded for using brand names of software packages or hardware.

At the end of the examination, fasten all your work securely together. The number of marks is given in brackets [] at the end of each question or part question.

This document consists of **20** printed pages.



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[Turn over

2

1 (a) State two items found in typical technical documentation.			

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	1
	2
	[2]
(1-)	
(D)	1
	2
	[2]

2 Four types of data storage media and four descriptions are shown in the table below.

Tick (\checkmark) the appropriate boxes in the table to match each data storage medium to its most suitable description.

	CD-ROM	DVD-RAM	fixed hard disk	memory stick
storage medium where data can only be read and not altered				
portable medium which allows transfer of data between computers				
memory where operating systems and applications software are usually stored				
medium which allows recording and playback to occur at the same time				

3	Thr	ee common devices are listed below:	For
	•	MP3 player digital camera mobile phone	Examiner's Use
	(a)	Choose one of the above devices. Describe the type of internal memory the device uses. Describe how data is transferred from the device to a computer.	
		Device	
		Type of internal memory used	
		Method of transferring data to a computer	
		[4]	
	(b)	Modern mobile phones include a digital camera and an MP3 player.	
		(i) Give one disadvantage when compared to a dedicated MP3 player.	
		(II) Give one disadvantage when compared to a dedicated digital camera.	
		101	
		[2]	

4 (a) Computer systems can introduce a number of health and safety issues in the office.

Five potential risks are shown below. Indicate by ticking the appropriate column whether the risk is a *health* issue or a *safety* issue.

potential riskhealth issuesafety issuerepetitive strain injury (RSI) caused by
excessive clicking of a mouse or typingtrailing wires connected to a computer
systemozone gas and toner particles produced
during laser printer operationheadaches and eye strain caused by
glare from a computer monitor/screenelectrocution caused by spilling liquids
on a computer system

[5]

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(b) Introduction of computer systems can also have an impact on the workers in the office.

Give three potential ways computers can affect the office workers.

1 ______ 2 _____ 3 ______ [3] **5 Five** definitions are given on the left hand side of the diagram below. **Five** computer terms are shown on the right.

By drawing arrows, connect each definition to the correct computer term.

website that allows virtual communication; user joins a site and chat room invites friends who, in turn, invite their own friends technology that allows telephone calls to be made using computer networks, social networking such as the Internet online "place" where a group of people get together and discuss a number of tagging topics software that allows any user to freely create and edit a web page using their VoIP own web browser marking, saving and archiving certain websites or items (such as photos); for wiki example, it allows users to track and organise favourite websites or photos

[4]

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6	Five	e students made the following statements.	For				
	Explain why each statement is incorrect .						
	(a)	"I always use CD-ROMs to save my data."					
		L · J					
	(b)	"The advantage of WiFi in the home is you don't need the use of a telephone line connection."					
		[1]					
	(c)	"Satellite navigation systems in cars send signals to satellites so that the satellite can work out where they are."					
		[1]					
	(d)	"Sending an email will cause a problem if the recipient is in another time zone where the time difference is 12 hours."					
		[1]					
	(e)	"Video conferencing allows meetings to be called at any time."					
		[1]					

(a) Describe how the sensors and microprocessor are used to control the speed of the spinning CD. [4] (b) Sudden movements can make the CD "skip". How can the microprocessor deal with this so that the CD operates correctly? [2] (c) Why would an MP3 player not suffer from the same problem? [1] _____

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The speed at which a CD spins in a portable music CD player is controlled by sensors and

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a small microprocessor.

- 8 Expert Systems are made up of a number of components.
 - (a) The diagram below shows four of these components and four definitions.

By drawing arrows, link the four components to their correct definitions:

made up of a series of *if … then* statements called inference rules

provides reasoning mechanism in a typical expert system

presents questions and information to a user and allows them to input a response

collection of facts used to solve problems in an expert system

Inference Engine

Knowledge Base

Rules Base

User Interface

[3]

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(b) Describe three of the limitations associated with using *Expert Systems*.

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- 9 Thin film technology is becoming increasingly common. This uses material as thin as a sheet of paper but which acts just like an LCD monitor. A microprocessor is used to control Examiner's the device and solid state memories are used to supply the data.
 - (a) Describe two advantages of thin film technology.

	1
	<u></u>
	2
	[2]
(b)	Describe two applications that could use thin film technology.
	1
	2
	[2]

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10	A c the	ompany uses an intranet which can also communicate with the outside world through Internet.	For Examiner's Use
	(a)	The system uses modems.	
		What is the purpose of a modem?	
		[1]	
	(b)	Part of the company's security strategy is to use a firewall.	
		Describe two features of a firewall.	
		1	
		2	
		[2]	
	(c)	Connecting to the Internet can cause potential problems.	
		State two of these problems.	
		1	
		2	
		[2]	

- Motorway Length **Toll charge** Number of Cars per day per km (\$) lanes ID (km) M1 100 50000 0.60 2 210 75000 0 4 0 3 M2 M3 180 60000 0.50 4 3 M4 40 20000 0.30 M5 25 15000 0.10 2 M6 100 40000 0.70 4 M7 30 10000 0.40 2 M8 150 60000 0.60 4 (a) How many fields and how many records are shown? number of fields (i) number of records [2] (ii) (b) Using Motorway ID only, what would be output if the following search condition was used? (Length (km) > 100) AND (Number of lanes > 3) [1] (c) What search condition is needed to find the motorways where the number of cars per day exceeds 50 000 or the toll charge per kilometre is greater than \$0.50?
- **11** A survey of motorways was carried out and a database was produced. A section of the database is shown below.

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[Turn over www.theallpapers.com **12** Study the following flowchart very carefully.



For Examiner's Use (a) Complete the trace table for this flowchart using the following test data:

3, 5,	1,	4, 8
-------	----	------

Α	В	С	D	Е	К	Х

[5]

(b) What values are output from the flowchart using the above test data?
[1]
(c) What function is this flowchart carrying out?
[1]
(d) What would happen if the value of X wasn't set to 0 in the return loop of the flowchart?
[1]

13	A company	requests new	customers who	register online	to give t	he followind	details:

name

address

•

type of credit/debit card payment card number All details must be entered. (a) (i) Describe one suitable different validation check for each field. name address _____ type of credit/debit card payment card number [4] (ii) Which of the four fields could be offered as a drop down box? Explain. [2]

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(b)	Other of	data ree	quired:
-----	----------	----------	---------

Other data required:	For Examiner's
date of birth	Use
male or female	
accept/decline company conditions	
Describe suitable input methods for this data.	
date of birth	
male or temale	
accept/decline company conditions	
[3]	

14 Some decorative lights are made up from a cluster of *red*, *blue*, *green*, *yellow* and *white* LEDs.

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Each colour is represented by a binary code:

32	16	8	4	2	1	
1	0	0	0	0	0	red
0	1	0	0	0	0	blue
0	0	1	0	0	0	green
0	0	0	1	0	0	yellow
0	0	0	0	1	0	white
0	0	0	0	0	1	black (all lights off)

A 6-bit register, R1, stores the 1-values to represent a sequence of colours. Thus, if R1 contains:

0	1	0	1	0	1
---	---	---	---	---	---

this means the *blue*, *yellow* and *black* colour sequence is stored and displayed in that order.

The length of time each light is on is set by a binary value in another register, R2:

Thus



means each colour is on for 2 seconds.

(a) The two registers contain the following values.

What is the sequence of coloured lights and the timing for each colour?



sequence of colours timing _____[2]

(b)	What will the two registers contain if the coloured light sequence is <i>red</i> , <i>green</i> and <i>black</i> and the timing is 5 seconds?	For Examiner's Use
	R1 R2	
	[2]	
(c)	What is the problem with trying to display <i>green</i> , <i>blue</i> , <i>red</i> in that order?	
	[2]	



[6]

(b) Complete the truth table for the above logic statement.

			Working space	
в	S	Р		x
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

[4]

16 A large word processor is being developed by first writing a series of modules. These are then put together to form the final word processor. Testing is done on each module and on the final word processor. The following flowchart shows how this word processor is developed. Several of the stages have been omitted.

Complete the flowchart, **using item number only**, from the list of items given.



For

Examiner's Use **17** A country has four mobile phone network operators. Each mobile phone number has eight digits. The first **three** digits identify the network operator:

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- 444 Yodafone 555 N2 network
- 666 Kofee mobile
- 777 Satsuma mobile

Write an algorithm, using pseudocode or flowchart only, which reads 50000 eight-digit mobile phone calls made during the day and outputs the number of calls made on each of the four networks.

[6]

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