Cambridge IGCSE™

INFORMATION AND COMMUNICATION TECHNOLOGY **0417/13**

Paper 1 Theory **October/November 2021**

2 hours

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use an HB pencil for any diagrams, graphs or rough working.

INFORMATION

- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].
- No marks will be awarded for using brand names of software packages or hardware.

This document has **20** pages. Any blank pages are indicated.

1 A tablet computer has input and output devices.

   (a) Give **two** examples of input devices which are part of a tablet computer.

   1 ....

   2 ....
   [2]

   (b) Give **two** examples of output devices which are part of a tablet computer.

   1 ....

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   2 ....

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   [2]

2 MICR, OCR and OMR are examples of recognition systems.

   Tick (✓) the most appropriate recognition system which relates to the following statements.

	MICR (✓)	OCR (✓)	OMR (✓)
This system magnetises the special characters on cheques in order to read them			
This method is used to read car number plates			
A bar code is an example of this system			
If the media from this system is photocopied it cannot be read by the recognition system			

[4]

3 **(a)** Identify **two** applications that use expert systems.

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[2]

(b) Identify **three** components found in an expert system.

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[3]

4 A library system has two tables; one for borrowers and one for books. Extracts from these tables are shown.

Borrower_ID	Borrower_name	Contact_telephone	Contact_email
5404	Susan Stranks	01632 960321	rockit@cambridgeinternational.org
9867	Fei Hong Zhao	07700 900222	tawara@cambridgeinternational.org

Borrowers table

Book_ID	ISBN	Name_of_book	Author_of_book	Date_published	Borrower_ID	Date_due_back
1	0859550153	Bird of Prey	David James	1977	5404	27/10/2021
34	3301028345	The Fifth Man	Colin Turner	1998	9324	05/10/2021
35	4237681321	A View of the Temple	Yu Yan Zhang	2017	8854	07/10/2021
59	4237681321	A View of the Temple	Yu Yan Zhang	2017	5404	27/10/2021

Books table

(a) Name the most appropriate validation check for each of these fields. Your answer must be different for each field.

ISBN ....

Date_due_back ....
[2]

(b) (i) For the books table, name the most appropriate field that could be used as a primary key.

.... [1]

(ii) The librarian has created a relationship between the books table and the borrowers table.

For the books table, name the most appropriate foreign key field that would be used to create the relationship.

.... [1]

(c) The data type for Contact_telephone has been set as text.

Explain why this field has been set to text rather than integer.

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.... [2]

(d) At the end of each day the tables are searched to issue reminders to borrowers about books that are overdue.

Describe the automatic processing involved in searching and issuing of reminders for overdue books.

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5 Keeping data secure is very important in any computer system. Many organisations use encryption when sending data.

(a) Describe the term encryption.

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(b) Another way of protecting data in a computer system is to use passwords.

Identify methods to prevent hackers from gaining knowledge of someone's password.

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6 The internet has both moderated and unmoderated forums.

Explain what is meant by an unmoderated forum.

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.... [4]

7 Many customers now use contactless payment and internet banking.

(a) Describe the computer processing involved in using contactless bank cards to pay for purchases.

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.... [4]

Fewer and fewer customers now use high street banks, preferring to bank online using the internet.

(b) Discuss the advantages and disadvantages of internet banking for the customer.

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Transactions with the bank's website use a variety of technologies including SSL.

(c) Explain what is meant by SSL. Include in your answer why SSL is used.

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(d) The web address of the bank is:

https://www.tawarabank.com

Describe the following parts of the web address.

https:// ....

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tawarabank ....

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.com ....

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[3]

8   When a system is being planned, analysis needs to take place.

    Questionnaires and interviews are examples of methods of researching existing systems.

    Evaluate, by weighing up the advantages and disadvantages, each of these methods.

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9   Rockit Motors has opened a car store in a shopping mall.

    Customers can test drive the cars they are planning to purchase using virtual reality systems
    within the store.

    (a) Name **two** devices which would be used in this virtual reality system.

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(b) Explain the term virtual reality.

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The manager of Rockit Motors has created many different types of documents including letters and memos for the company. Each of them is produced using its corporate house style.

(c) Explain why corporate house styles are required.

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10 Many young people now use social media rather than other forms of communication.

Evaluate your own use of social media and explain any eSafety strategies you could use to help minimise the potential dangers.

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11 A student has taken a photograph of him and his friend, using a digital camera. He needs to increase the size of the image to include it on a poster.

(a) Give **one** disadvantage of increasing the size of this image.

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.... [1]

(b) He now wishes to edit the image to remove his friend. He edits the image by cropping it and removing part of the image.

Describe, step by step, how he would crop the image.

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12 A doctor measures the blood pressure of some of his patients regularly. The patients take home a blood pressure machine and record their results on a spreadsheet which the doctor has created. Part of the spreadsheet is shown.

	A	B	C	D	E	F	G	H	I
1	**Blood pressure readings**					**Blood pressure warnings**			
2	**Date**	**Sys**	**Dia**	**Warning**		**Sys**	**Dia**	**Warning**	
3	10-Feb	134	74	Normal		60	40	Low	
4	11-Feb	137	67	Normal		120	80	Normal	
5	12-Feb	145	81	Mild		140	90	Mild	
6	13-Feb	150	86	Mild		160	100	Moderate	
7	14-Feb	180	74	Severe		180	110	Severe	
8	15-Feb	134	75	Normal					
9	16-Feb	130	57	Normal					

(a) When a reading produces a Severe or Low warning then the text automatically changes to a red font on a light red background.

Explain how the doctor could set up automatic colour change for these warnings on the spreadsheet.

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The doctor has set up a named range called Bloodpressure for the cells F3 to H7.

(b) Explain why the doctor has used a named range.

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The formula =VLOOKUP(B3,Bloodpressure,3) has been entered into cell D3.

(c) Explain what the formula does.

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The doctor has created a graph of the readings for one patient and has displayed it on the spreadsheet. However, there are elements missing.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Blood pressure readings**						**Blood pressure warnings**						
2	**Date**	**Sys**	**Dia**	**Warning**									
3	10-Feb	134	74	Normal									
4	11-Feb	137	67	Normal									
5	12-Feb	145	81	Mild									
6	13-Feb	150	86	Mild									
7	14-Feb	180	74	Severe									
8	15-Feb	134	75	Normal									
9	16-Feb	130	67	Normal									
10													
11													
12													
13													
14													
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16													

Chart Title — Blood pressure line graph with Sys and Dia series plotted from 09-Feb to 17-Feb, y-axis 0 to 200.
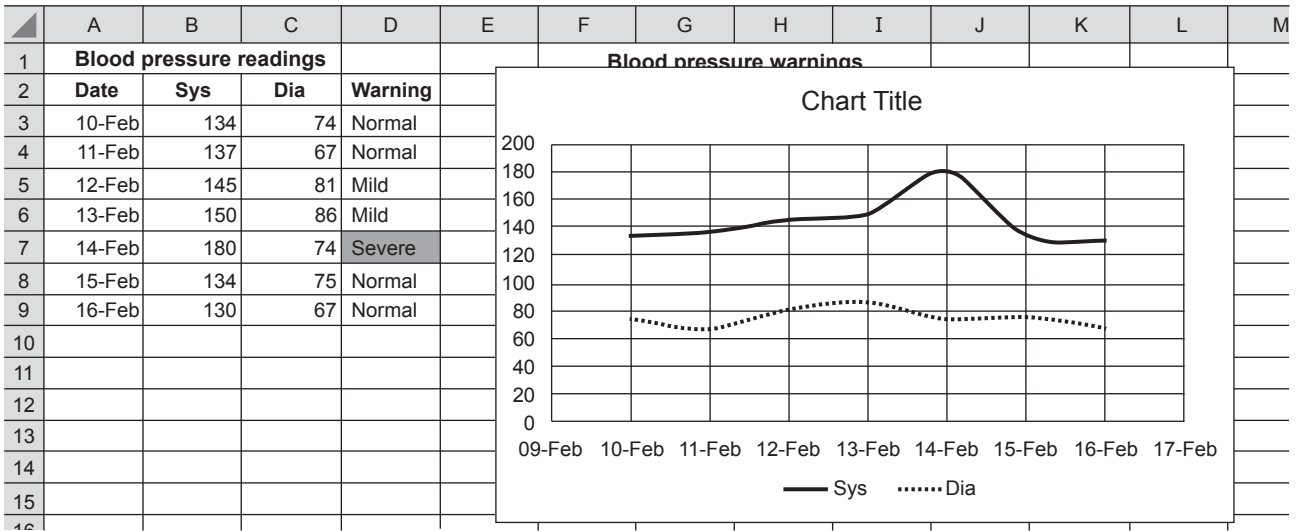
(d) Explain how the doctor created the graph. Write in your answer **one** improvement that could be made to the graph.

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.... [3]

(e) At the end of the month the doctor needs to produce a hard copy document showing information about a patient: their name, date of birth and patient number, as well as data and the graph from the spreadsheet.

Design a suitable document layout. The document must have appropriate spacing.

[5]

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