



Cambridge IGCSE™

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INFORMATION AND COMMUNICATION TECHNOLOGY

0417/11

Paper 1 Theory

May/June 2020

2 hours

You must answer on the question paper.

No additional materials are needed.

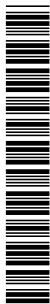
INSTRUCTIONS

- 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 **16** pages. Blank pages are indicated.



1 A computer consists of both hardware and software.

(a) Define the term software.

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[2]

(b) There are two types of software.

Identify the types.

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2.....

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[2]

2 Tick (✓) whether the following statements refer to a Command Line Interface (CLI) or a Graphical User Interface (GUI).

	CLI (✓)	GUI (✓)
The user has to type in every instruction		
The user does not need to learn any of the instructions		
Each instruction has to be typed in correctly		
The user is in direct communication with the computer		

[2]

3 Every computer contains input and output devices and a central processing unit (CPU).

(a) Describe the CPU including its role.

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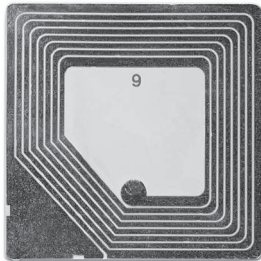
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[4]

(b) Data can be read directly by using a number of different devices.

Name the most appropriate device used to read the following data.



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Cheque No.	Branch Code	Account No.	Transaction Code
05482	55448	654478	25447

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[4]

- 4 A hospital is creating a database to store blood donors' medical details. The fields in the database include Health_number, Date_of_birth, Gender and Blood_group.

(a) When a new blood donor wishes to give blood they need to fill in a form.

Each blood donor has a unique health number which uses a 10-digit number, for example 9434765919.

Blood group can be A, B, AB or O.

Part of the form is shown below.

Blood donor	
1. What is your health number?	<input type="text"/>
2. What is your date of birth?	<input type="text"/> / <input type="text"/> / <input type="text"/>
3. What is your gender?	M/F
4. What is your blood group?	<input type="text"/>

Name a suitable data type for the answers given to each of the questions in the form. For any numeric field, specify the type of number.

Question 1.....

Question 2.....

Question 3.....

Question 4.....

[4]

(b) In the Blood_group field the only data that can be entered is A, B, AB or O.

Tick (✓) whether each of the following blood groups is an example of **abnormal** or **normal** data.

Blood group	abnormal (✓)	normal (✓)
AB		
C		
B		
AO		

[2]

(c) The administrator needs a list of all the blood donors in the database with blood group A as well as in the same list all the blood donors with blood group AB. This list will only include female blood donors.

To find the blood donor with the health number 9434765919 he will need to type in the following query.

Health_number = 9434765919

Write a query to find all the female blood group donors with the blood group A as well as those with AB.

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..... [6]

(d) When the details of a new donor are added to the database the person's date of birth is entered.

Explain why the administrator would prefer their date of birth to be stored rather than their age.

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[4]

(e) Name the most appropriate validation check for the Health_number.

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[1]

5 Phishing and pharming can affect the security of a user's data.

(a) Compare and contrast phishing and pharming.

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[6]

7 The headteacher of a school has decided to replace desktop computers with laptop computers.

Describe the advantages and disadvantages of using a laptop computer rather than a desktop computer.

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[4]

8 Following recent data protection issues the personal data we allow organisations to share about us may be reduced.

(a) Discuss the benefits and drawbacks of trying to keep personal data confidential and secure.

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[6]

(b) The sharing of email addresses can lead to spam.

Explain what is meant by the term spam email.

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[2]

(c) Explain why spam email should be prevented.

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[4]

9 Point of sale (POS) terminals are used in supermarkets.

(a) Tick (✓) which of the following devices used at a POS terminal are only input devices, which are only output devices and which are both.

Device	Input (✓)	Output (✓)	Both (✓)
Bar code reader			
Buzzer			
Touch screen on till			
Receipt printer			
Light sensor on the conveyor belt			
Electronic scales			

[6]

(b) A stock file contains data about the goods being sold. Describe the steps needed to update the stock file when an item is scanned at the point of sale (POS) terminal. Include in your description how new stock can be ordered automatically.

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[6]

10 The network manager at a school has been asked to develop a student registration system to help staff keep a record of student attendance.

(a) Describe the steps required in the analysis of such a system.

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[6]

(b) The school is planning to use fingerprints as a way to record when students arrive in the class.

Describe the advantages and disadvantages of using fingerprint data entry for student registration systems rather than magnetic ID cards.

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[4]

(c) Fingerprints are one example of biometrics.

Identify **three** other examples of biometrics.

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- 2.....
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- 3.....
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[3]

11 Most data protection acts include the principle that data should be accurate and, where necessary, kept up to date.

List **four** other principles of a typical data protection act.

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- 4.....
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[4]

12 The way we buy products using credit cards has changed in recent years. Originally the magnetic stripe on the back of the card was used with a signature. Then chip and PIN methods were used, and more recently contactless methods have been introduced.

Discuss the effectiveness of using these different methods to improve security when paying for goods.

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[8]

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