

Cambridge Assessment International Education

Cambridge International General Certificate of Secondary Education

CANDIDATE NAME				
CENTRE NUMBER		CANDIDATE NUMBER		

COMPUTER SCIENCE

0478/12

Paper 1 Theory

February/March 2019

1 hour 45 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

No calculators allowed.

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name in the spaces at the top of this page.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, 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.

Any businesses described in this paper are entirely fictitious.

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.

The maximum number of marks is 75.

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.



1	(a)	Elle has a file stored on her computer that is 20 MB in size. Jordan has a file that is 10 GB in
		size.

Tick (✓) to show which is the **larger** file.

File size	Tick (√)
20 MB	
10 GB	

[1]

(b) Bob has a file stored on his computer that is 3500 kB in size. Gerty has a file that is 3 MB in size.

Tick (✓) to show which is the larger file.

File size	Tick (√)
3500 kB	
3 MB	

2	Man	у со	mputer systems have an input device and an output device.	
	(a)	(i)	State what is meant by an input device.	
				[1]
	((ii)	Give an example of an input device.	
				[1]
	(b)	(i)	State what is meant by an output device.	
				[1]
	((ii)	Give an example of an output device.	
				[4]

3	(a) A long distance running race uses an electronic counter that counts each finishes the race.								ach competito	or who
		The	count is stored as b	inary in a	12-bit r	egister.				
		A de	enary value of the co	unt is dis	played o	n a scre	en above	the finish line		
		(i)	The screen currentl	y displays	s:					
				0	0	3	9			
			State the binary val	ue that is	currently	y stored	to display	the count she	own.	
										[2]
		(ii)	More competitors competitors	ross the f	inish line	and the	screen r	ow displays:		
				0	3	5	0			
			State the binary value that is currently stored to display the count shown.							
										[2]
		(iii)	At the end of the rac	ce the bin	ary valu	e stored	is:			
	011011000111									
			Give the denary val	ue that w	ould be	displayed	d on the s	creen at the e	end of the rac	e.
			Show your working.							
									1	
			Screen	display:						
									J	

[2]

(b)	Sen	sors are used at the finish line to identify the number of competitors who finish the race.
	(i)	Identify two different sensors that could be used to identify the number of competitors.
		Sensor 1
		Sensor 2[2]
	(ii)	The sensors are used with a microprocessor to count how many competitors finish the race.
		Explain how the sensor and the microprocessor are used.

4

Dar	ius is writing a computer program that allows binary values to be calculated.
Dar	ius chooses to write the program in a high-level language rather than a low-level language.
(a)	Explain why Darius chooses to write the program in a high-level language.
	[2
(b)	Darius will use a translator to translate the program. He could use a compiler or an interpreter
	Five statements are given about compilers and interpreters.

Tick (\checkmark) to show if the statement applies to a **Compiler** or an **Interpreter**. Statements may apply to both.

Statement	Compiler (√)	Interpreter (✓)
A report of errors is produced at the end of translation.		
The program is translated one line at a time.		
The program is translated from high-level language into machine code.		
An executable file is produced.		
The program will not run at all if an error is detected.		

[5]

(c) He wants to compress the files to send them as he needs to attach them to an email.

Darius is sending several programs that he has created to his friend Selma.

		ius tells Selma he is going to use lossy compression. Selma tells him that he should use sless instead.
	Ехр	plain why Selma tells Darius to use lossless compression instead of lossy.
		[4]
(d)	Erro	ors can occur when data is transmitted, stored or entered into a system.
	Dar	ius could use an error detection method to find whether errors have occurred.
	One	e error detection method he could use is a checksum.
	(i)	Describe how a checksum detects errors.

(11)	State tiffee other error detection methods that Danus could use.
	Method 1
	Method 2
	Method 3
	[3]

5 Consider the following logic statement:

(a) Draw a logic circuit that represents the given logic statement. Your logic gates must have a maximum of two inputs. Do **not** simplify the logic statement.



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

Α	В	С	Working space	х
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]

6

ı	Vadi	ia pı	urchases a printer to print out her homework.			
,	She	con	nects the printer to her computer using USB.			
	(a)	Explain what is meant by USB.				
				[3]		
	(b)	Nac	dia's printer uses powdered toner rather than liquid ink.			
		(i)	State the type of printer Nadia has purchased.			
				[1]		
	((ii)	Give two benefits of using this type of printer.			
			Benefit 1			
			Benefit 2			
				 [2]		
	(iii)	Give one drawback of using this type of printer.			
	`	. ,	Drawback 1			

[5]

- (c) Nadia uses several types of computer storage for her homework and other projects.
 - (i) Five examples of computer storage are given.

Tick (✓) to show if the computer storage is **Primary**, **Secondary** or **Off-line**.

Storage example	Primary (√)	Secondary (√)	Off-line (✓)
Solid state drive (SSD)			
Blu-ray disc			
USB flash memory			
Random access memory (RAM)			
Read only memory (ROM)			

(ii)	Nadia is considering purchasing a magnetic storage device.
	Describe how a magnetic storage device stores data.
	101

	(iii)	Give two advantages of using a magnetic storage device rather than a solid state storage device.
		Advantage 1
		Advantage 2
		[2]
7	Arya reg	jularly uses the Internet as a research tool for her school projects.
	Identify	and describe three risks to Arya's computer when she is using the Internet for research.
	Risk 1	
	Descript	ion
	Risk 2	
	Descript	ion
	Risk 3	
	Descript	ion
		[6]

12

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which itself is a department of the University of Cambridge.