



**Cambridge Assessment International Examinations**  
Cambridge International General Certificate of Secondary Education

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**INFORMATION AND COMMUNICATION TECHNOLOGY**

**0417/12**

Paper 1 Theory

**May/June 2019**

**2 hours**

Candidates answer on the Question Paper.

No Additional Materials are required.

**READ THESE INSTRUCTIONS FIRST**

Write your name, centre number and candidate number in the spaces at the top of this page and any additional pages you use.

Write in dark blue or black pen.

Do not use staples, paper clips, glue or correction fluid.

**DO NOT WRITE IN ANY BARCODES.**

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

Answer **all** questions.

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.

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

This document consists of **15** printed pages and **1** blank page.



1 A computer consists of hardware and software.

(a) State what is meant by hardware.

.....  
 ..... [1]

(b) State what is meant by software.

.....  
 ..... [1]

(c) There are two types of software.

Name **one** of the two types of software used by a computer.

.....  
 ..... [1]

(d) Name the piece of hardware found in a tablet computer that is both an input and output device.

.....  
 ..... [1]

2 There are many types of data storage.

Tick whether the following statements are examples of read-only memory (**ROM**), random access memory (**RAM**) or a hard disk drive (**HDD**).

	ROM (✓)	RAM (✓)	HDD (✓)
It loses its data when the computer is switched off.			
It is classed as backing storage.			
It stores the start-up instructions of the computer.			
It temporarily stores the current work of the current user.			

[4]

3 Circle **two** items which are used for direct data entry.

Keyboard

MICR

Microphone

Mouse

Printer

RFID

[2]

4 Alpine slalom skiing involves a number of skiers racing down a mountain negotiating obstacles. The time it takes each skier to complete the course is measured. The fastest skier is awarded first place. This involves the use of a number of different sensors to monitor variables.



Using words from the list below, complete the following statements.

Humidity

Light

Motion

pH

Pressure

Sunlight

Temperature

Turbidity

(a) This sensor is used to measure how cold it is on the course.

..... [1]

(b) This sensor is used to stop the clock when a skier crosses the finish line.

..... [1]

(c) This sensor is used to measure the altitude (height above sea level) at the top of the course.

..... [1]

(d) Skiers take part in two separate races. The fastest thirty skiers qualify for the second race.

Thirty skiers have already completed the course. In order for the next skier to qualify he has to beat the race time of the skier currently in 30th place.

Part of the spreadsheet showing the current standings is shown.

	A	B	C	D	E
1				<b>Finishing times</b>	
2	<b>Current Position</b>	<b>Skier Name</b>	<b>Country</b>	<b>First Run</b>	<b>Qualified</b>
29	27	Lars Anderson	SWE	47.72	Y
30	28	Bob Mittor	USA	49.09	Y
31	29	Claude Bissett	FRA	54.05	Y
32	30	Aleksandr Ivanov	RUS	54.06	Y
33					
34					
35	<b>Next skier</b>			<b>First Run</b>	<b>Qualified</b>
36		Dave Roberts	GBR	46.43	

Write a formula that can be entered in cell E36 to display Y if the skier has qualified by beating the time of the skier currently in 30th place. If the skier has not qualified then N is displayed.

=.....  
 ..... [3]

- (e) Just before the second run column E is deleted as it is no longer required. As the skiers in the second run complete the course their times are entered into the spreadsheet. The spreadsheet has been changed to display the second run times, as shown.

	A	B	C	D	E	F
1				<b>Finishing times</b>		
	<b>Current</b>					
2	<b>Position</b>	<b>Skier Name</b>	<b>Country</b>	<b>First Run</b>	<b>Second Run</b>	<b>Points</b>
3	1	Dave Roberts	GBR	46.43	48.32	
4	2	Javier Del Campo	ESP	46.86	49.08	
5	3	Andre Jakobson	SWE	46.91	49.00	
6	4	Ruslan Eminov	RUS	46.96	49.22	
7	5	Bheka Wilson	RSA	47.10	48.33	

The combined times for the first and second runs need to be added to the spreadsheet in a new column between columns E and F.

Describe the steps you would take to add this new column with the heading Combined Time.

.....

.....

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..... [3]

- (f) Write a formula that can be entered in the new cell F3 that adds the time taken to complete the first run to the time taken to complete the second run.

=.....

..... [1]

- (g) When the overall race is completed the data is sorted into order based on the combined times. The first place skier will be at the top of the list.

Part of the final spreadsheet before the data is sorted is shown.

The 30th place skier is on row 32.

	A	B	C	D	E	F	G
1			<b>Finishing times</b>				
	<b>Current</b>					<b>Combined</b>	
2	<b>Position</b>	<b>Skier Name</b>	<b>Country</b>	<b>First Run</b>	<b>Second Run</b>	<b>Time</b>	<b>Points</b>
3	1	Dave Roberts	GBR	46.43	48.32	94.75	
4	2	Javier Del Campo	ESP	46.86	49.08	95.94	
5	3	Andre Jakobson	SWE	46.91	49.00	95.91	
6	4	Ruslan Eminov	RUS	46.96	49.22	96.18	
7	5	Bheka Wilson	RSA	47.10	48.33	95.43	

Describe the steps you would take to sort the data to show each skier in their correct position, without using functions.

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[4]

(h) Skiers throughout the season earn World Championship points. At the end of the race the points are calculated for each skier. The winner of the race gains 100 points. The other skiers have their points calculated by:

- subtracting the combined time of the winner from the combined time of the skier
- then subtracting this value from the winner’s points.

Write a formula to be placed in cell G4 to show the skier’s points for the race. The formula will be replicated to G32.

=.....  
 ..... [3]

5 Adinda is a marathon runner. She uses a smartwatch which is a smaller version of her smartphone. She trains by running in areas near her home. She uses a smartwatch with an in-built GPS system to navigate the route she is running.

(a) Describe the disadvantages of using a smartwatch in this way.

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 .....  
 .....  
 .....  
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 .....  
 .....  
 ..... [4]

(b) Name **two** other uses of GPS systems.

1.....  
 2.....  
 ..... [2]

- (c) Adinda also carries a smartphone strapped to her arm but finds this is difficult to use when running. A smartphone can be used for communication, either for making phone calls or text messaging. Adinda stops part way through her run for a rest and wishes to communicate with her friend using the smartphone.

Describe why text messaging is a better way for Adinda to communicate with her friend rather than making a phone call.

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[3]

6 Tawara school uses both the internet and an intranet.

- (a) Describe **four** disadvantages to students of using the internet compared with an intranet.

1.....

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2.....

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3.....

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[4]



(b) Email is a service provided by the internet.

For each of the following problems, associated with email, describe methods of protecting your data.

(i) Spam

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[4]

(ii) Viruses

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[4]

7 The introduction of computers into an organisation’s payroll department has affected employees’ working patterns. Two examples of this are part-time working and job sharing.

(a)

(i) Describe what is meant by part-time working.

.....  
..... [2]

(ii) Describe what is meant by job sharing.

.....  
..... [2]

(b) The introduction of these computers has had positive and negative effects on the payroll department’s workers.

Describe the benefits to workers of introducing computers into this department.

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..... [4]

8 Internet banking is changing how we carry out banking transactions.

Discuss the advantages and disadvantages to the customers of the introduction of internet banking.

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[6]

9 Expert systems have many applications.

(a) Name **two** applications that use expert systems.

1.....

2.....

[2]

(b) Tick **three** components of an expert system.

	Tick (✓)
Interactive user interface	
Spreadsheet	
Motor	
Printer	
Knowledge base	
Search engine	
Actuator	
Rules base	

[3]

10 The systems life cycle is followed when a new computer system is being created.

Tick whether the following statements are examples of the **Analysis** stage, the **Design** stage or the **Evaluation** stage of the systems life cycle.

	Analysis (✓)	Design (✓)	Evaluation (✓)
Identifying the problems with the current system			
Deciding on testing strategies			
Observation of workers using the current system			
Comparing the solution with the original task requirements			

[4]

- 11 A teacher is planning to develop a presentation to show his younger students, aged 5 to 6.

Describe the factors which need to be considered when designing the presentation for these students.

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[6]

- 12 Generic file formats can be used when saving files.

(a) Tick **three** generic file formats.

	Tick (✓)
.xls	
.pdf	
.doc	
.rtf	
.sdc	
.bcc	
.csv	
.accdb	

[3]

(b) Explain why generic file formats are needed.

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

[2]

13 (a) Describe the following terms with reference to navigation from a web page.

(i) Hyperlink

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

[2]

(ii) href

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[2]

(b) Explain the difference between the use of relative file paths and absolute file paths in navigation from a web page.

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[4]

14 Explain the difference between analogue data and digital data.

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[2]

15 As our use of the internet increases e-safety becomes essential.

Discuss why e-safety is needed.

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[8]

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