Cambridge International AS & A Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

INFORMATION TECHNOLOGY **9626/11**

Paper 1 Theory **October/November 2021**

1 hour 45 minutes

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.
- Calculators must **not** be used in this paper.

INFORMATION

- The total mark for this paper is 90.
- The number of marks for each question or part question is shown in brackets [ ].

[Turn over

1 Phoebe is collecting data to find the level of pollution in a local river.

(a) Tick the most accurate statement regarding data.

	✓
A group of facts which are used in context is called a set of data.	
Data can only consist of text and numbers.	
Understanding that Paris, London and Berlin are capital cities of countries in Europe makes this a set of data.	
Data cannot be interpreted until it has a context.	

[1]

(b) Tick the most accurate statement regarding the relationship between data and information.

	✓
Data without a context is called information.	
Data is the result of processing information, usually by computer.	
Data that has meaning becomes information.	
Information, when arranged to make meaningful output, becomes data.	

[1]

Phoebe will use sensors as direct data sources to collect the data. She will place sensors in the river and collect the readings from a computer.

(c) Describe the benefits of gathering data from direct data sources in this scenario.

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(d) Describe the drawbacks of gathering data from direct data sources in this scenario.

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2 **(a)** Tick the most accurate statement referring to the purpose of input devices.

	✓
A sensor is used to store data for later use.	
A magnetic chip reader is used to enter text directly from a bank card.	
A bar code reader is used to read magnetic ink characters.	
A touchpad is used to simulate the behaviour of a mouse when using a laptop computer.	

[1]

(b) Tick the most accurate statement referring to the purpose of output devices.

	✓
A laser printer can only be used to output low volumes of high-quality documents.	
A dot matrix printer can use continuous stationery.	
A plotter is used to output multi-part stationery.	
An inkjet printer is used to output high volumes of low-quality documents.	

[1]

3 Many online banking applications use the HTTPS protocol, involving encryption, for secure connections.

Evaluate, by weighing up the advantages and disadvantages, the use of HTTPS and the need for encryption in banking websites.

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4 Describe the differences between system software and application software. Include features and examples of each type of software in your answer.

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5 A company owner wishes to buy software to use to produce advertising materials for her company. She can either buy custom written software or off-the-shelf software.

(a) Describe **three** benefits of using custom written software.

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(b) Describe **three** benefits of using off-the-shelf software.

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6 Computers are often used, together with sensors, to control devices in the home.

Evaluate, by weighing up the advantages and disadvantages, the use of control technology in the home.

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7 A company has several IT workers. To help reduce health issues the company encourages workers to take regular breaks.

Describe, in detail, **three** different health issues that can affect these workers. For each issue give one method, other than taking regular breaks, of helping to prevent it. Each method must be different.

Issue 1 ....

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Prevention ....

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Issue 2 ....

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Prevention ....

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Issue 3 ....

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Prevention ....

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8   Many companies have branches in different cities. Branch workers can connect to the main office using the company's virtual private network (VPN) connection.

Describe the characteristics of this type of VPN.

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9 Video-conferencing is one use of the internet.

(a) Describe what is meant by the internet.

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(b) Explain why members of the general public use video-conferencing more now than when it was first introduced.

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10 The spreadsheet below shows the estimated number of visitors to the different countries in the United Kingdom. The figures shown relate to the months of July and August 2019. The formulae used in column D, to add up the number of visitors to each country, are also shown.

	A	B	C	D	E	F	G	H		D
1				UK Tourism Figures						UK Tourism Figures
2										
3	Country	CCode1		Total number of visitors (millions)		Date	CCode2	Number of visitors (millions)		Total number of visitors (millions)
4	England	En		10.56		July 2019	NI	0.53		=SUMIF($G$4:$G$11,B4,$H$4:$H$11)
5	Northern Ireland	NI		1.14		July 2019	En	5.10		=SUMIF($G$4:$G$11,B5,$H$4:$H$11)
6	Scotland	Sc		1.25		July 2019	Sc	0.62		=SUMIF($G$4:$G$11,B6,$H$4:$H$11)
7	Wales	Wa		0.81		July 2019	Wa	0.43		=SUMIF($G$4:$G$11,B7,$H$4:$H$11)
8						August 2019	En	5.46		
9						August 2019	NI	0.61		
10						August 2019	Sc	0.63		
11						August 2019	Wa	0.38		

Spreadsheet   Column D Formulae

(a) Using this spreadsheet as an example, explain, in detail, what is meant by absolute and relative cell referencing and explain why both are used.

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(b) Describe, in detail, how **other** characteristics of spreadsheet software would enable this spreadsheet to be used for modelling purposes. Each characteristic must be different.

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11   Normalisation is often used to refine the structure of a relational database.

Describe **four** advantages of using normalisation.

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12 A computer repair company employs a technician who uses an expert system to diagnose problems with printers. The company also employs a knowledge engineer.

(a) Explain how the technician would interact with the expert system.

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(b) Explain the role of the knowledge engineer.

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13 Here is an extract from a table which is part of a relational database. It requires the use of a compound key.

Studentid	Second_name	Coursecode
L03127	Gimenez	MAT
L03218	Driscoll	CHE
L03313	De Silva	PHY
L03214	Alicante	BIO
L03127	Gimenez	CHE

Analyse, including its effectiveness, the function of a compound key. Refer to the extract in your answer.

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Please turn over for Question 14.

14 A manager has produced a training video. It has been given to the IT department to edit.

Describe the purpose of the following features of video editing software and how each could be used.

(a) Trimming ....

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(b) Adding captions ....

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