



Cambridge International AS & A Level

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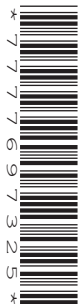
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INFORMATION TECHNOLOGY

9626/12

Paper 1 Theory

May/June 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 [].

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

- 1 (a) Tick the most accurate statement referring to the use of a length check when validating data.

	✓
It returns an error message if a data item is not in a lookup list.	
It checks to make sure a data item is within an upper limit and a lower limit.	
It checks that a data item consists of a set number of characters, not more or less.	
It is only used to check numbers.	

[1]

- (b) Tick the most accurate statement referring to the use of a check digit when validating data.

	✓
It is used to check that the data in two fields correspond.	
It checks the number of digits.	
It is the digit added to the end of a long number after a calculation has been performed.	
It checks that a number is above a certain limit.	

[1]

2 Sensors are used in both monitoring and control applications.

- (a) Tick the most accurate statement referring to the use of technology to monitor weather conditions.

	✓
Readings from sensors are not processed before being output.	
A sound sensor is the sensor most frequently used in a weather station.	
Rainfall is measured using a computerised measuring stick.	
Graphs can be produced automatically from a weather monitoring system.	

[1]

- (b) Tick the most accurate statement referring to the use of technology when used in systems which control traffic lights.

	✓
An actuator is the most important input device in such a system.	
The timing sequence of the traffic lights is randomly generated.	
An induction loop is used to detect the presence of an automobile.	
Traffic light systems use moisture sensors to detect the presence of pedestrians.	

[1]

(c) Describe the inputs, processing and outputs involved in the cooking of a meal using a microprocessor-controlled oven. Include the devices required in your answer.

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- 3 A manager wants to code the data about clothes sold in a shop, ready for storing in a database. The table shows the manager’s first attempt.

Category	Data
Colour	Light green (G), Black (B), Dark green (G), Red (R)
Type of clothing	Shirt (S), Skirt (S), Trousers (T), Pullover (P)
Size (ins)	25 – 30 (S), 31 – 36 (L), 37 – 42 (XL), 43 – 48 (XXL)
Brand	Astio (A), Dasiap (D), Utap (U), Gumho (G)

- (a) Give **three** different reasons why the manager wants the data coded.

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[3]

- (b) Give **three** different drawbacks of coding the data as shown in the table.

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[3]

- (c) Describe **two** different improvements which could be made to this coding system.

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[2]

4 Define the following types of malware, including a description of what each type does.

(a) Worm

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..... [3]

(b) Spyware

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..... [3]

(b) The company Narinder works for is in Ghana. Her parents live in Tanzania, a long way from Ghana.

She writes a blog and uses instant messaging to stay in touch with her parents.

Describe **four** other methods by which Narinder could use the internet to communicate with her parents, giving a different drawback of each method.

Method 1

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Drawback

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Method 2

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Drawback

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Method 3

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Drawback

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Method 4

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Drawback

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[8]

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- 9 GoodHope Ltd uses computers to process its payroll. The company pays its workers weekly, which involves the updating of a master file.

Part of a transaction file is shown. It contains workers' ID numbers and the hours worked by those workers in a particular week.

Part of the master file used by the company is shown. It contains the workers' ID numbers and the hourly rate at which they are paid in \$.

Transaction file

ID_number	Hours_worked
25306	35
25376	40
25891	37
27813	40
28197	35
32678	40
33429	37
36802	38
38439	38
39286	40

Master file

ID_number	Hourly_rate
13487	26
25306	25
25376	25
25891	24
26145	25
27813	22
28197	23
31026	22
32678	26
33429	22
36802	21
38439	25
39286	24
39875	25

- (a) The transaction file has been sorted so that the updating can begin.

Describe what other process must happen before updating can begin.

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 [1]

10 Many nuclear reactions are simulated rather than being carried out in real life.

(a) Describe **three** advantages of using a computer-based model to run a simulation for these reactions.

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(b) Describe **two** disadvantages of using a computer-based model to run a simulation for these reactions.

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- 11 The spreadsheet below shows information about sweets that a shop sells. The data has been formatted but the spreadsheet needs some improvements.

	A	B	C	D	E	F
1	Item	Cost p	Selling	Profit	Amount sold	
2	Nutty	\$1.10	\$1.30	\$0.20	193	
3	Cbco	\$0.95	\$1.10	\$0.15	194	
4	Cbco	\$1.05	\$1.30	\$0.25	171	
5	choc	\$0.80	\$0.90	\$0.10	181	
6						

- (a) Describe, in detail, what would happen within the spreadsheet if the mouse was double-clicked with the pointer positioned at X.

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 [1]

- (b) Describe, in detail, what would happen within the spreadsheet if the mouse was double-clicked with the pointer positioned at Y.

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 [1]

- (c) Originally, the data was entered into the cells in the range B2:C5 as numbers.

Describe the formatting that has been applied to the cells in this range.

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 [1]

- (d) Validation is to be applied to cells B2 to B5.
This will prevent numbers less than the current minimum value from being entered.
The shop owner will not use a range check or a lookup check.

Name and describe the validation check that will be used.

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..... [2]

Please turn over for Question 12.

12 Joanne has created a spreadsheet using proprietary software. Paula has suggested that she should save it in an open-source file format.

(a) Describe **three** distinct features of proprietary software.

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(b) Describe **two** distinct features of an open-source file format.

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