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INFORMATION TECHNOLOGY

9626/01

Paper 1 Theory

For examination from 2020

SPECIMEN PAPER

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. You may use an HB pencil for any diagrams, graphs or rough working.
- 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.
- 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 **16** pages. Blank pages are indicated.

- 1 There are many ways of changing data to suit a purpose including coding, encoding and encryption of data. Coding data in a field containing the gender of a person, for example, would involve coding 'male' as 'm' and 'female' as 'f'.

(a) Tick the correct statement regarding the coding of data.

	✓
A disadvantage of coding data is that it makes the data very difficult to read and understand	
An advantage of coding data is that it saves storage space	
A disadvantage of coding data is that it becomes much slower to type in the data	
An advantage of coding data is that codes are never complicated	

[1]

(b) Tick the correct statement regarding the encoding of data.

	✓
Encoding data is a form of validation	
Text and numbers are the only data types that can be encoded	
Converting digital data to analogue data is a form of encoding data	
Encoding is done to deliberately conceal the content of the data	

[1]

(c) Tick the correct statement regarding the encryption of data.

	✓
Encrypting data prevents hackers from intercepting it	
Encryption is the conversion of data into a form that cannot be easily understood by unauthorised users	
The two main types of encryption are known as public key encryption and open encryption	
Decryption is the process of further converting encrypted data into another more complicated encrypted form	

[1]

2 (a) Describe the difference between data and information.

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(b) A newspaper story is regarded as static data.

Using another appropriate example, describe what is meant by static data.

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3 Giving examples, explain what is meant by:

(a) application software

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(b) system software.

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4 Describe the characteristics of a gesture based user interface.

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- 5 Here is a small section of a spreadsheet used to calculate the weekly wages of the workers in a company.

	A	B	C	D	E	F
1	First name	Second name	Hours worked	Hourly rate	Weekly wage (\$)	Full name
2	John	Smith	40	8.50	=C2*D2	
3	Johann	Schmidt	42	9.25	=C3*D3	
4	Felix	Schnell	38	8.75	=C4*D4	
5	Maurice	LaPorte	46	11.50	=C5*D5	
			=SUM(C2:C5)	=MAX(D2:D5)	=AVERAGE(E2:E5)	

- (a) Using examples from the spreadsheet, explain what is meant by a cell reference.

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- (b) This spreadsheet uses formulae and functions. Explain the difference between formulae and functions.

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- (c) The manager of the company wants the full name of the worker printed on the payslip. In order to do this a formula will need to be used in cell F2 combining the first name and the second name separated by a space.

Write down the formula which uses a function to combine these data.

= [4]

You can use the space below for any working you need.

- (d) The manager wants to see immediately if a worker earns more than \$500 per week, without reading through the spreadsheet.

Explain what you would do in cells E2 to E5 to make it easier for her to see this.

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- (e) Relative cell referencing has been used in the spreadsheet. Using examples from this spreadsheet, explain why the use of absolute referencing would **not** be suitable.

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- (f) This spreadsheet could be used for modelling purposes. An example of modelling is the use of simulators for pilot training.

Describe **three** advantages of using computer simulations for pilot training rather than the real thing.

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- 6 A shop selling Konia mobile (cell) phones keeps records of all the phones it sells. The shop only stocks three models but each model has either 32 or 64 GB of memory. Part of the shop’s database is given below.

Customer	Model	Price (\$)	Memory (GB)
K Spencer	1278C3	500	32
J Sandhu	1273C6	400	64
M Akhtar	1273C3	300	32
Te Won	1275C6	450	64
B Perez	1275C3	350	32
Espanita di Stefano	1278C6	600	64
B Smith	1275C6	450	64
J Johannson	1275C3	350	32
Su Li	1278C6	600	64

- (a) A validation check is needed to make sure that only valid model numbers can be accepted. Name this validation check and describe how it would work.

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- (b) Giving examples, explain how consistency checks could be used to ensure that the data that are entered in the shop's database are valid.

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- (c) The data in the shop's database are in first normal (1NF) form. The database is to be converted to 2NF by having separate tables.

Complete the grid below to show the contents of the phone model table.

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(d) Give **two** advantages of normalising a database.

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(e) The shop manager wants to produce a graph of each model's sales during the year. She is not sure whether to use a pie chart or a line chart.

Analyse the differences between a pie chart and a line chart for this purpose.

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7 A head teacher wishes to use a computer to create a newsletter which will keep parents up to date with events at the school.

(a) Name **two** software types that he could use.

type 1

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type 2

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(b) Compare and contrast the use of these software types.

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8 The internet is used by many individuals in the world today.

(a) There are a number of types of malware that can be accidentally downloaded from the internet. Other than viruses, describe **three** of these types of malware.

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(c) Explain what is meant by the internet and the World Wide Web. In your answer include features of the internet which do **not** use the World Wide Web.

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9 Evaluate the differences between compilers and interpreters.

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