Cambridge International AS & A Level

CANDIDATE NAME

CENTRE NUMBER ☐☐☐☐☐

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INFORMATION TECHNOLOGY **9626/13**

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 [ ].

This document has **16** pages. Any blank pages are indicated.

1 Coding of data, such as G for green and B for blue, has some advantages and disadvantages.

(a) Tick the most accurate statement regarding an advantage of coding data in this way.

	✓
Data can become more difficult to interpret.	
All codes are easy to forget.	
It never leads to the coarsening of data.	
Coding of data means time is saved when entering data.	

[1]

(b) Tick the most accurate statement regarding a disadvantage of coding data in this way.

	✓
Codes cannot be used in a flat file database.	
More mistakes are made when entering data.	
It is possible to run out of meaningful code combinations.	
It is more difficult to use validation rules with the data.	

[1]

(c) A shirt manufacturer uses codes to store information about its shirts. For example, a blue shirt with a neck of 40 cm and a chest of 98 cm could be coded as B4098.

Explain what each part of the code P4395 could mean and why there may be problems with coding shirts in this way. Include in your explanation ways of improving this coding method.

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(d) Other methods are used to convert data. These include encryption and the use of codecs.

Analyse the effectiveness of these two methods.

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2   (a)   Tick the most accurate statement referring to software.

	✓
An operating system is an example of application software.	
Software consists of data or computer instructions.	
Software consists of RAM and ROM chips.	
A buffer is an example of application software.	

[1]

(b)   Tick the most accurate statement referring to system software.

	✓
A spreadsheet is an example of system software.	
A blu-ray disc is an example of system software.	
A printer driver is an example of system software.	
Control software is an example of system software.	

[1]

(c)   A company stores all its sales records in a spreadsheet.

Discuss the benefits and drawbacks of using a spreadsheet for this purpose.

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3 Fraudsters sometimes attempt to obtain customers' personal and banking data so they can commit identity theft.

Describe how customers should try to prevent their personal and banking data being obtained by phishing.

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4   Many parents are concerned that their children are not aware of the e-safety issues that arise from using the internet.

Describe the guidance parents should give to make sure their child stays e-safe when using social networking and gaming sites.

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5 Many companies have an intranet for use by their workers.

Describe what a company intranet is.

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6 Many computer hardware companies use expert systems to diagnose computer faults. The inference engine is a key component in an expert system.

Describe, in detail, the other components of an expert system.

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7 All the exams taken in a school are marked out of 80. The school has introduced a system of marking where students are awarded 5 marks for just sitting the exam and then, as normal, are awarded further marks for correct answers.

The marks are stored in a spreadsheet and validated using a range check.

Describe, giving examples, **three** types of test data that could be used to test the range check. For each type of data, describe an improvement that might be necessary as a result of the testing.

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8 After a program is written in a high-level programming language, it has to be converted into a lower level of language.

Evaluate, by weighing up the advantages and disadvantages, the use of an interpreter for this purpose.

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9 Students often confuse the concepts of data, information and knowledge.

Consider the following: 5, 10, 15, 20

Explain, using this example, how data becomes information, and how information can then lead to further knowledge.

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10   A bank keeps the following information about its customers and accounts in a database:

•   all the types of account customers can open
•   details of when customer accounts are opened
•   the names of each customer
•   customers' contact details.

Tables in the database are linked as shown:

Accounts	Date_Opened	Customers_1	Customers_2
🔑 Account_ID Account_type	Customer_ID Account_ID Date_Account_Opened	🔑 Customer_ID First_Name Second_Name	🔑 Customer_ID Address1 Address2 Phone

(Accounts 1 — ∞ Date_Opened ∞ — 1 Customers_1 1 — 1 Customers_2)

(a)   Describe, in detail, how the tables are connected and the possible relationships that exist within the database.

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(b) The tables were created with the field names shown. The field names were assigned correctly and then data was entered.

The software rejected the relationships as they were being set up.

Describe **two** reasons the software would have rejected the relationships.

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11 A journalist is researching background information on a story. His editor has provided some hard copy books on the topic. The editor has told the journalist to use the World Wide Web as well, because that could be more reliable than using the books.

Compare and contrast the use of these static and dynamic sources for this research.

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12 Describe what is meant by the following types of database query:

(a) Complex

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(b) Nested

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(c) Summary.

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13 A developer is designing a user interface for one specific user. The developer has been provided with the user's mental model to help with the design.

Describe what a mental model is, and give the benefits to the user of this method of design.

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