Cambridge Assessment International Education

Cambridge International AS & A Level

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

1257120347

INFORMATION TECHNOLOGY **9626/12**

Paper 1 Theory **February/March 2022**

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 70.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **12** pages. Any blank pages are indicated.

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1 A collection of data could be the following:

1989, Paolo, √, ₹, ≠, OR

(a) Explain, by defining the term 'data', why this is just a collection of data and is not information.

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(b) Select **three** of these items of data. Explain what information each item might represent and how it could be used.

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[3]

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2 An interpreter is a type of system software.

Describe how an interpreter operates.

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3 Mainframe computers are particularly suited to carrying out the transaction processing of online banks.

(a) Describe the features of a transaction processing system.

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(b) Discuss the advantages and disadvantages of the use of mainframe computers.

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4 Computerised weather stations are used to monitor a number of analogue atmospheric variables.

Describe how **three** of these variables are collected and what needs to happen to the data before it can be used by a computer.

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5 Some expert systems use a mixture of forward chaining and backward chaining. Some use forward chaining only.

Describe the process of forward chaining.

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6 A school secretary is updating a database by copying data from some hard copy records. Here are three of the records:

First_name	Family_name	Student_number	Previous_school	Date_of_birth
Jonathon	Odoki	12036	St Mary's	07/12/2004
Sven	Johansson	09132	The Grange	13/10/2007
Manjit	Sangherra	10102	Bluestars	11/03/2007

The Student_number will be stored as text, with the first two characters representing the year group the student belongs to.

The Student_number and Date_of_birth are the only data that need to be validated as they are entered. A range check, limit check or presence check would not be appropriate for validating these data.

(a) Describe, in precise detail, **three** appropriate validation checks that could be used to validate the data. Each validation check must be different.

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[6]

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(b) As well as validation, verification will need to be carried out.

Explain why verification is needed in addition to validation. Use examples from your answers to part **(a)**.

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7 The average (mean) of a set of numbers can be found by adding the numbers together and dividing the resulting total by how many numbers there are in the set.

Write an algorithm in pseudocode to enter and find the average of a set of numbers using a REPEAT…UNTIL loop. Your algorithm must work for different sets of numbers.

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8 Phishing is an attempt by fraudsters to gather personal information using email. Receivers of emails should use several different methods to prevent phishing attacks.

Evaluate the different methods which can be used to prevent phishing.

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9 Hackers sometimes commit fraud after causing spyware to be installed on other users' computers.

(a) Describe what is meant by the term 'spyware'.

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(b) Explain how a hacker uses the information gained from spyware to commit fraud.

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10 **(a)** Define the following database terms.

(i) One-to-one relationship

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(ii) One-to-many relationship

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(iii) Compound key

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(b) Explain how a many-to-many relationship can be created in a database.

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