Cambridge International AS & A Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

INFORMATION TECHNOLOGY **9626/12**

Paper 1 Theory **May/June 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.

[Turn over

1   Some students have been asked by their teacher to carry out a study. They will collect data about the families living in five streets close to their school. They will carry out the study using direct data sources and will not use records from the 2020 census which are kept at the city hall.

Describe the suitability of using direct data sources rather than the census data for the study.

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2   Encryption has many uses, including the encryption of hard disks.

Describe hard disk encryption.

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3 Julia is setting up a hairdressing business. She has recruited several staff. She is creating a database of all her staff and has written down all their details ready for entering into a computer. She will need to verify the data when it is entered.

She has been told that she cannot use a parity check but should use visual verification and double data entry.

(a) By describing what is meant by a parity check, explain why it might not be suitable in this scenario.

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(b) Compare the similarities and differences between the visual checking and double data entry methods of verification.

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4 The performance of mainframe computers and supercomputers is often measured using performance metrics.

Compare, by describing the similarities and differences between them, the different types of performance metrics.

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5 When a high level language program is written, it has to be translated so the computer can run it. This can be achieved using a compiler or an interpreter.

Discuss the advantages and disadvantages of using a compiler rather than an interpreter.

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6 Sensors are used in monitoring systems to measure physical variables. It is important that sensors are calibrated before use.

(a) Describe, in detail, these sensors and give an appropriate use for each. Each use must be different.
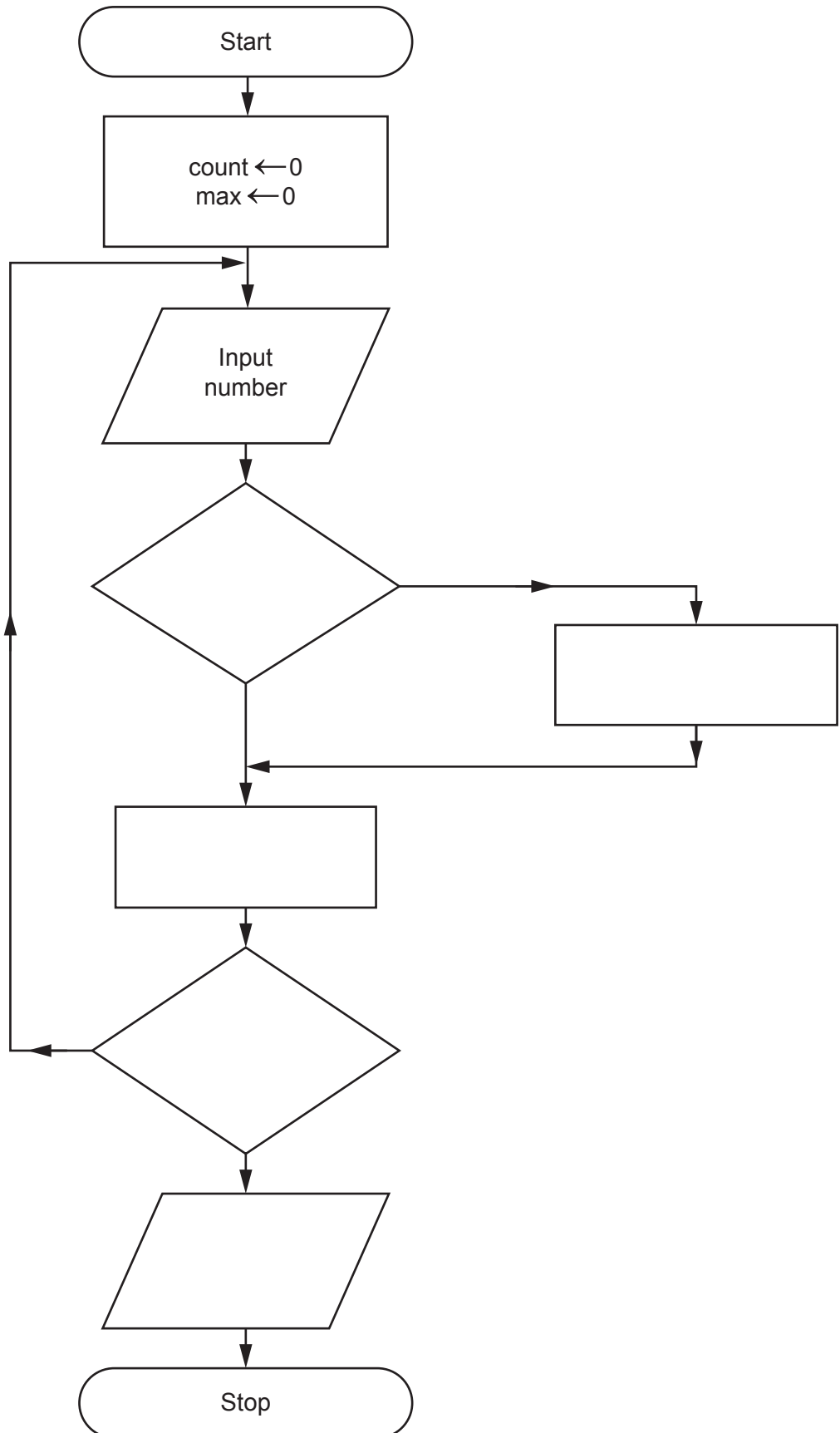
Humidity ....

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(b) Explain the importance of calibration.

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(c) Describe the differences between one point calibration and two point calibration.

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7 Josefine has started to draw a flowchart which inputs 10 numbers and outputs the largest value.

Complete the flowchart by filling in the empty boxes and by placing yes and no as appropriate in the diagram.

[7]

8 Pharming is a method used by hackers to obtain information from bank customers.

(a) Explain what is meant by pharming.

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(b) Describe **three** methods a customer could use to minimise the risk of becoming a victim of pharming.

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9 Many companies use computers to process their payroll.

A transaction file is produced once a week. It consists of the WorkerID and HoursWorked fields. The master file contains the WorkerID, RateOfPay and WagesSoFar fields as well as other details. The WagesSoFar field represents how much each worker has earned so far this year.

Each worker's wage is calculated by multiplying the HoursWorked by the RateOfPay. When the wage for that week is calculated, it is added on to the WagesSoFar field.

Every week the master file has to be updated to include the new wage earned so far this year.

(a) Complete the following pseudocode algorithm which shows the process of updating the master file. You can assume no other transactions are being carried out.

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READ first record in transaction file
READ first record in old master file
WHILE not end of transaction file
    IF transaction file WorkerID = master file WorkerID
        THEN
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(b) Updating a master file in a payroll system is an example of batch processing.

Discuss the advantages and disadvantages of using batch processing, compared to other types of processing, for a payroll system.

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