



CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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9626/13

May/June 2023

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

- 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.

- 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.

1 Describe what is involved in data logging.

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..... [4]

2 Explain the purpose of the SSL/TLS protocol.

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..... [5]

3 There are different types of processing including batch processing and real-time processing.

(a) Without referring to master files and transaction files, describe what is meant by batch processing.

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(b) Rocket guidance systems are used in space exploration.

Explain why a rocket guidance system is an example of the use of real-time processing.

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..... [3]

- 4 One of the functions of an operating system is to maintain the security of a computer system.

Describe the **other** functions of an operating system.

[8]

5 Justify the use of Information Technology for monitoring the environment.

[8]

- 6** A computer-controlled traffic light system controls the flow of motor vehicles and pedestrians.

Describe the inputs, processing and outputs involved in this system.

[8]

7 Explain the reasons for the digital divide between the old and the young.

[6]

8 Spyware is a type of malware.

Describe the consequences to the individual of the use of spyware on their computer.

[4]

- 9 Discuss the advantages and disadvantages of using a gesture-based user interface rather than a graphical user interface to control devices.

[8]

- 10** An expert system is being trialled for use as part of a study on animal identification. It has been set the following task.

The goal is to decide the colour of a bird named Hortense.

Two facts are provided:

- she sings
- she is 15cm tall.

The rule base contains the following three rules:

- IF X is an ostrich – THEN X has a long neck
- IF X sings and X is 15cm tall – THEN X is a canary
- IF X is a canary – THEN X is yellow

The inference engine has concluded that Hortense is yellow. It has taken the facts as data and used the rules base to decide:

- 1 Hortense is a canary
- 2 Hortense is yellow

- (a)** Identify which type of chaining the inference engine used.

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 [1]

- (b)** Explain the reasoning the inference engine used.

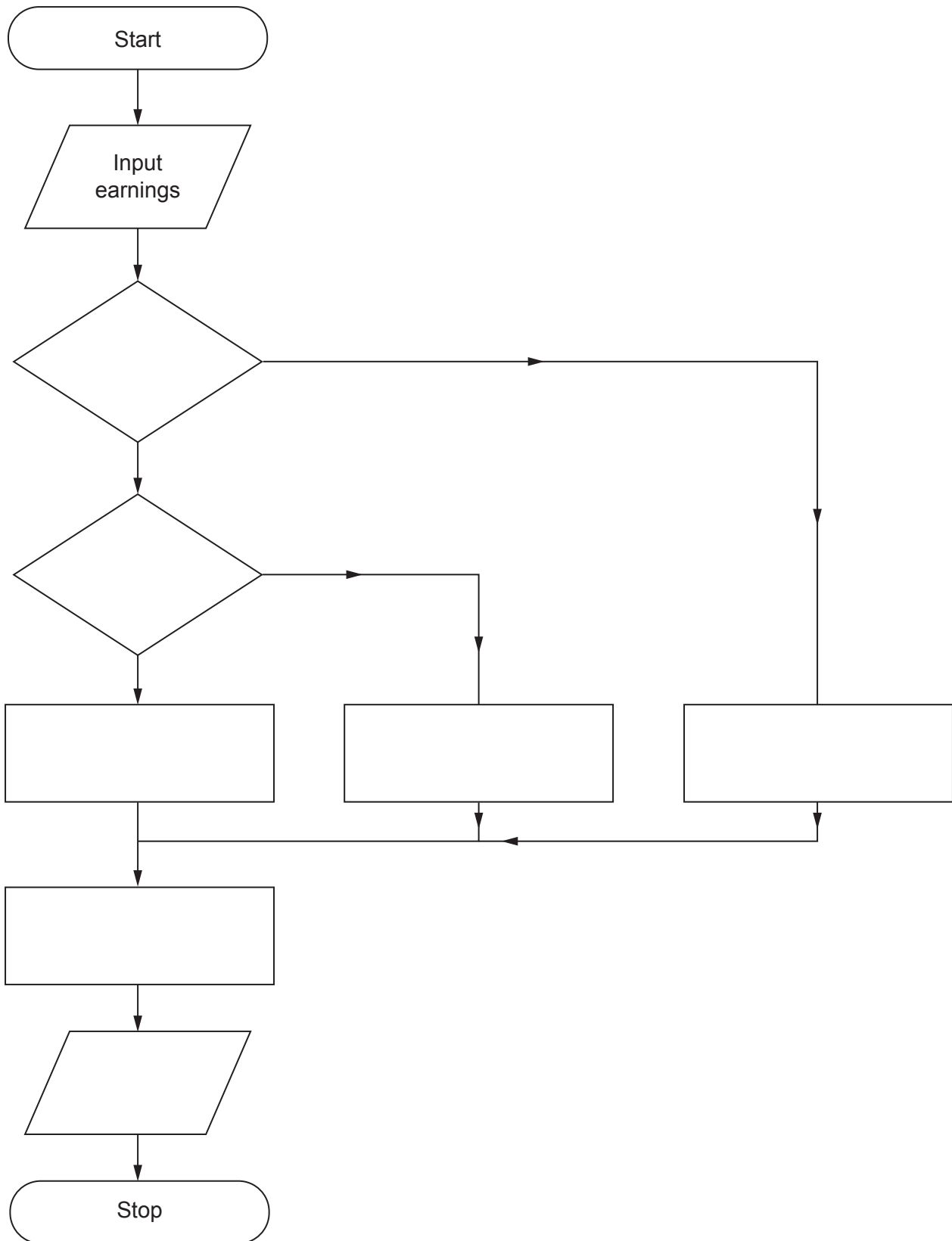
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 [4]

11 In Ruritania these are the tax rules.

- People who earn up to \$10 000 pay no tax.
- People who earn between \$10 000 and \$40 000 pay 20% tax on their earnings **above** \$10 000.
- People who earn more than \$40 000:
pay \$6 000 ($\$30\,000 \times 20\%$)
and pay 40% tax on their earnings **above** \$40 000.

Complete this flowchart which shows how the net wage (the money earned after tax is paid) is calculated and is output for an individual in Ruritania.



[8]

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