

## Paper2 Specimen Paper

### Y Ngai

Please note that you may see slight differences between this paper and the original.

Candidates answer on the Question paper.

**OCR supplied materials:**  
Additional resources may be supplied with this paper.

**Other materials required:**

- Pencil
- Ruler (cm/mm)

**Duration: 90 mins**

Candidate forename		Candidate surname	
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Centre number						Candidate number				
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### INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer all the questions, unless your teacher tells you otherwise.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Where space is provided below the question, please write your answer there.
- You may use additional paper, or a specific Answer sheet if one is provided, but you must clearly show your candidate number, centre number and question number(s).

### INFORMATION FOR CANDIDATES

- The quality of written communication is assessed in questions marked with either a pencil or an asterisk. In History and Geography a *Quality of extended response* question is marked with an asterisk, while a pencil is used for questions in which *Spelling, punctuation and grammar and the use of specialist terminology* is assessed.
- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **82**.
- The total number of marks may take into account some 'either/or' question choices.

Answer all the questions.

1(a). Kofi uses his computer to record an audio file of himself playing his guitar.

Outline what happens when the computer converts the music into a file.

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[2]

(b). Kofi increases the sample rate his computer is using to record his guitar.

Explain **two** effects this will have on Kofi's recording.

1

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2

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[4]

(c). Kofi is emailing his recording to a record label. He uses lossy compression to produce the music file.

Explain **two** reasons why using lossy compression is beneficial.

1

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2

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[4]

2(a). Order the following units from smallest to largest:

GB          bit          PB          byte          nibble          MB

----- [1]

(b). Convert the decimal number 191 into an 8 bit binary number.

----- [1]

(c). Convert the hexadecimal number 3E into a decimal number. You must show your working.

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----- [2]



(e).

(i) Add together the following two 8 bit binary numbers. Express your response in an 8 bit binary form.

01101010

10010110

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[2]

(ii) Identify the problem this addition has created.

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[1]

3(a). Complete a 2 place right shift on the binary number 11001011.

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[1]

(b). Explain the effect of performing a 2 place right shift on the binary number 11001011.

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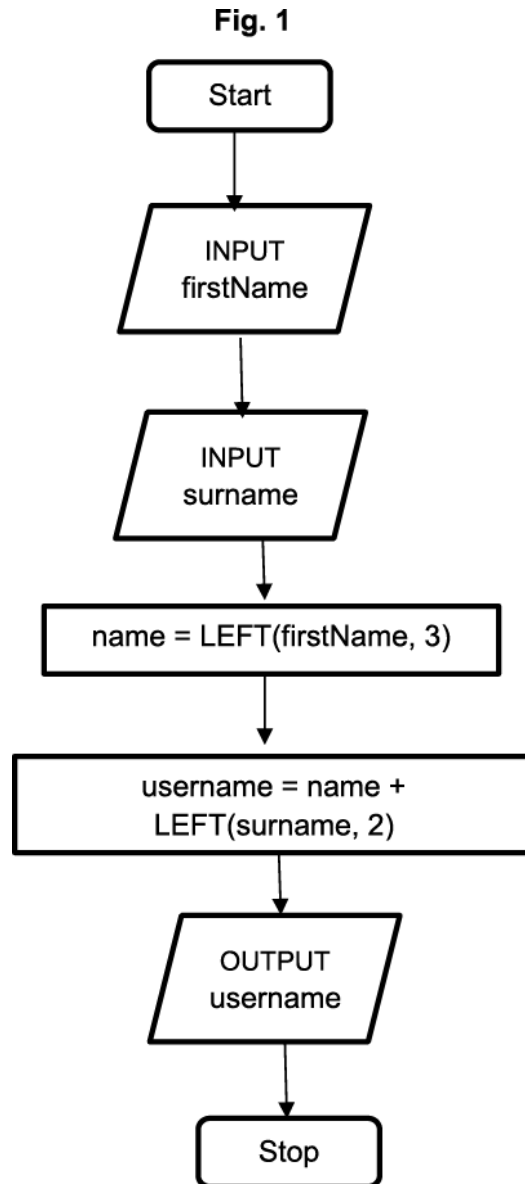
[2]

(c). Complete the truth table below for the Boolean statement  $p = \text{NOT}(A \text{ AND } B)$ .

<b>A</b>	<b>B</b>	<b>P</b>
FALSE	FALSE	TRUE
FALSE	TRUE	
TRUE	FALSE	
TRUE	TRUE	FALSE

[2]

4(a). Johnny is writing a program to create usernames. The first process he has developed is shown in the flowchart in Fig. 1.



For example, using the process in Fig. 1, Tom Ward's user name would be TomWa.

State, using the process in Fig. 1, the username for Rebecca Ellis.

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----- [1]



5(a). Harry is planning to create a computer game using a high-level programming language.

State why the computer needs to translate the code before it is executed.

----- [1]

(b). Harry can use either a compiler or an interpreter to translate the code.

Describe **two** differences between how a compiler and an interpreter would translate Harry's computer game.

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----- [4]



6(a). Heath is researching how long, to the nearest minute, each student in his class spends playing computer games in one week (Monday to Friday). He is storing the data in a 2D array.

Fig. 2 shows part of the array, with 4 students.

**Fig. 2**

		<b>Students</b>			
		<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>Days of the week</b>	<b>0</b>	60	30	45	0
	<b>1</b>	180	60	0	60
	<b>2</b>	200	30	0	20
	<b>3</b>	60	10	15	15
	<b>4</b>	100	35	30	45

For example, student 1, on Monday (day 0), played 30 minutes of computer games.

Explain why Heath is using an array to store the data.

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[2]

(b).

(i) Identify a data type that could be used to store the number of minutes in this array.

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[1]

(ii) State why this data type is the most appropriate.

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[1]

- (c). Heath wants to output the number of minutes student 3 played computer games on Wednesday (day 2). He writes the code:

```
print (hoursPlayed[3,2])
```

The output is 20.

- (i) Write the code to output the number of minutes student 0 played computer games on Wednesday.

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----- [1]

- (ii) State the output if Heath runs the code:

```
print (hoursPlayed[2,1])
```

----- [1]

- (iii) State the output if Heath runs the code:

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print (hoursPlayed[3,1] + hoursPlayed[3,2])
```

----- [1]

- (iv) Write an algorithm to output the total number of minutes student 0 played computer games from Monday (day 0) to Friday (day 4).

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----- [3]









(b). Identify **two** variables used in the program.

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----- [2]

(c).

(i) Identify **one** item in the program that could have been written as a constant.

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----- [1]

(ii) Give **one** reason why you have identified this item as a constant.

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----- [1]

(d). Finn uses an IDE (Integrated Development Environment) to write his programs. Identify **two** features of an IDE that Finn might use.

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----- [2]

**END OF QUESTION PAPER**