Class/ Index Number	Centre Number/ 'O' Level Index Number	Name
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新加坡海星中学

MARIS STELLA HIGH SCHOOL
PRELIMINARY EXAMINATION
SECONDARY FOUR

COMPUTING **7155/01**

Paper 1 Written **28 Aug 2019**

2 hours

Candidates answer on the Question Paper.
No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your class, index number and name in the spaces at the top of this page.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Approved calculators are allowed.

Answer **all** questions.

The number of marks is given in brackets [ ] at the end of each question or part question.
You should show all your working.
The total number of marks for this paper is 80.

For Examiner's Use
80

1 Insert **six** of the following words or numbers about computers and data in the correct place in the text below.

2	10	16	analogue
binary	denary	digital	hexadecimal

While _____ data is transmitted via fibre optical cables, a computer cannot process this type of data. For a computer to be able to process data, it needs to be converted to _____ data. As humans, we mostly use a _____ number system; this is a base _____ number system. Computers use a _____ number system; this is a base _____ number system.

[6]

2 The three binary numbers in the registers X, Y, Z were transmitted from one computer to another.

	Parity bit							
Register X	1	0	0	1	1	0	0	0
Register Y	0	1	1	0	0	1	1	1
Register Z	1	0	0	1	1	0	0	1

One binary number was transmitted incorrectly. This is identified through the use of a parity bit.

Identify which register contains the binary number that was transmitted incorrectly. Explain the reasons for your choice.

The binary number that was transmitted incorrectly is in **Register** ……

Explanation ……...

…….

…….

…….

…….

…….

[4]

3 John is writing a program using a high-level language. The program will be published and sold for a profit.

(a) John uses an interpreter when creating the computer program.

State **three** features of an interpreter.

Feature 1 ……...

……

Feature 2 ……...

……

Feature 3 ……...

……

[3]

(b) James writes a similar code and compiled the program when he completed it.

Explain **two** benefits of compiling the program.

Benefit 1 ……...

……

……

……

Benefit 2 ……...

……

……

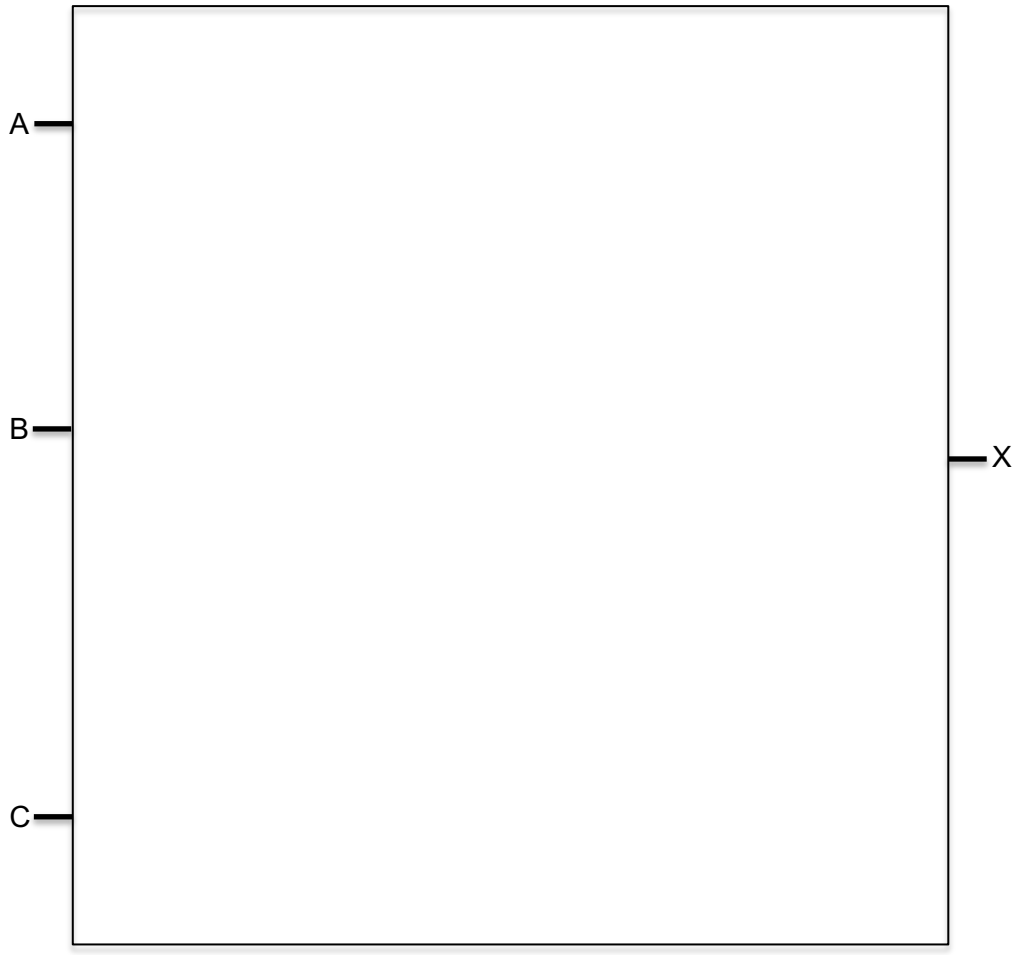
……

[4]

4 Consider the logic statement:

X = ((**A** AND **B**) AND (**A** OR NOT **C**)) OR (**B** AND NOT **C**)

(a) Draw a logic circuit to represent the given logic statement.



[6]

(b) Complete the truth table for the given logic statement.

A	B	C	Working Space					X
0	0	0						
0	0	1						
0	1	0						
0	1	1						
1	0	0						
1	0	1						
1	1	0						
1	1	1						

[4]

5 Phishing and pharming are two examples of online security threats to a computer system.

(a) Explain what is meant by phishing and pharming.

Phishing ……...

……

……

……

Pharming ……

……

……

……
[4]

(b) Identify **two** other online security threats to a computer system.

Security threat 1 ……

Security threat 2 ……
[2]

(c) Give **two** security measures that can help to protect a computer system from online security threats.

Security measure 1 ……

Security measure 2 ……
[2]

6 Darryl stores data electronically.

Describe **two** methods that he could use to avoid loss of stored data.

Method 1 ……...

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Method 2 ……...

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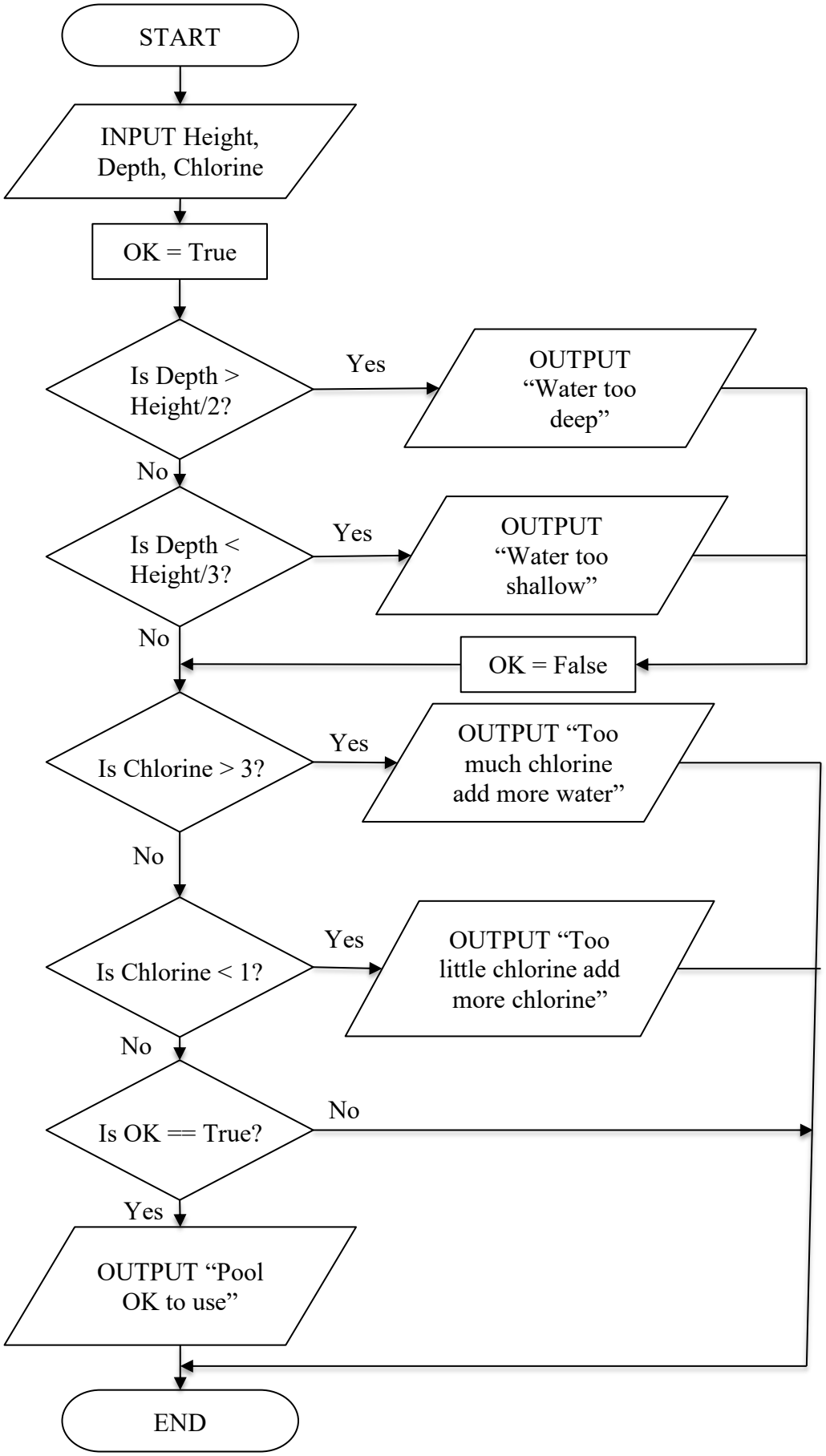
……
[4]

7 The following checks the level of chlorine, depth of water and height of a swimming pool. Error messages are output if a problem is found.



(a) Complete the trace tables for each set of input data.

Input data: **6**, **2.5**, **2**

Height	Depth	Chlorine	OK	OUTPUT

Input data: **4**, **3**, **1.5**

Height	Depth	Chlorine	OK	OUTPUT

Input data: **6**, **3.5**, **4**

Height	Depth	Chlorine	OK	OUTPUT

[6]

(b) Identify a problem with the algorithm that the flowchart represents.

……

…… [1]

8 Describe **two** differences between Read Only Memory (ROM) and Random Access Memory (RAM).

Difference 1 ……..

……

……

……

Difference 2 ……..

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……

[4]

9 Five internet terms and six definitions are listed.

Draw a line to connect each term to a correct definition.

Internet term	Definition
Browser	A program that allows a user to view webpages
Internet Service Provider (ISP)	The main protocol that governs the transmission of data using the Internet
Uniform Resource Locator (URL)	A website address that is typed into the address bar
MAC address	An address given to each device on a network. It is provided by the network
IP address	A unique address given to a device on a network. It is provided by the manufacturer
	A company that provides a connection to access the Internet

[5]

10 An algorithm is required to find the smallest number out of 10 positive numbers input.

```
1       Small = 0
2       Counter = 0
3       REPEAT
4               INPUT Num
5               IF Num < Small
6                       Num = Small
7               ENDIF
8               Counter = Counter + 1
9               OUTPUT Small
10      UNTIL Counter < 10
```

(a) There are **four** errors in this pseudo-code.

Locate the errors and state the correct pseud-code.

Error 1 ……

Correction ……

Error 2 ……

Correction ……

Error 3 ……

Correction ……

Error 4 ……

Correction ……

[8]

(b) **(i)** The algorithm does not include validation on input.

Name **and** describe **one** validation check that could be added to validate the input.

……..

……..

……..

……..

[2]

(ii) Name **two** different validation checks, other than your answer to **part (b)(i).**

1 ……..

2 ……..

[2]

(c) Once completed, the algorithm is tested with data for normal conditions.

Identify **two other** test case conditions that could be used to test the algorithm.

For **each** condition, give an example of test data for this algorithm.

Test case condition	Test data

[4]

11 A small cafe sells five types of items:

bun	0.50 dollars
coffee	1.20 dollars
cake	1.50 dollars
sandwich	2.10 dollars
dessert	4.00 dollars

You are required to write a program for the cashier system that does the following:

- inputs item sold and the quantity for every transaction during the day,
- uses the string “end” to finish the day’s input,
- adds up the daily amount earned for each type of item,
- outputs the total earnings (for all items) at the end of the day,
- outputs the type of item that had the highest earnings at the end of the day.

(a) State the input, output, and process that are required for the program.

Input ……

……

Output ……

……

Process ……

……

[3]

(b) Write an algorithm, using pseudo-code or a flowchart, to create the program required in the question.

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[6]

-End of Paper-