Class	Index Number	Name

新加坡海星中学

MARIS STELLA HIGH SCHOOL
PRELIMINARY EXAMINATIONS
SECONDARY FOUR

COMPUTING **7155/01**
Paper 1 Written **23 Aug 2018**
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 a HB pencil for any diagrams or graphs.
Do not use staples. paper clips, highlighters, glue or correction fluid.

Approved calculators are allowed.

Answer **all** the 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

This document consists of **12** printed pages.

1 (a) Convert the denary number 4351 into a hexadecimal number. Show your working.

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……..
[2]

(b) Convert the binary number 11010101 into a denary number. Show your working.

……..

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……..
[2]

(c) Describe **two** common uses of the hexadecimal number system.

1 ……..

……..

……..

2 ……..

……..

……..
[4]

2. Insert **six** of the following words about types of software licences in the correct places in the text below.

public	proprietary software	freeware
illegal	legal	public domain software
shareware	commercial	free and open source software

Most …….. software are under legal protection and copyright, and they are also known as …….. . Unauthorised copying is …….. and majority of the source code is kept secret. Only after these legal protection have expired, been surrendered or are simply inapplicable would these programs become …….. .

A type of software known as …….. is similar to proprietary software except that it is available for use at no cost. It usually allows users to try a limited version of the software. While …….. is usually the demonstration software that is distributed for free for a specific evaluation period.

[6]

3 Computer networks are common nowadays. Most homes are equipped with a simple modem and a router to link the mobile devices at home to the same network. Identify **two** other network devices. In each case, explain the function of the device.

Device 1 ……..……...

Function ..…….....

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…….....

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Device 2 ……..……...

Function ..…….....

…….....

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…….....

[6]

4 Your Co-Curricular Activities (CCA) club wants to organise an enrichment activity for its members. Each student is given 3 enrichment activities to choose from. Your club wants to use a computer program to find out which students are interested in which enrichment activity and which is the most popular choice. There are 60 students in the club.

State the inputs, the outputs and the processes required to find the most popular enrichment activity and the names of the students who chose that enrichment activity.

Inputs ……....

…….....

…….....

Outputs ……....

…….....

…….....

Processes required ……....

…….....

…….....

[6]

5 There are three main types of program errors that can occur in programming.

(a) A student was asked to write a program that asks for integer and returns the value of that integer multiplied by 5. The program would be required to check that only numbers are accepted. The student wrote the following code.

```
1  number = input(“Please enter a number. “)
2  while not number.isdigit:
3      number = input(“Please enter numbers only. “)
4  answer = number * 5
5  print(answer)
```

The student made 2 mistakes in the programming code above. That caused his output to be undesirable.
You are required to do the following:

- locate which lines the errors are in
- for each error, identify what type of error it is
- explain why it is an error
- what should be done to correct the error

Line ……...

Type of Error ……..

Description …….

……..

……..

Correction ……..

……..

……..

Line ……..

Type of Error …….

Description …….

……..

……..

Correction …….

……..

……..

[6]

(b) (i) State the third type of error that is not found in part (a).

……..……..

(ii) Describe with an example why such an error occurs and what will it cause.

……..……..

……..……..

……..……..

……..……..

[4]

6 Five statements about compilers and interpreters are shown.

Tick (√) to show whether the statement refers to a compiler or to an interpreter.

Statement	Interpreter	Compiler
Takes one statement at a time and executes it		
Syntax errors are detected before the program runs		
Translates the whole program in one go		
Easier to debug		
Resulting program runs at a faster speed		

[5]

7 Pharming is a type of cyber-attack; describe two safety measures that businesses could use to prevent pharming.

Safety measure 1 ……....

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…….....

Safety measure 2 ……....

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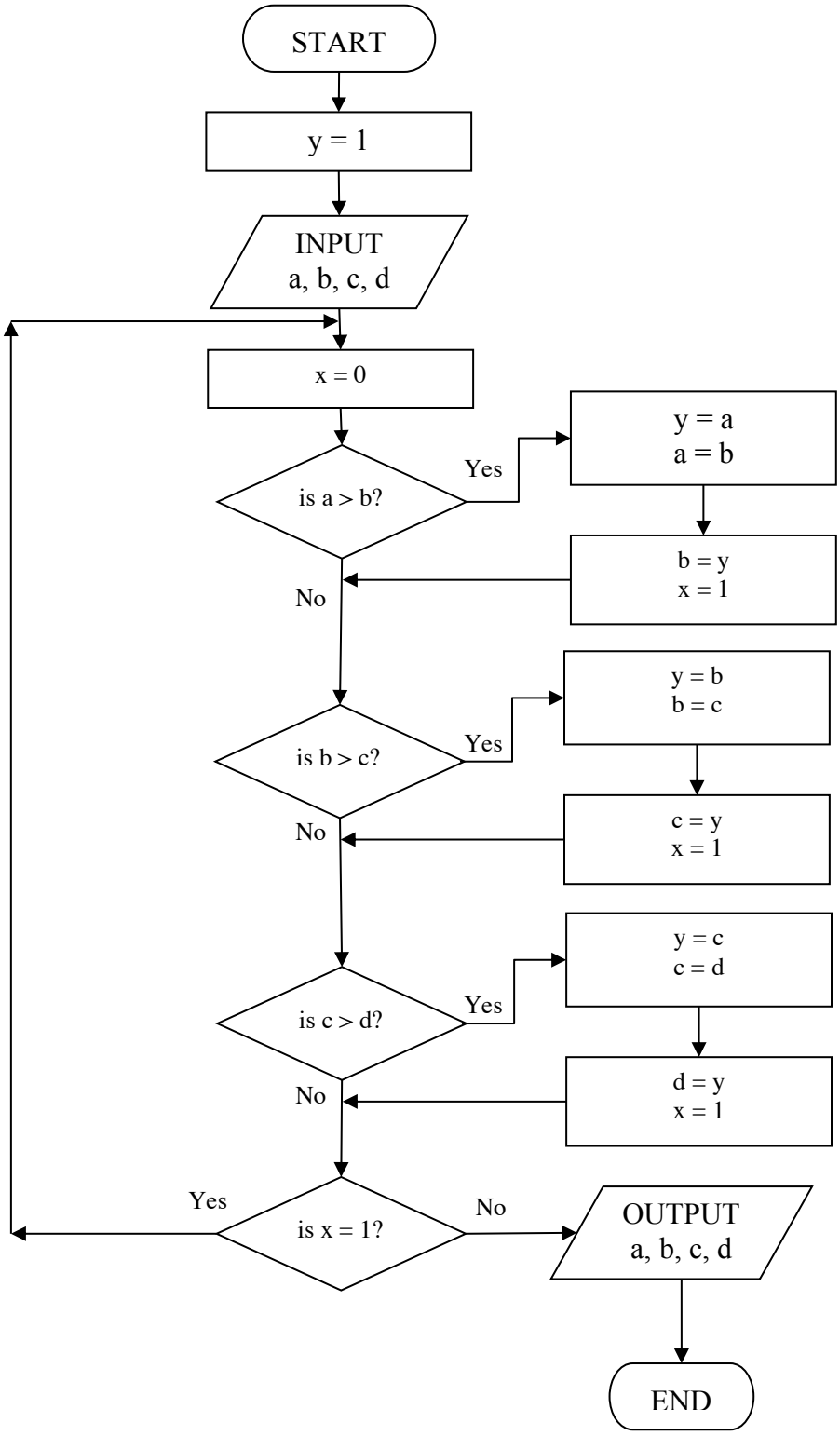
…….....

[2]

8 Study the following flowchart of a program very carefully.



(a) Complete the trace table for the following two sets of data:

(i) a = 18, b = 34, c = 5, d = 55

(ii) a = 5, b = 9, c = 4, d = 1

a	b	c	d	x	y	OUTPUT

[4]

(b) (i) Explain the purpose of this program.

……

……

(ii) Explain the purpose of the following two variables within this program.

x ……

……

y ……

……

[3]

9 Spreadsheets are used to process and analyse data. Explain the purposes of conditional formatting, goal seek and scenario manager features in spreadsheets.

conditional formatting ……..……..……..……

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……..……

goal seek ……..……..……...

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……..……

scenario manager ……..……...……..

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……..……

[3]

10 Rick gave the following three computer definitions.

Give the name of the term being described in each case.

(i) “a temporary memory to store data waiting to be sent to a device”

……...

(ii) “a signal from a device sent to a computer causing the CPU to stop its current operation temporarily”

……..

(iii) “a permanent storage device type that has faster access speed and is not susceptible to mechanical shocks”

……..

[3]

11 Networks are made up of physical topology (e.g. bus topology) and logical topology (e.g. peer to peer networking).

You are tasked to design the information kiosk for the upcoming Changi Airport Terminal 5. The information kiosk would allow users to check their current location and how to get to a particular destination within the terminal. Your design should ensure that updating the main computer will update all the other kiosk as well.

Suggest a possible physical and logical topology for your design. Explain your decision.

Physical topology ……

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……

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Logical topology ……..

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……

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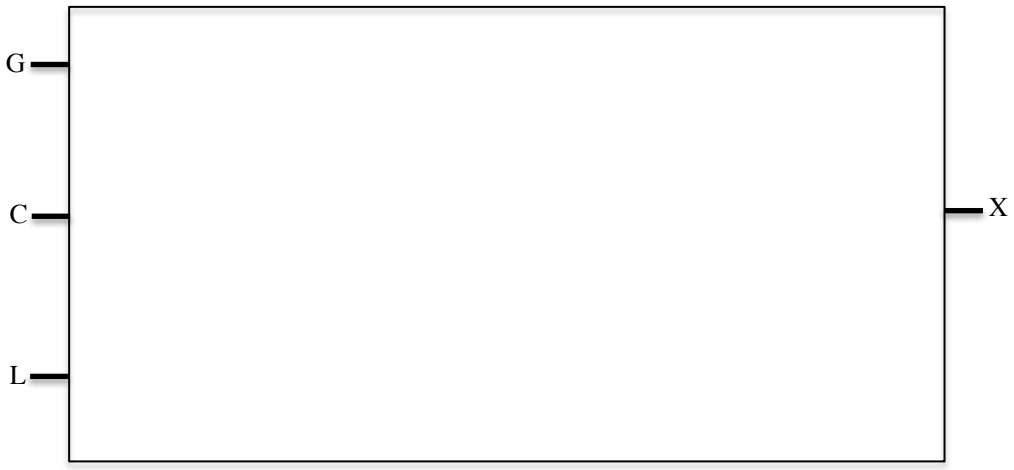
[6]

12 A gas heater has a safety circuit made up of logic gates. It generates an alarm sound in response to certain conditions.
The output, X, of the logic circuit that drives the alarm must have a value of 1 only if:
either gas pressure is normal and carbon monoxide level is too high
or gas leak is detected and carbon monoxide level is normal

The inputs to the system are:

Input	Description	Binary Value	Conditions
L	gas leak detection	0	no gas leak is detected
		1	gas leak is detected
C	carbon monoxide level	0	carbon monoxide level is normal
		1	carbon monoxide level is too high
G	gas pressure	0	gas pressure is normal
		1	gas pressure is too high

(a) Draw a logic circuit for this safety system.



[5]

(b) Complete the truth table for the monitoring system.

L	C	G	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]

13 Write an algorithm, using pseudocode only, which:

- inputs 1000 numbers
- ensures that the number entered is between (1 to 10000) (You may assume that only numbers will be input)
- processes each number to identify if it's a perfect square
- outputs only the perfect square
- outputs the total number of perfect squares
- outputs the total percentage of inputs are perfect squares
- outputs the total number of even perfect squares
- outputs the total number of odd perfect squares

(You may use INT(X) in your answer e.g. Y = INT (3.8) gives the value Y = 3 and SQRT(X) in your answer e.g. Z = SQRT(81) gives the value Z = 9.0)

Your output statement should look as follows:

The total number of perfect squares: 143
The total percentage of inputs that are perfect squares: 14.3%
The total number of even perfect squares: 101
The total number of odd perfect squares: 42

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[9]

-End of Paper-