Name: ______________________________ (   )   Class: Sec ______

BUKIT VIEW SECONDARY SCHOOL

PRELIM EXAMINATION

Secondary 4 Express

COMPUTING **7155/01**

13 September 2018

PAPER 1 Written **2 hours**

Candidates answer on the Question Paper.

No Additional Materials are required.

<u>READ THESE INSTRUCTIONS FIRST</u>

Write your Name, Register Number and Class on the top of this page.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
No marks will be awarded for using brand names of software packages or hardware.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
You should show all your working.

80

Setter: Mr Low Chee Wah   Parent's signature : _______________

This question paper consists of 16 printed pages.

1. (a) A company uses spreadsheet software.

Draw a line between the description and the correct spreadsheet function.

Description	Function
It is one of the logical functions to determine if all conditions in a test are TRUE	**AND**
Returns number rounded up, away from zero, to the nearest multiple of significance	**AVERAGE**
Returns the mean of the given numbers	**CEILING**
Search the data in column and use associated data in the same row	**ROUND**
	VLOOKUP

[4]

2. **(a)** Convert the binary number **11101001** into a denary number. Show your working.

……

……

……[2]

(b) Convert the denary number **121** into a hexadecimal number. Show your working.

……

……

……[2]

(c) Convert the hexadecimal number **E4** into a binary number. Show your working.

……

……

……[2]

(d) Convert the binary number **10011100** into a hexadecimal number. Show your working.

……

……

……[2]

3. Insert **six** of the following words about a being safe and responsible computer user in the correct place in the text below.

cloud	data corruption	data loss	decoding
encoding	firewall	private	public
router	spyware	worm	

Encryption refers to the process of ……. data so that a secret key is needed for …… the data.

The …… is a device or computer program that prevents unauthorised access to or from a …… network.

A ……is a hidden program that secretly collects personal information about its users and transmits this information to attackers without the users' knowledge.

…….. occurs when computer data is changed or becomes unreadable. [6]

4. An engineer wants to use a computer program to find out which day in May experiences the highest temperature in the factory. The average temperature of each day in May is recorded. There are a total of 30 readings taken for this study.

(a) State the inputs, the outputs and the processes required to find the hottest day in May.

Inputs

……

……[2]

Outputs

……

……[2]

Processes required

……

…… [2]

(b) Is 100 degree Celsius (100°C) a possible extreme data for the input? Explain your answer.

……

……

……. [2]

5. Name each of the key terms described in the five statements below:

	Statement	**Terms**
(a)	Creative works that are the creations of the mind and can exist purely as data with no physical form.	
(b)	The legal right of owners to control the use and distribution of their intellectual property.	
(c)	Official description of activities that are authorised or forbidden by the owner of intellectual property.	
(d)	Software where the legal protections that are typically granted to intellectual property have either expired, been surrendered or are simply inapplicable.	
(e)	Demonstration software that is distributed for free but for a specific evaluation period only.	

[5]

6. When we use programming language, the source code must be translated into machine code before it can be run.

(a) What are machine codes?

……

…… [1]

(b) Name the 2 translator programs used to perform the translation and describe their functions.

(i) ……

……

(ii) ……

…… [2]

(c) Explain the computer term “Command Line Interface.”

……

……

…… [1]

7. A topology describes the physical layout of a network. Understanding the topology is essential to designing a network.

(a) Describe **one** advantage of ring topology over bus topology.

……

……[1]

(b) Which topology would you recommend if the requirement is to isolate fault easily and perform a replacement without affecting the rest of the network?

……

……[1]

(c) Which network topology is the least reliable in the event of a breakdown of a computer in the network? Explain your choice.

……

……

……[2]

8. **(a)** Complete the table for **two** main differences between RAM and ROM.

S/N	RAM	ROM
1		
2		

[2]

(b) Solid-state hard disk is used as an external storage device in certain circumstances. List **one** advantage and **one** disadvantage of this type of storage device over magnetic storage device.

(i) Advantage: ……

……

(ii) Disadvantage: ……

…… [2]

(c) Describe the function of each of the following computer components:

(i) Central processing unit: ……

……

(ii) Arithmetic Logic Unit (ALU): ……

…… [2]

9. **(a)** In ensuring that a program works as intended, validation checks are often added to the codes. What is data validation?

……

……

…… [1]

(b) In the following extracts of codes, give the name of validation check.

	Extract of codes	**Name of validation check**

(i)	while True:
	  s = input("Enter name: ")
	  if (len(s)!=0):
	  break
	  else:
	  print(“Error, try again”)	

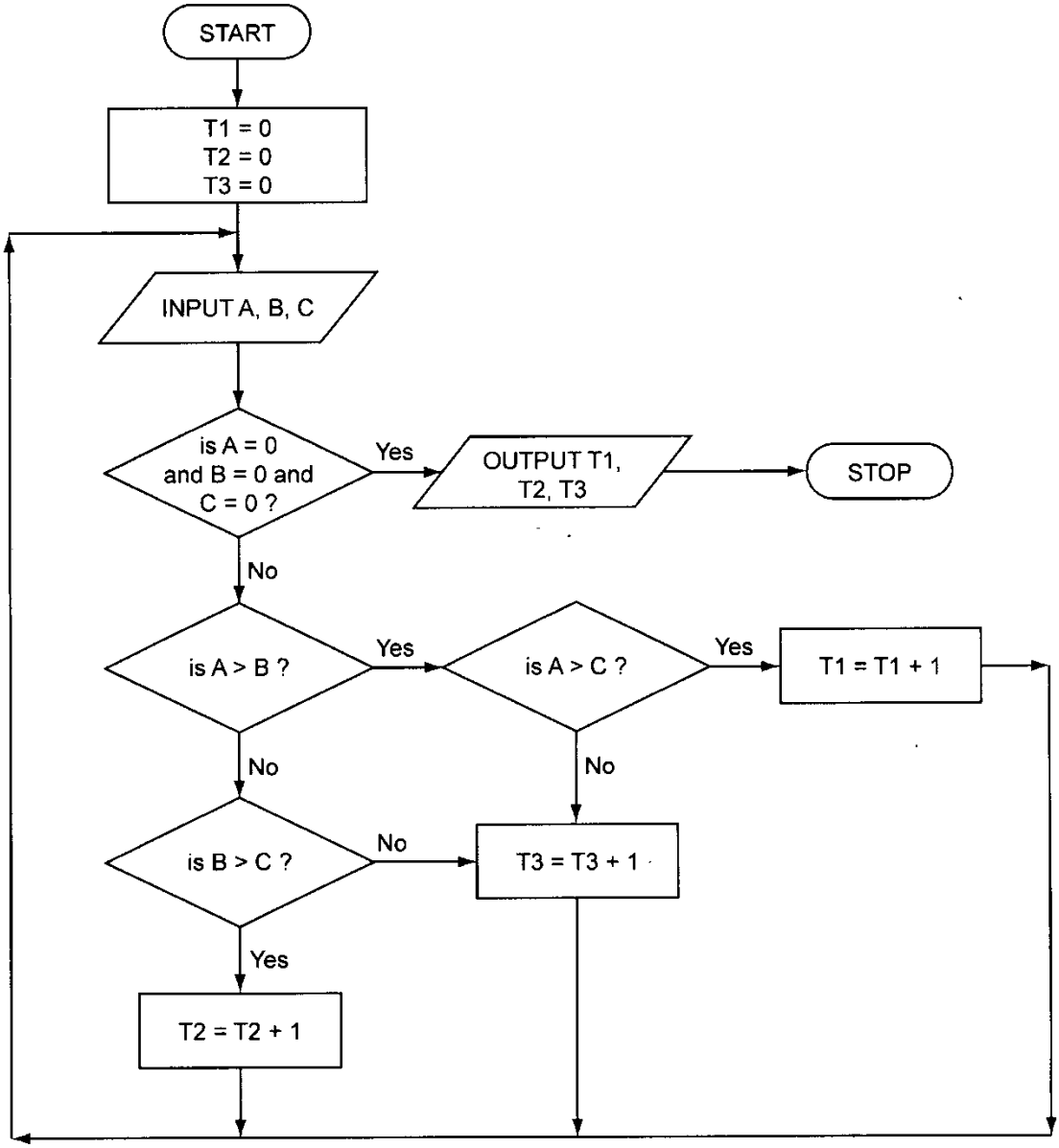
(ii)	while True:
	  p = float(input("Enter p: "))
	  if p >= 0.0 and p<= 100.0 :
	  break
	  else:
	  print(“Error, try again”)	

(iii)	while True:
	  s = input("Enter name: ")
	  if len(s) == 2 and s[0] in "ABCDEF" and s[1].isdigit():
	  break
	  else:
	  print("Error, try again")	

(iv)	while True:
	  s = input("Enter Postal Code: ")
	  if (len(s)==6):
	  break
	  else:
	  print("Error, try again")	

[4]

10. Study the following flowchart very carefully.



(a) Complete the trace table for this flowchart using the following test data:

5, 2, 1 4, 9, 7 6, 1, 3 5, 8, 9 1, 11, 3 0, 0, 0

T1	T2	T3	A	B	C	OUTPUT

[5]

(b) This flowchart does not give correct answers for certain sets of test data.

Suggest a data set that would give an incorrect answer.

Give a reason for your choice.

Data set .....

.....

Reason .....

.....

..... [2]

11. (a) The following pseudocode algorithm should:

- input the science test marks of a class of 40 students into an array in sequence of their class registration number starting from 1
- output the average test mark of the class
- output the registration number of the top student
- output the highest test score

```
1      count = 0
2      sum = 0
3      max = 100
4      repeat
5
6           input num[count]
7           if num[count] > max then
8              max = num[count]
9              j = count
10          endif
11          sum = sum + num[j]
12     until count = 39
13     Output sum/40, j, max
```

There are **four** errors in this pseudo-code. Locate the errors including its line number and state the correct pseudo-code.

Error 1 ……

Correction ……

Error 2 ……

Correction ……

Error 3 ……

Correction ……

Error 4 ……

Correction ……

[8]

(b) Describe a scenario whereby the above program will not name the top student correctly. Assume all 40 input data are valid data.

……

……

…… [1]

12. An alarm, Y, sends a signal (Y = 1) when certain fault conditions in a chemical process are detected. The inputs are:

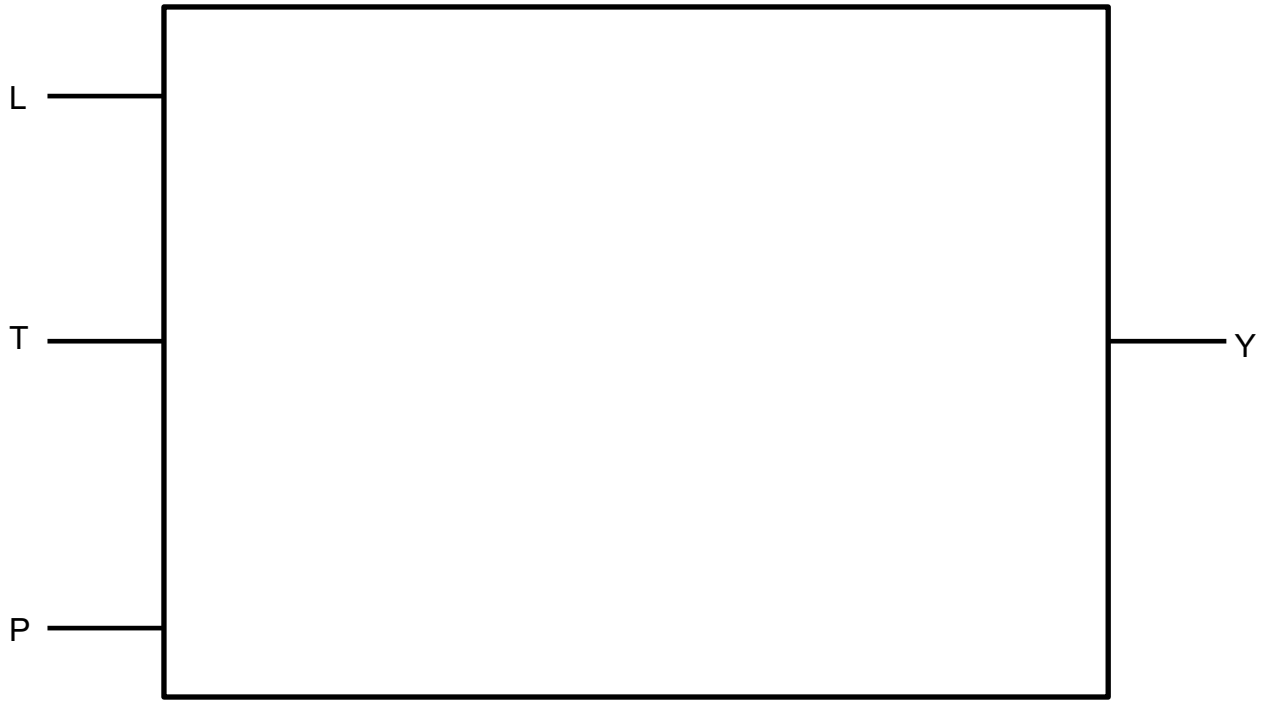
Input	Binary Value	Condition
L	1	Leakage detected
	0	Leakage not detected
T	1	Temperature >= 150°C
	0	Temperature < 150°C
P	1	Pump ON
	0	Pump OFF

The alarm, Y, returns a value of 1 if:

either **(i)** Temperature >= 150°C AND Pump is OFF

or **(ii)** Leakage detected AND Temperature < 150°C

(a) Draw the logic circuit for the above system.



[5]

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

L	T	P	Working Space	Y
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. A teacher is interested to store the values of a class test results in an array and perform some data manipulations with it. The class size is not expected to be more than 40 students.

Write an algorithm, using pseudocode or a flowchart, which:

- input up to 40 student names and their respective test scores
- stop if the student name = “end”
- output the name and score of the top student(s)

[5]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- End of paper -