Name: _____ Register Number: _____

Class: _____

Clementi Town Secondary School
Preliminary Examination 2019
Secondary 4 Express

Computing

7155/01
26 August 2019
2 hours

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

Do not open the booklet until you are told to do so.
Write your name, register number and class on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, 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

_____
This question paper consists of **11** printed pages, including this cover page.

[Turn over

Answer **all** the questions.

1   Write down **THREE** considerations when deciding on an external storage device.   [3]

----

2   The following passage describes how the data flow when the computer is switched   [5]
on. Fill in the blanks with the following helping words.

instructions   basic input/output system (BIOS)   ROM

operating system   power-on self-test (POST)

The computer loads instructions for performing a   ---------------------------------------

from ------------------------------------   to ensure that all the hardware components

are functioning properly.

The computer then loads the   -------------------------------------   from ROM. The

BIOS provides basic -------------------------------------   on how to communicate with

hardware components as well as where to look for an operating system.

Assuming that an   -------------------------------------   is found on the computer's hard

drive, its data and instructions are then loaded from the hard drive into RAM.

3   The following diagram shows the specification of the processor in 2 computers.

| **Computer 1**
Injel T9
Quad-Core 2.7GHz | **Computer 2**
Injel T8
Duo-Core 2.5GHz |

(a)   Write down 2 factors that affects the performance of a processor.   [2]

   (i)   ---

   (ii) ---

(b)   Using the 2 factors stated in **(a), e**xplain why Computer 1 will perform   [2]
better than Computer B in its processing ability.

----

4   A palindrome is a word, phrase, number or sequence of words that reads the same backwards as forwards.

An English teacher is trying to write a program that helps him to identify palindromes.

(a)   Identify the input required.   [1]

(b)   Suggest **ONE** form of data validation he could implement in the program   [2]
and explain why.

(c)   Write down the possible output(s) of the program.   [2]

----

5   **(a)**   Convert the hexadecimal number $(CD7)_{16}$ to denary.   [2]

Answer: ---

(b)   Convert the binary number $(1101\ 1011)_2$ to hexadecimal.   [2]

Answer: ---

(c)   Convert the denary number $(3172)_{10}$ to hexadecimal.   [2]

Answer: ---

[Turn over

6   The following pseudo-code is for an algorithm that sums up only the **ODD** integers
    from an input of **100** integers and outputs the result.

Line

```
1    Count = 0
2    Sum = 1000
3    WHILE Count < 101
4        INPUT Number
5        IF Number is even
6            Sum = Sum ** Number
7        ENDIF
8        count = count + 1
9    ENDWHILE
10   OUTPUT sum
```

There are **FOUR** errors in this pseudo-code. Locate the errors by stating the
line number and state the correct pseudo-code.

(a)   Error 1: .... [1]

          Correction: .... [1]

(b)   Error 2: .... [1]

          Correction: .... [1]

(c)   Error 3: .... [1]

          Correction: .... [1]

(d)   Error 4: .... [1]

          Correction: .... [1]

7   Explain the use of parity bits during data transmission

....

....

....

....

....

....

....
                                                                                                              [2]
....

8 The Python Turtle is an interesting way to learn programming. To start using the   [6]
Turtle, an instance of the turtle "bob", with the shape of the turtle is created as
shown below.

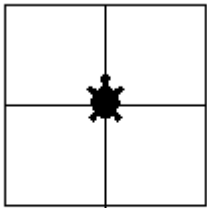| Code	Image
```import turtle bob = turtle.Turtle() bob.shape("turtle") #to initialize the turtle to face upwards bob.left(90)```	

Using the space below, write down the codes to produce the image on the right.

The following codes may help you in the implementation of the image.

`bob.right(90)` – turtle turns right 90 degrees.

`bob.left(90)` – turtle turns left 90 degrees.

`bob.forward(50)` – turtle moves forward 50 pixels.

Code	Image
```#continue your answer here```	

9   "PayPal scammers might send out an attack email that instructs them to click on a link in order to rectify a discrepancy with their account. In actuality, the link leads to a fake PayPal login page that collects a user's login credentials and delivers them to the attackers."

Taken from https://www.tripwire.com/state-of-security/security-awareness/

(a)   Identify the cyber-attack mentioned in the passage above.   [1]

(b)   For the cyber-attack mentioned in (a), write down **TWO** ways in which you can identify the cyber-attack.   [2]

(c)   State **TWO** other forms of cyber-attacks.   [2]

(d)   Give a brief description for each cyber-attack mentioned in **(c)**.   [2]

(i)

(ii)

----

10 **(a)** Complete the truth table for the following logic circuit: [4]
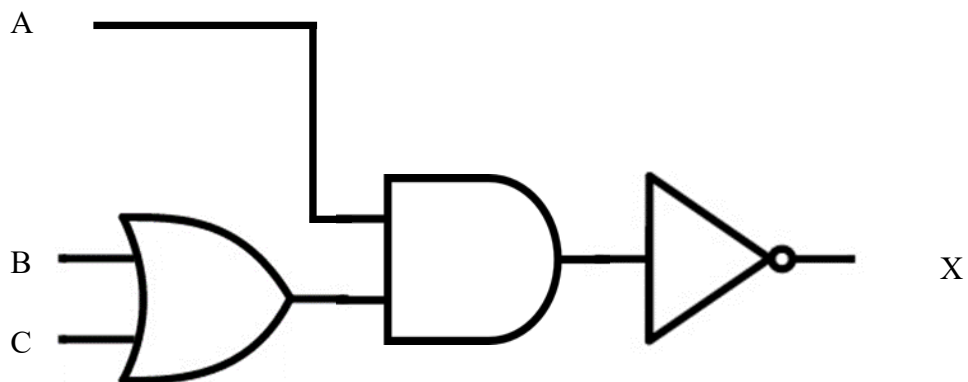
A	B	C	Working	X
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		

(b) A washing machine employs basic logic to carry out its washing.
The inputs to the system are:

Input	Binary Value	Condition
W (weight)	1	Weight of clothes detected.
	0	Weight of clothes not detected.
X(water)	1	Water is turned on.
	0	Water is turned off.
Y(switch)	1	Machine is switched on.
	0	Machine is switched off.

The system will sound an alarm when certain conditions are detected.
Alarm (Z) will sound (=1) when:

there are no clothes
or
there is no water

Draw a circuit diagram to represent the above system.   [5]

W ____

X ____   ____ Z

Y ____
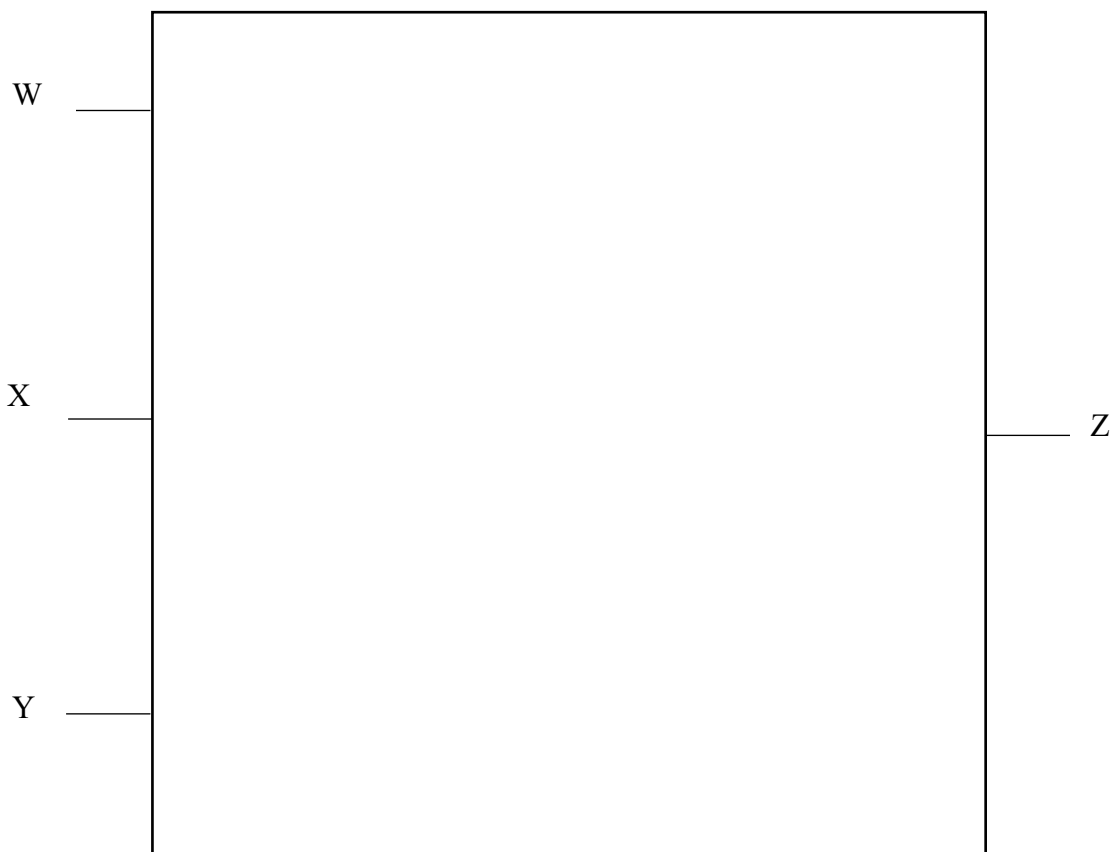
11   The following spreadsheet uses the FV function to analyse the ending balance of several different bank investments. The initial investment will be $10 000. Data is provided for each alternative including the annual interest rate, the number of compounding periods per year (annually if 1, quarterly if 4, and monthly if 12), the additional payments made for the compounding period, and the total loan duration in years.

	A	B	C	D	E	F
1	Initial Investment	$10,000				
2						
3	Bank	Annual Interest Rate	Periods per Year	Payment Per Period	Loan duration in years	Ending balance
4	Bank of Clement	0.06	4	75	5	$15,202.83
5	Chiater Bank	0.05	12	25	5	
6	Driven	0.07	2	300	5	
7	Commonwealth	0.055	1	300	5	
8						

Using cell references, write down the components in the calculation of the cell **F4**.

(a)   rate.   [1]

(b)   nper.   [1]

(c)   pmt.   [1]

(d)   pv.   [1]

(e)   type.   [1]

(f)   Hence or otherwise, write down the formula for FV in cell **F4**.   [1]

(g)   Suggest an alteration to the formula in **(f)** so that it can be copied down the   [1]
column to determine the ending value of the other investments.

[Turn over

12 **(a)** Write down THREE preventive measures for our passwords in preventing unauthorized access to our accounts. [3]

← → C ⌂ 🔒 https://gist.git

(b) In the figure above, it shows a typical internet address where we can usually see a lock symbol followed by "https". [2]

What does it mean by https and what does it offer to the user?

----

13 A network comprises of several pieces of hardware.

Draw a line between the description and the correct hardware.

Description   Hardware

Provides the hardware interface to enable the transfer of data between a device and a network

Network hub

Forwards packets between separate networks

Network interface card

Transmits received packets to all connected devices

Router

Constructs a single network by connecting two similar networks together

Modem

Responsible for modulation and demodulation

Bridge

[5]

14   Write an algorithm, using only pseudo-code or a program flowchart, that

- inputs 10 different numbers and stores these numbers in an array

- Outputs the array index of any number over 50

- Outputs how many numbers were less than 0 and outputs how many numbers were greater than 0

[8]

~ END OF PAPER ~

[Turn over