BOON LAY SECONDARY SCHOOL

PRELIMINARY EXAMINATION

2022

Name	
CCA	

Subject	:	**COMPUTING**
Paper No	:	**1**
Subject Code	:	**7155/01**
Level	:	**SECONDARY FOUR EXPRESS**
Date/Day	:	**30 AUGUST 2022 / TUESDAY**
Time	:	**0815 – 1015**
Duration	:	**2 HOURS**

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

READ THESE INSTRUCTIONS FIRST

Before you start your exam, check that you have received the correct paper and the number of printed pages are correct.

Write your name, index number, and CCA 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 or rough working.
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.

1 **(a)** A computer is a complex electronic device that utilizes many different components to perform calculations and to output the desired results.

(i) Buses are used to transfer data from one part of a computer to another.

Draw one or more lines to match the type of bus (left) to their correct description(s) (right).

Type of bus	**Description**
Data bus	Transports information from memory to processor when reading data from memory
	Transports information from memory to processor when writing data to memory
Address bus	Transports information from processor to memory when reading data from memory
	Transports information from processor to memory when writing data to memory

[2]

(ii) What are the two components inside a CPU and their respective functions?

Component 1 : ……

Function: ……..

……

……...[2]

Component 2 : ……

Function: ……..

……

……...[2]

(b) RAM is placed near to the CPU as it is a “volatile” memory.

(i) Explain the term “volatile” in this context.

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……...[1]

(ii) State two functions of RAM.

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……...[2]

(iii) Other than being volatile, state another characteristic of RAM and explain why it is placed near the CPU.

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……...[2]

(c) Data for longer-termed storage is usually kept in secondary storage drives.

(i) Provide an example of data that is usually kept in secondary storage drives and explain your choice.

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……...[2]

(ii) Explain how data in secondary storage devices can be accidentally damaged without internet access.

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……...[2]

2 **(a)** A simple home network can allow for devices in a home to connect to the internet.

(i) State the function of the following networking hardware.

Network interface controller

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……...[1]

Network hub

……

……

……...[1]

(ii) In the space provided below, construct a simple home network that would allow devices to connect to the internet.

Your network must consist of the following:

- Modem
- Router
- Network Switch

You should use well labelled boxes to represent the hardware.

[3]

(b) **(i)** State and explain if a home network should use a wired or wireless setup.

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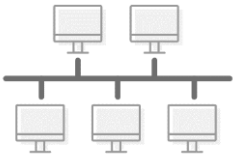
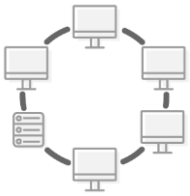
……...[3]

(ii) The table below shows three common network topologies.

Label them with their correct names and state a feature of each topology.

			
Name			
Feature			

[6]

(c) **(i)** Explain the need for parity bits and checksums in data transmissions.

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……...[2]

(ii) Explain how checksums can be used in a network.

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……...[3]

3 **(a)** The development of a program involves many stages.

(i) Draw lines to connect the descriptions on the left to the correct stages of developing a program on the right.

Description	Stage
	Gather requirements
Train users to use the program.	
	Plan solutions
Compare the actual output with expected output.	
	Write code
Determine the complete set of outputs that is necessary to solve the problem.	
	Test and refine code
Write possible algorithms using either flowcharts or pseudo-code.	
	Implement code

[2]

(ii) Explain why it is necessary to plan, test and refine the code before implementing it.

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……...[2]

(b) The code below was found in an unnamed python file without any instructions.

Study the code carefully and answer the questions that follow.

```
list1 = ["M", "na", "i", "Ke"]
list2 = ["y", "me", "s", "lly"]
list3 = []

for i in range(len(list1)):
    list3.append(list1[i]+list2[i])

print(list3)
```

(i) Trace the code shown above and complete the trace table below.

i	list1[i]	list2[i]	list3

[4]

(ii) What is the function of this code?

……

……...[1]

(iii) State a type of check that can be implemented for this program and explain why it would be useful.

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……...[2]

(c) Python is considered an interpreted language. In programming terms, explain the difference between an interpreter and complier.

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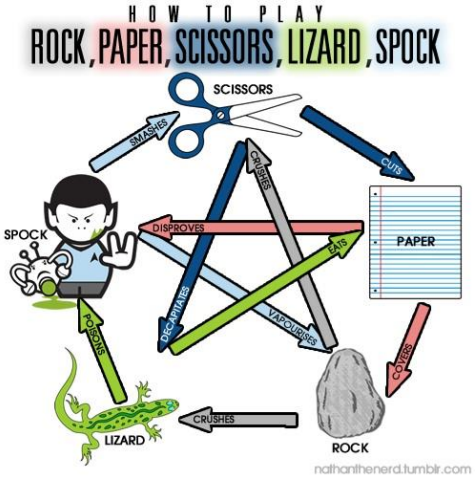
……..[2]

4 A game of rock-paper-scissors-lizard-spock is played between two players on a computer.

It is played like the traditional rock-scissors-paper but has two more possible moves.

A computer program is to be written to play this game. The first player to reach 3 consecutive wins will win the game.



(a) **(i)** State possible inputs for this game.

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……..[1]

(ii) State the possible outputs for this game.

……

……..[1]

(iii) State the possible processes involved in this game.

……

……..[1]

(b) A student studying GCE OLevel Computing says that he can apply the principles of pattern recognition and generalisation to this problem and will be able to solve all the possible combinations if he can solve one of them.

Explain what is meant by pattern recognition, generalisation, and how such principles can be used to handle this programming problem.

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……[4]

(c) In a particular round, a player plays “Spock”.

Using pseudo code, write code to determine if the player wins.

You may make use of the following structures where required.

INPUT, IF… THEN …ELSEIF…END IF, WHILE… ENDWHILE…, FOR… NEXT

[4]

5 **(a)** Malicious software, or malware, refers to software that is intentionally used to damage, disrupt, or gain unauthorised access to a computer system.

Name two types of malware and describe their distinguishing features.

Malware 1 ……

Description

……

……

……[2]

Malware 2 ……

Description

……

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……[2]

(b) **(i)** Explain why students might be the target of a phishing attempt.

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……[2]

(ii) Describe how a phishing attempt might be carried out on a group of students.

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……[2]

(iii) Explain how students can prevent themselves from falling prey to phishing attempts.

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……...[2]

(c) Explain what plagiarism is and describe at least two negative effects it can produce.

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……...[3]

6 **(a)** Describe a Boolean data type.

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……..[1]

(b) A logic circuit has the following Boolean statement: **X = (A AND B) NOR (A OR (NOT C))**

In the space below, construct the logic circuit using the correct symbols.

[4]

(c) Complete the truth table below for the Boolean statement:

X = (A AND B) NOR (A OR (NOT C))

A	B	C		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]