SERANGOON SECONDARY SCHOOL
PRELIMINARY EXAMINATION
SECONDARY 4 EXPRESS

CANDIDATE NAME						CLASS			
CENTRE NUMBER	S					INDEX NUMBER			

COMPUTING

Paper 1

7155/01
25 August 2022
2 hours

Setter(s): Mr Adrial Tan

READ THESE INSTRUCTIONS FIRST

Write you Centre number, 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, 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.

For Examiner's Use
80

1 Anthony uses a spreadsheet to record his expenses. He records:

- the date of purchase and the amount spent on each item
- the mode of payment of each item purchased (cash or credit card)

	A	B	C	D	E
1	**Date**	**Item**	**Amount ($)**	**Payment mode (cash/credit card)**	
2	01/07/2022	EZ link card top up	$ 50.00	credit card	
3	08/07/2022	Clothing	$ 120.00	cash	
4	15/07/2022	Books	$ 45.00	cash	
5	17/07/2022	Movie	$ 10.00	credit card	
6	25/07/2022	Phone Bill	$ 45.00	credit card	
7					
8		Cash expenses:	$ 165.00		
9		Credit card expenses:			
10		Total expenses:			

(a) Identify the **most appropriate** data type for the data in the following cell references:

Cell	**Data type**
A1	
A3	
C6	
D4	

[4]

(b) The cell **C10** will calculate the total expenses.

Identify the function that will need to be entered into **C10**.

…….. [1]

(c) The cell **C9** will calculate the total expenses that he had paid using credit card.

Anthony uses **one** function to calculate this value.

Describe the formula that will need to be entered in cell **C9**.

……

……

……

……

…….. [3]

2 Anthony wants to make sure his computer is secure against cyberattacks.

(a) Some of the following words need to be used to complete the description of cyberattacks.

cookies	**data**	**hardware**	**harmless**	**internet**
LAN	**pharming**	**phishing**	**software**	**spamming**
spyware	**Trojan-horse**	**reputable**	**restricted**	**worm**

Insert **five** words from the list given to complete the following statements.

A cyberattack is an unwelcomed attempt to steal, expose, alter, disable or destroy information through unauthorised access to computer systems. It is usually carried out over a network such as the …… .

One type of cyberattack is …… . This is a type of malware that downloads onto a computer disguised as a …… program and attacks a computer by enabling intruders to open backdoors for unauthorised access to the computer.

A second type of cyberattack is …… . This is a form of social engineering attack which sends fraudulent communications that appear to come from …… sources in order to steal personal information such as passwords and credit card numbers from users.

[5]

(b) Anthony wants to protect his data from accidental damage and malicious actions.

The table has three problems that can cause damage to data.

Complete the table by **describing** the effect of each problem.

Give **one** preventive measure for keeping data safe for each problem.

Each effect and preventive measure must be different for each problem.

Problem	Effect	Preventive measure
Power failure	…… …… …… …… ……	…… …… …… …… ……
Human error	…… …… …… …… ……	…… …… …… …… ……
Hardware failure	…… …… …… …… ……	…… …… …… …… ……

[6]

3 Five spreadsheet functions are on the left, and six descriptions on the right.

Draw one line to link each function to its correct description.

Function	Description
	Rounds a number up to the nearest level of significance
COUNT	
	Finds the largest numeric value in a given range of cells
COUNTA	
	Finds a numeric value based on its position in a list when sorted by value in descending order
COUNTIF	
	Counts the number of cells in a range that meet a given condition
LARGE	
	Counts the number of cells in a range that contain numbers, currencies, dates, times and percentages
MAX	
	Counts the number of cells in a range that are not empty

[5]

4 Belinda is setting up a home network. There are two desktop computers and a laser printer that use a wired connection. There are five wireless devices: one laptop, one tablet, two mobile phones and one smart television.

(a) The home network has a router, but does not have a switch.

(i) A router and a switch are examples of network hardware.

Name **one** feature that is the same in both a router and a switch, and **one** difference.

Feature that is the same ……..

…….

Difference ……..

…….

[2]

(ii) Identify and describe the function of **two other** network devices that could be part of the home network.

Device 1 …….

Function …….

…….

Device 2 …….

Function …….

…….

[4]

(b) Is Belinda's home network a LAN or a WAN? Give reasons for your choice.

Belinda's home network is a ……

Reasons

……

……

……

[3]

5 **(a)** Three truth tables are shown

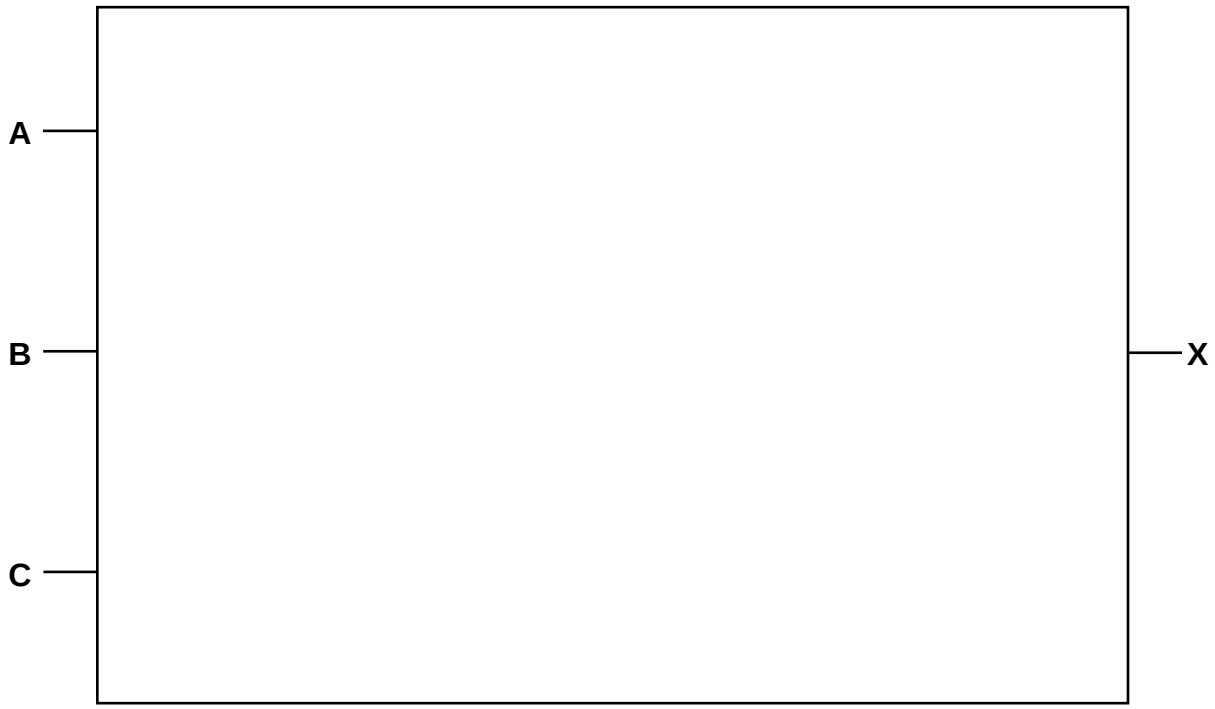
State whether each truth table is correct or incorrect. Write the correct solution for any incorrect truth table.

Truth table	Correct or incorrect	Correct solution (where needed)
A | **B** | **A AND B** 0 | 0 | 0 0 | 1 | 1 1 | 0 | 1 1 | 1 | 1		**A** | **B** | **A AND B** 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
A | **B** | **A NAND B** 0 | 0 | 1 0 | 1 | 1 1 | 0 | 1 1 | 1 | 0		**A** | **B** | **A NAND B** 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
A | **B** | **A NOR B** 0 | 0 | 0 0 | 1 | 0 1 | 0 | 0 1 | 1 | 1		**A** | **B** | **A NOR B** 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |

[3]

(b) Draw the logic circuit to represent the following Boolean statement. Do **not** simplify the statement.

X = (**A** NOR **B**) NAND (**B** OR NOT **C**)



[4]

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

X = (**A** NOR **B**) NAND (**B** OR NOT **C**)

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]

6 Caleb is developing an application for a new mobile game.

(a) The following table shows the five stages of program development:

Letter	Description
A	Gather requirements
B	Implement and deploy code
C	Plan solutions
D	Write code
E	Test and refine code

Complete the following sequence by writing one of the letters **A**, **B**, **C** or **D** (from the table above) for each stage to show the most appropriate order of each stage of program development.

Note: Stage 4 has already been completed.

Stage	Letter
1	
2	
3	
4	**E**
5	

[3]

(b) Caleb plans the solution using decomposition.

Describe what is meant by **decomposition**.

……..

……..

……..

…… [2]

(c) In the game, the user swipes on the touchscreen panel of a mobile device, which moves a game character in the game.

Identify **one** process required by this game.

……..

…… [1]

(d) Caleb wants to release his game as either freeware or open-source software.

Describe what is meant by **freeware** and **open-source software**.

Freeware

……..

……..

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Open-source software

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……..

[4]

(e) Caleb watches video tutorials online that have been created and distributed by the National University of Singapore to help him learn programming skills to create his application.

Give the most appropriate term used to describe these materials distributed by the university.

……..

…… [1]

7 A pseudo-code algorithm:

- allows a user to repeatedly enter a number until 0 is entered
- outputs the largest number entered if it exists
- outputs the second largest number entered if it exists
- outputs the third largest number entered if it exists
- duplicates are allowed in the outputs.

```
01   Flag = [False, False, False]
02   Large = [0, 0, 0]
03   INPUT Num
04   WHILE Num != FALSE
05        FOR Count = 0 to 2
06             IF Num > Large[Count] THEN
07                  Temp = Large[Count]
08                  Large[Count] = Num
09                  Num = Temp
10                  Flag[Num] = TRUE
11             ENDIF
12        NEXT Count
13        INPUT Num
14   ENDWHILE
15
16   FOR Count = 0 to 2
17        IF Flag[Count] == FALSE THEN
18             OUTPUT Flag[Count]
19        ENDIF
20   NEXT Count
```

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

State the line number of each error **and** write the correct pseudo-code.

Error 1 ……..

Correction ……...

Error 2 ……..

Correction ……...

Error 3 ……..

Correction ……...

Error 4 ……..

Correction ……...

[8]

(b) Identify **and** describe **two other** types of program error.

Error type 1 ……..

Description ……..

……...

……...

Error type 2 ……..

Description ……..

……...

……...

[4]

(c) The input of a number is tested with normal and error test case conditions.

Identify **two** different examples of test data for each test case condition.

Test case condition	Test data
Normal	
Error	

[4]

(d) Two debugging techniques are:

- walking through a program
- testing the program in smaller parts

Identify and describe **one other** debugging technique that could be used.

Debugging technique ……

Description ……..

……...

[2]

8 A number guessing game is programmed.

- The user inputs a whole number for the player to guess.
- The player inputs a whole number as his/her guess.
- The number input by the player is compared to the number input by the user.
- If the guess is too small, it tells the user to guess higher.
- If the guess is too large, it tells the user to guess lower.
- If the guess is correct, it outputs the message “You win!” and the number of guesses.

Write an algorithm, using pseudo-code, program code or a flowchart, for the game described.

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[7]

END OF PAPER