

## **Bukit View Secondary School**

Secondary 4 Express Preliminary Examination 2022

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CANDIDATE NAME			
CLASS		INDEX	
		NUMBER	

#### COMPUTING

Paper 1

7155/01 15 September 2022 2 hours

Candidates answer on the Question Paper.

#### **READ THESE INSTRUCTIONS FIRST**

Write your name, class and index number on 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. 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.

The maximum number of marks is 80.

For Examiner's use
Marks

Setter: Ms Lee Poh Tin

Parent's Signature:\_\_\_



**1** Four descriptions of spreadsheet functions are on the left, and five spreadsheet functions are on the right.

Draw **one** line to link each description to the correct spreadsheet function.

Description	Spreadsheet Function
	FLOOR.MATH()
Returns the integer portion of a division.	
	HLOOKUP()
Returns the remainder after a number is divided by a divisor.	
	MOD()
Rounds a number down to the nearest integer.	
	OR()
Looks for a value in the top row of a table or array of values and returns a value in the same column from a row specified.	
	QUOTIENT()

[4]

- 2 An organization with 35 employees scan their staff cards at the general office when they report for work. The clerical staff will need to report to the organization director on employees who report late for more than three times in a month and the average minutes late for the days that they reported late. The output should be appropriately formatted.
  - (a) Specify the inputs, stating the requirements for valid inputs.

......[1]

(b) Specify the outputs, stating the requirements for correct outputs.

.....[1]

 (c) Identify the most appropriate data type for storing the 35 input data collectively. Explain the reason for your choice of data type.
 Choice of Data Type .....
 Reason for your choice ....

......[2]

- **3** A new bank has been incorporated and a team of engineers has been engaged to configure the computers for the bank employees.
  - (a) The engineers have decided to set up a computer network for the bank employees.
    - (i) Give one advantage of a computer network.
       [1]
       (ii) Give one disadvantage of a computer network.
       [1]
  - (b) Identify and describe the function of **one** network device that could be used in the network.

Network Device	
Description	
	[2]

**4 (a)** Complete the following table for each related term and description of threats to privacy and security.

Description of privacy and security threats	Term
The interception of requests sent from a computer to a legitimate website and redirection to a fake website to steal personal data.	
	Cookie
The mass distribution of unwanted messages or advertising to email addresses.	

### [3]

(b) Explain two-factor authentication and give an example to illustrate it.

Two-factor authentication	
Example	
	[2]

**5** (a) Identify the type of storage media described in the table below.

Description	Type of Storage Media
Data is stored as very small pits or indentations that can be read or written by a laser.	
Data is stored in electronic circuits called "flash memory" that have no moving parts.	
Data is stored on a material that can be read or written by a head.	
	1

(b) Convert **372 KB** of memory to bytes.

(c)

# [1] Convert **5600 MB** of memory to GB.

......[1]

**6 (a)** 20:18:0F:BC:D0:AE is an example of a MAC address with 6 parts of hexadecimals.

	(i)	State what the term <b>MAC</b> represent.	
		[	[1]
	(ii)	State what the first 3 parts of the hexadecimals represent.	
			[1]
	(iii)	State what the last 3 parts of the hexadecimals represent.	
		[	[1]
	(iv)	Explain the purpose of using MAC address.	
		[	[1]
(b)	RGB ( For ex red at	colour codes is another application of the hexadecimal number systems xample, the hexadecimal colour code #FF0000 represents the colou ; its highest intensity.	s. Jr
	Give t	the hexadecimal colour code for blue at its highest intensity.	
		[	[1]
(c)	An orç Expla	ganisation has the web address <u>https://www.sportshop.com/shoes.htm</u> in whether this web site is encrypted.	<u>I</u> .
		[	[1]

7	(a)	Convert the binary number <b>10100011</b> into a hexadecimal number. Show your working.	
			[0]
			[2]
	(b)	Convert the hexadecimal number <b>C5</b> into a binary number. Show your working.	
			[2]
	(c)	Convert the denary number <b>217</b> into a hexadecimal number. Show your working.	
			[2]
	(d)	Explain how the binary number <b>11100001</b> is converted into a denary numb	er.
			[2]

8 Data validation is a process of ensuring that the input data satisfies a set of requirements. Range check is a data validation which checks that value entered is between an upper value and a lower value.

The full marks of a class test is 25 marks. There is no penalty for incorrect answers given by the students.

(a) Complete the following pseudo-code by extending it to perform range check on the mark input. The algorithm should continually prompt for another mark until a valid mark is entered.

OUTPUT "Enter the mark: "	
INPUT mark	
	[0]
	[2]

(b) The algorithm is tested with normal, error and boundary test case conditions.

For each test case condition in the following table, give a **different** example of **integer** test data for the mark input.

Test case condition	Test data
Normal	
Error	
Boundary	

[3]

**9** The pseudo-code below inputs 5 numbers. The predefined function INT (num) will return the integer value of num. For example, INT (3.9) will return 3 and INT (5.2) will return 5.

```
count1 = 0
count2 = 0
FOR i = 0 to 4
INPUT num
IF num == INT(num)
count1 = count1 + 1
ELSE
count2 = count2 + 1
ENDIF
NEXT
OUTPUT count1, count2
```

(a) Complete the trace table for this pseudo-code using the following test data. 12.4, 8, 25, 17.8, 6

i	count1	count2	num	OUTPUT

[5]

(b) State the purpose of this pseudo-code.

......[1]

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



 $\mathbf{Z} = (\mathbf{P} \text{ AND NOT } \mathbf{Q}) \text{ OR } (\mathbf{P} \text{ NAND } \mathbf{R})$ 

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

 $\mathbf{Z} = (\mathbf{P} \text{ AND NOT } \mathbf{Q}) \text{ OR } (\mathbf{P} \text{ NAND } \mathbf{R})$ 

Ρ	Q	R	Working Space	z
0	0	0		
0	0	1		
0	1	0		
0	1	1		
1	0	0		
1	0	1		
1	1	0		
1	1	1		
	•			[

**11** An algorithm has been written in the pseudo-code below to remove spaces and digits from a string input. The algorithm displays the number of characters removed and the new string without the spaces and digits.

In this pseudo-code, the index of string starts from 0. The predefined function len(text) will return the number of characters in the string text. The predefined function char.isdigit() will return the boolean value True if char is a digit character; otherwise, it return the boolean value False.

```
01
     removed = 0
02
     new name = ""
03
     INPUT name
04
     FOR i = 0 to len(name)
          IF name[i] == " " and name[i].isdigit() == True
05
06
                removed = i + 1
07
          ELSE
08
               new name = name[i]
09
          ENDIF
10
     NEXT
11
     OUTPUT removed, new name
```

(a) Identify **one** variable used in the pseudo-code.

**12** A teacher needs to find out a list of students who have daily pocket money less than the average meal price in the school canteen. The school also needs to raise fund to meet the monthly financial gaps of these students. The school has 120 students and there are 6 stalls in the school canteen selling meals.

Write an algorithm using pseudo-code to

- input the meal price of the 6 stalls in the canteen;
- input the name for 120 students and their daily pocket money and store them in 2 separate lists. Assume that their daily pocket money is the same everyday.
- output the message "The following students need financial help: ";
- output the names of students with daily pocket money less than average meal price in the canteen and output their respective pocket money;
- output how much fund the school should raise in a month to meet the monthly financial gaps of these students so that they are able to afford the average meal price. Assume that there are 20 school days in a month.

You do **not** need to validate the inputs.

16

- **13** With the advancement of technology, there are numerous impacts on the way people communicate.
  - (a) State a social benefit for people to use technology in communication.

- (b) State a negative social impact for people to use technology in communication.
- (c) State an economic impact on the use of technology in communication.

.....[1]

(d) State an ethical issue which may arise due to the use of technology in communication.

.....[1]

**14** Write an algorithm using flowchart to count the number of students in a class staying in the West region. There are a total of 30 students in the class.

You are required to

- ask the user to enter the region where each student stays.
- output the number of students staying in the West region.

You do **not** need to validate any data entered. You are also **not** required to check for lowercase or uppercase alphabets in the data entry.

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