	ST. PATRICK'S SCHOOL PRELIMINARY EXAMINATIONS 2018 SECONDARY 4 EXPRESS		
NAME			
CLASS		INDEX NUMBER	

COMPUTING

Paper 1 Written

7155/01 11 September 2018 2 h

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

READ THESE INSTRUCTIONS FIRST

Write your name, class, index number 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. 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 Exan	niner's Use
Parent's Signature :		
Date:	Marks	/80
Remarks (if any) :	Total	
		%

1 Draw a line to match the spreadsheet function to the correct description.



2 (a) Convert the binary number 10110110 into a denary number. Show your working.

(b) Convert the hexadecimal number F5 into a binary number. Show your working.

 [2]

 (c)
 Convert the denary number 34 into a hexadecimal number. Show your working.

 [2]

 (c)
 Convert the denary number 34 into a hexadecimal number. Show your working.

3 Insert six of the following words about computer hardware, memory and storage devices in the correct place in the respective spaces below.

optical storage(s) sto		digital storage(s)	digital solid-state prage(s) storage(s)		processor register(s)	
	ROM		RAM		ALU	
secondary storage(s)		address bus(es)		data bus(es)		control unit(s)

The type of memory or storage employed in a computer depends on how the data stored inside is meant to be used:

are physically located inside the processor. The extremely fast but small data storage spaces are used directly by the ______ and _____.

or main memory is where data and instructions are stored temporarily so

that they can be quickly accessed by the processor when needed.

is where data and instructions that rarely need to change or would be needed for a computer to start up are stored.

is where large amounts of data are stored, such as in a hard disk or a hard drive.

[6]

4 Signals are sent to and from the components of a processor using buses.

Identify and describe the purpose of two different buses.

(a) Bus 1 Purpose [3] (b) Bus 2 Purpose [3]

xplain what is meant by "high-level programming language". program written in a high-level programming language is translated into machine code. his is so that it can be processed by a computer.	[1
program written in a high-level programming language is translated into machine code. nis is so that it can be processed by a computer.	. L
ame one type of translator that can be used.	[ŕ
riefly describe how your answer to part (b) translates this program.	
	[1
tate one advantage of your answer to part (b) as compared to other type(s) of translators.	
st contract in the year 2017. There are 50 employees in the company and all the licts' amounts are different. the inputs, the outputs and the processes required to find the name and the contract nt of that employee.	
;	
its	
sses required	
itssses required	
	riefly describe how your answer to part (b) translates this program. tate one advantage of your answer to part (b) as compared to other type(s) of translators. mpany wants to use a computer program to find out which employee has secured the st contract in the year 2017. There are 50 employees in the company and all the locts' amounts are different. the inputs, the outputs and the processes required to find the name and the contract int of that employee.

5

6

7 An algorithm is required to check that the user has entered a Personal Identification Number (PIN) that is 5 digits long. The input is provided in an integer called "PIN" and the output is displayed on the screen. Study the following pseudo-code.

```
count
INPUT PIN
REPEAT
        PIN = PIN%10
        count = count + 1
UNTIL PIN >= 1
IF PIN == 5 THEN
        OUTPUT "PIN length is valid."
ELSE
        OUTPUT "PIN length is invalid."
ENDIF
```

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

Error 1	
Correction	
Error 2	
Correction	
Error 3	
Correction	
Error 4	
Correction	
	[8]
	 [0]

8 An online-banking user was checking his email's spam mailbox when he noticed that he received the following notification allegedly from DBS Bank.

X DBS	Bank online Service Conta
Update Your Credit Ca	ard-DBS Bank Singapore
Dear Customers DBS,	
You have reached the maximum number of failed lo locked. To unlock your access, click: Login to iBank	ogin attempts, for your safety access to iBanking has been ing and proceed with the verifivation process. <u>Click here</u> .
Update: https://internet-banking.dbs.com.	sg/IB/confirm/hUilUASDuasullv5WOQ8
Thank you for your immediate attention to this matt	ter.
<u>dbs.com.sg</u>	
Thank you, The team of DBS Bank Singapore	

The user promptly recognizes that the email is fraudulent and ignores it after a quick scrutiny.

(a)	Name a	nd explain the type of cyberattack involved.	
			•
			[2]
(b)	Identify	two tell-tale signs that allowed the user to conclude that the email is fraudulent.	
	Sign 1		
	Sign 2		
			[2]

- **9** A company has several offices around the world.
 - (a) Data is transmitted between the offices over the Internet. In order to keep the data safe the company is using a firewall at each office.

Explain how a firewall would keep the company's data safe.

		[2]
(b)	The use of firewall alone is clearly not sufficient to ensure safety of the company's sensitive data.	
	Suggest, with reasons, three other security measures that the company should take to keep their sensitive data safe.	
	Measure 1	
	Measure 2	
	Measure 3	
		[3]

10 The following is an example of a Uniform Resource Locator (URL).

http://stpatricks.moe.edu.sg/contact-us.htm				
	Part 1	Part 2	Part 3	
Identify the three parts	that make up th	ne URL.		
Part 1				
Part 2				
Part 3				[3]

11 This flowchart shows a program, which accepts an input list of numbers and sorts them accordingly. The sorted list is then returned as the output.



Complete the trace table for the following set of data.

num_list = [4, 2, 7, 9]

Trace table

i	j	temp	num_list[j]	num_list[j+1]	OUTPUT

[6]



А	В	Working Space	х	
0	0			
0	1			
1	0			
1	1			[2

Single logic gate		[1]]
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- 13 An indicator light will switch on when certain conditions occur in a laboratory. The output, X, of a logic circuit that drives the indicator light must have a value of 1 only if:
 - either temperature (A) is high and humidity (B) is low
 - or humidity (B) is high and pressure (C) is low

The inputs to the system are:

Input	Binary	Condition
٨	0	Temperature is low
A	1	Temperature is high
D	0	Humidity is low
D	1	Humidity is high
0	0	Pressure is low
U	1	Pressure is high

(a) Complete the Boolean statement for the above.

Х =	=	[1	1
		•	1

(b) Hence or otherwise, draw a logic circuit for the system.

- [5]
- **14** Computer networks can be classified according to their geographical size, transmission medium and network organization type.
 - (a) Depending on the geographical coverage of the network, a network can be broadly classified into three categories.

State these three categories.

......[1]

- (b) Networks can also be classified according to their transmission medium, namely a wired and a wireless network connection.
 - (i) Most cafes and canteens tend to prefer wireless networks. Give two reasons for their choice.

	Reason 1			
	Reason 2			
		[2]		
(ii)	Despite the benefits of wireless networks, many offices have still been observed to retain some form of wired network as their primary mode of data transmission.			
	Suggest a reason for this observation.			
		[1]		
Dev can	ices in a network are generally classified as either clients or servers. These devices be organized in either a client-server or peer-to-peer (P2P) network.			
Stat	e two differences between a client-server network and a P2P network.			
Difference 1				
Diffe	erence 2			
		[2]		

(c)

- **15** Write an algorithm, using only pseudo-code or a program flowchart, that:
 - inputs twenty words and stores these words in an array
 - outputs the array index of all four-lettered words
 - outputs how many words were fewer than 4 letters, and outputs how many words were greater than 4 letters

 [8]

or program flowchart