Name: _____ ( ) Class: _____

MONTFORT SECONDARY SCHOOL

PRELIMINARY EXAMINATION 2020

Secondary 4 Express

COMPUTING **7155/01**
Paper 1 Written **16 Sep 2020 (Wed)**

8.15 am **2 hours**

READ THESE INSTRUCTIONS FIRST

Do not open this booklet until you are told to do so.

Write your name, index number and class in the spaces provided 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.
Approved calculators are allowed.

Answer **all** questions.

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 total marks for this paper is 80.

For Examiner's Use	
Total	80

Parent's Signature: _____

This document consists of **13** printed pages and **1** blank page.

Setter: Mr Wong Teck Piaw

1 Amanda has a taken a $100,000 study loan from the bank. The loan is to be repaid over 5 years. The interest rate is 6% per year. She has a spreadsheet to keep track of the repayments and the amount she owes.

	A	B	C	D	E
1	**Initial Loan**	$100,000		**Total Paid to Date**	-$5,154.00
2	**Interest Rate**	6%		**Amount Owed**	-$97,926.00
3	**Loan Duration (months)**	60		**Number of Payments Made**	3
4	**Monthly Payment**	-$1,718.00			
5	**Total to Pay**	-$103,079.97			
6					
7	**Date**	**Amount Paid**			
8	1/8/2020	-$1,718.00			
9	1/9/2020	-$1,718.00			
10	1/10/2020	-$1,718.00			

(a) State the type of data that is held in each of the following cells.

A1.....

A8.....

B1..... [3]

(b)

(i) The cell B4 shows the monthly payment amount.

Identify the most appropriate function to use in cell B4, if the interest rate and monthly payment amount remain the same. [1]

.....

(ii) The cell E1 shows the total amount that Amanda has paid to date. The payments are entered in cells B8 to B68.

Identify the most efficient function to use in cell E1. [1]

.....

(iii) The formula in cell E3 calculates the number of payments made.

Identify the most appropriate function to use in cell E3.

…… [1]

(iv) Cell E2 shows the amount owed to the nearest whole number.

Identify the most appropriate function used in cell E2 to convert the value to the nearest dollar.

…… [1]

2

(a)

(i) Convert the denary number **232** into a hexadecimal number. Show your working.

……

…… [2]

……

(ii) Convert the binary number **10100110** into a denary number. Show your working.

……

…… [2]

……

(iii) Convert the hexadecimal number **9F** into a binary number. Show your working.

……

…… [2]

……

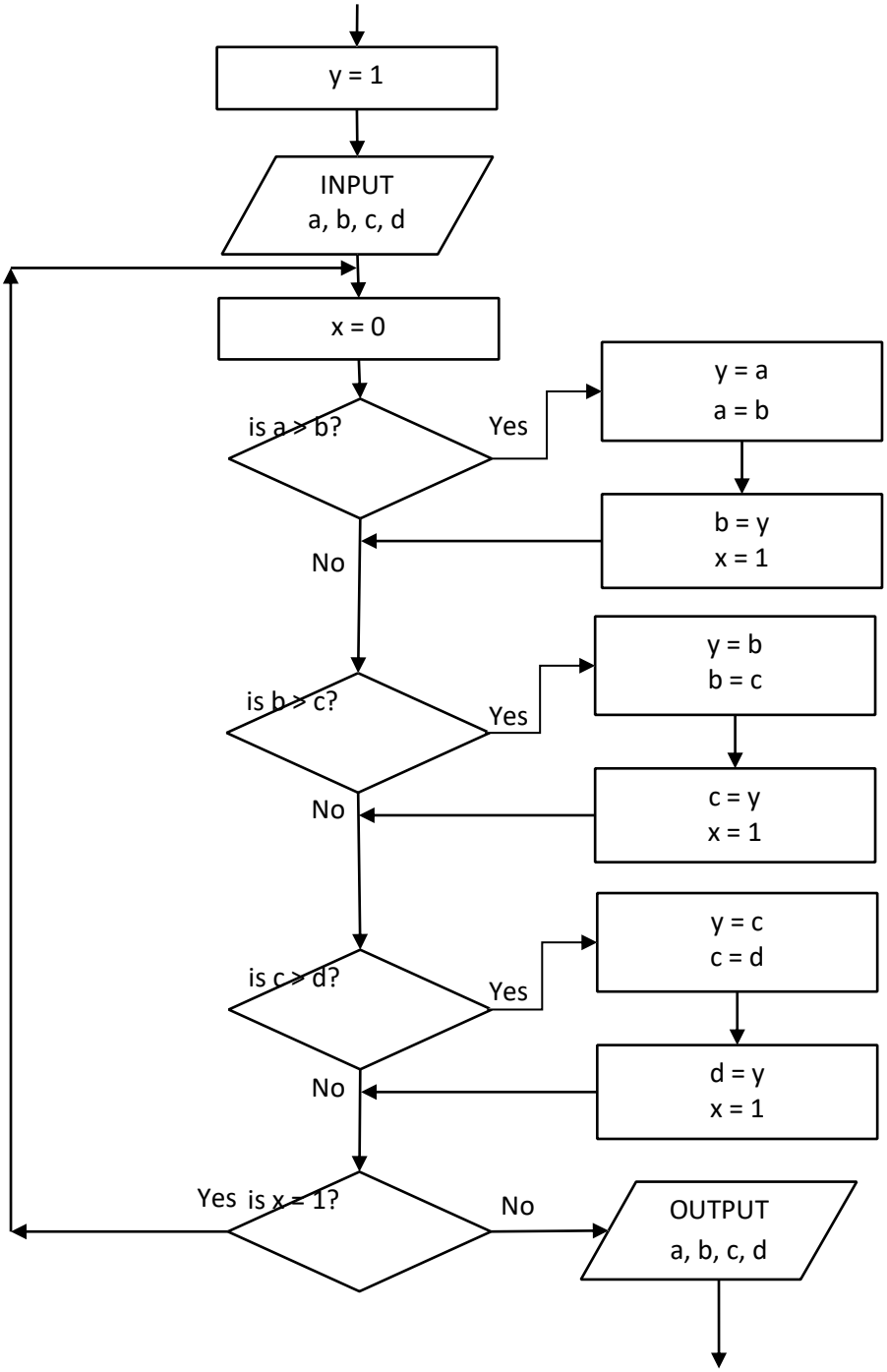
(b) Network addresses are one example of where hexadecimal is used to represent binary.
State two other examples where hexadecimal is used to represent binary.

[2]

1 .....

2 .....

3 Integers are input into the flowchart below.



START

END

(a) Complete the trace table for the following set of data.

a = 3, b = 4, c = 2, d = 1

Trace table

a	b	c	d	x	y	Output

[7]

(b) State the purpose of the algorithm.

[1]

…….....

…….....

(c) State the purpose of the following variables in the flowchart.

[2]

x .....

y .....

4 The following diagram shows five network terms and six descriptions.

Draw a line from each network term to its best description.

Term	Description
	The average number of bits of data that can be transmitted from a source to a destination over the network
Wide Area Network (WAN)	Network of devices connected by a physical medium such as cables
Transmission medium	Network of devices covering multiple large-scale geographical locations
Wired network	Network of computing devices typically spanning across two or more buildings within the same town or city
Wireless access point (WAP)	A means of connecting computers together, such as using copper cables, radio wave or light pulses
bandwidth	A device that provides connection between wireless devices up to 100 metres away and can connect to wired networks.

[5]

5 Insert **five** of the following words/phrases in the correct place in the text below.

ROM	register	external storage
solid-state	magnetic	RAM

The type of computer memory used depends on how the data is meant to be used. The extremely fast ……..….. is located inside the processor. Where data are stored temporarily for the processor to access, ……..….. is used. The ……..….. is used for data that starts up computers or data that rarely needs to be changed. The ……..….. is where large

amounts of data are stored, and ……..….. storage is a popular option due to its small size and resistance to drops and mechanical shock. [5]

6 Technology is used in various areas of entertainment and finance.

(a) Give **two** social impacts to people using technology in entertainment.

1.....

.....

2.....

..... [2]

(b) Give **two** economic impacts to people using technology in entertainment.

1.....

.....

2.....

..... [2]

(c) State **one** ethical issue with the use of technology in finance.

.....

..... [1]

7 Data stored on a computer is valuable and needs to be kept safe and secure.

(a) Identify **two** methods of keeping computer-based data safe from power failure.

1.....

.....

.....

2.....

.....

..... [2]

(b) Describe the following terms **and** how they could be used in cyberattacks.

Trojan horse.....

.....

..... [4]

Pharming.....

.....

..... [1]

(c) State **one** additional cyberattack.

.....

8

(a) Identify the logic gates represented by the following truth tables.

(i)

A	B	X
0	0	1
0	1	1
1	0	1
1	1	0

[1]

.....

(ii)

A	B	X
0	0	0
0	1	1
1	0	1
1	1	1

[1]

.....

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

X = (**A** AND NOT **C**) OR ((**A** NAND **B**) AND **C**)

[5]

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

X = (**A** AND NOT **C**) OR ((**A** NAND **B**) AND **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]

9 A pseudo-code algorithm:

- allows a user to input 20 numbers and store them in a list
- allows the user to input a target number to search for
- outputs the number of times the target number is found in the list.

```
1   For Index = 0 to 20
2       OUTPUT "Input a number"
3       INPUT Numbers[x]
4   NEXT Index
5   OUTPUT "Input the number to search for"
6   INPUT Search
7   Count = 1
8   FOR Index = 0 to 19
9       IF Search == Numbers[Index] THEN
10          Count = Count + 1
11      ENDIF
12  NEXT Count
13  OUTPUT Index
```

There are **four** errors in this pseudo-code.

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

Error 1.....

Correction.....

Error 2.....

Correction.....

Error 3.....

Correction.....

Error 4.....

Correction.....

[8]

10 A program needs to reverse the letters of a string and then prints the result. You may assume that the input string only contains lower case alphabet characters. So the reverse of input string “abcde” is “edcba”.

Write an algorithm, using a flowchart to:

- ask the user to enter a string of characters
- outputs the reversed string.

You do **not** need to validate any data entered.

[7]

11 A teacher needs a computer program to read in the performance scores for 40 auditions in Montfort Got Talent competition. The program will output the average score, the lowest score and the highest score. Each performance score is an integer between 0 and 10 inclusive.

Write an algorithm, using pseudo-code that:

- inputs 40 scores
- outputs the average score, the lowest score and the highest scores. You **must** validate all inputs.

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.... [7]

End of Paper