Review on test #2

1. The memory of a CPU consists of a small program as shown in **TABLE 2**, each memory cell can hold 1 byte of data. The list of op-codes is given in **TABLE 1**. Describe what the program in **TABLE 2** does.

TABLE 1.

Op-code	Functions
0000	HALT (STOP)
0001	LOAD
0010	STORE
0011	ADD
0100	SUBTRACT
0101	SHIFT LEFT
0110	SHIFT RIGHT
0111	BRANCH
1000	BRANCH ON ZERO

TABLE 2.
Memory

0000	
0001	
0010	
0011	
0100	00011000
0101	01001001
0110	00101010
0111	01111011
1000	00001000
1001	00000100
1010	
1011	00000000
1100	
1101	
1110	
1111	

Review on test #2

ANS:

At cell address 0100, it loads the data from cell 1000, so it loads the decimal number 8

At cell address 0101, it subtracts the data in cell 1001, so it subtracts the decimal number 8 by 4

At cell address 0110, it stores the result to cell 1010

At cell address 0111, the program jumps to cell address 1011

At cell address 1011, the program stops

Review on test #2

2. If "A" is a Boolean variable which takes on values 0 or 1. Which of the following Boolean expression(s) always produces a value of 1?

I. = A + 1
II. = A + A'
III. = A • A'
IV. = A • 1

ANS:

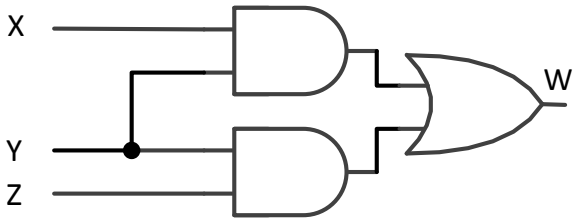
I. involves the OR operator with one of the inputs as 1, so the output must be 1
II. When A is 0, A + A' = 0 + 1 = 1, when A is 1, A + A' = 1 + 0 = 1, so the output is always 1
III. When A is 0, A • A' = 0 • 1 = 0, so A • A' does not always produce a value of 1
IV. When A is 0, A • 1 = 0, so A • 1 does not always produce a value of 1

So only I. and II. are correct.

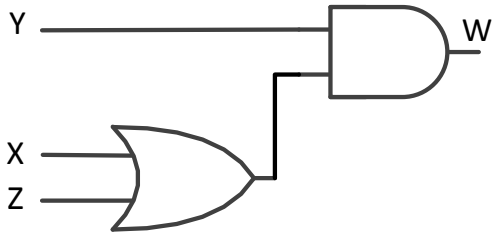
Review on test #2

3. Which of the following circuits are equivalent?

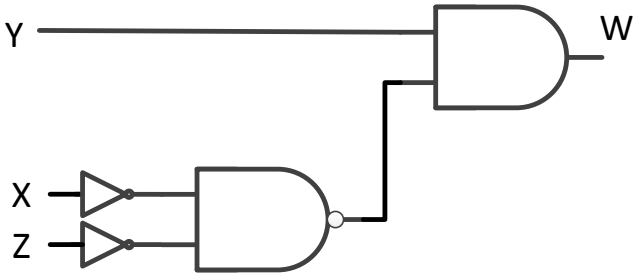
I.



II.



III.



ANS:

I. the Boolean expression is: W = X • Y + Y • Z

II. the Boolean expression is: W = Y • (X + Z)

III. The Boolean expression is: W = Y • (X' • Z')'

According to the De Morgan's theorem, X' • Z' = (X + Z)', so in III., W = Y • (X + Z)

So all the circuits are equivalent.

Review on test #2

4. Which of the following excel formulas will return the Boolean value **TRUE**?

A. = NOT (2)
B. = NOT(-2)
C. = AND(TRUE<>FALSE,FALSE)
D. = NOT(NOT(0.1))
E. = OR(FALSE,TRUE<>TRUE)

ANS:

NOT() returns **TRUE** only when NOT(0) or NOT(FALSE). In C. one of the input arguments is FALSE, so using the AND operation would return FALSE. In E. TRUE<>TRUE would return FALSE, so the OR operation would return FALSE.

Hence, D. is the only one that would return **TRUE**

Review on test #2

5. What result is produced when the following Excel expression is evaluated?

=LEN(CONCATENATE(LEFT("EECS",2),1520))

ANS:

LEFT("EECS",2) = EE
CONCATENATE(LEFT("EECS",2),1520) = EE1520

The LEN() function returns the length of the string, so

LEN(CONCATENATE(LEFT("EECS",2),1520)) = 6

Review on test #2

6. The **Final marks** worksheet lists the marks of 8 individuals, and the **Lookup** worksheet classifies the marks with their grades.

	A	B
1		
2		
3	**Marks range**	**Grade**
4	0	F
5	50	D
6	60	C
7	80	B
8	90	A
9		
10		
11		

Final_marks | Lookup | Sheet3

	A	B	C	D	E
1		**Name**	**Marks**	**Final Grade**	**Bonus point**
2		Peter	90		
3		Jane	75		
4		Mary			
5		Tommy	50		
6		Sam			
7		Jessica	95		
8		Stan	40		
9		Roger	88		
10					
11		**Average**	73.0		

Final_marks | Lookup | Sheet3

Suppose the following formula has been entered in the column labelled "**Final Grade**" (i.e. D2 to D9) in the **Final_marks** worksheet:

=IF(ISNUMBER(Marks),LOOKUP(Marks,Marks_range,Grade),"Not Completed")

Complete the cells from D2 to D9 to show what would be seen in the data view of the **Final_marks** worksheet

Review on test #2

The **Final marks** worksheet lists the marks of 8 individuals, and the **Lookup** worksheet classifies the marks with their grades.

	A	B
1		
2		
3	**Marks range**	**Grade**
4	0	F
5	50	D
6	60	C
7	80	B
8	90	A
9		
10		
11		

Final_marks | Lookup | Sheet3

	A	B	C	D	E
1		**Name**	**Marks**	**Final Grade**	**Bonus point**
2		Peter	90		
3		Jane	75		
4		Mary			
5		Tommy	50		
6		Sam			
7		Jessica	95		
8		Stan	40		
9		Roger	88		
10					
11		**Average**	73.0		

Final_marks | Lookup | Sheet3

Suppose cell C11 is defined as "**Average**" and the following formula has been entered in the column labelled "**Bonus Point**" in the **Final_marks** worksheet:

=IF(AND(Marks>Average,Final_Grade="A"),"Yes","No")

Complete the cells from E2 to E9 to show what would be seen in the data view of the in the **Final_marks** worksheet

Review on test #2

ANS:

Name	Marks	Final Grade	Bonus point
Peter	90	A	Yes
Jane	75	C	No
Mary		Not Completed	No
Tommy	50	D	No
Sam		Not Completed	No
Jessica	95	A	Yes
Stan	40	F	No
Roger	88	B	No

Review on test #2

7. The **Sales** worksheet lists the sales and the region from the individual sales person. The **Summary by Region** worksheet calculates the "**Sales total**" from each region as shown by cells: C3 to C6. Provide a SINGLE Excel function that you would enter in cell ***C5*** to obtain the sales total corresponds to the sales made in the "East" region

	A	B	C
1			
2		**Sales Region**	**Sales Total**
3		North	$ 280,000
4		South	$ 590,000
5		East	$ 630,000
6		West	$ 960,000
7			

Sales | Summary by Region | Sheet3

	A	B	C	D
1		**Last Name**	**Region**	**Sales**
2		Au	North	$ 150,000
3		Bernier	South	$ 220,000
4		Bince	South	$ 370,000
5		Bushby	East	$ 190,000
6		Campbell	West	$ 260,000
7		Carrick	West	$ 410,000
8		Fraser	East	$ 330,000
9		Hon	East	$ 110,000
10		Smith	West	$ 290,000
11		Ison	North	$ 130,000
12				

Sales | Summary by Region | Sheet3

*All ranges have been **named** using the labels that appear in the **Sales** worksheet*

Review on test #2

ANS:

The sales total in cell C5 can be obtained using the "SUMIF" function:

= SUMIF(Region,B5,Sales)