

Academic year 2020/21
Trimester 1

Q1) Complete the Binary Positional Weight Chart (PWC) to find the weight of each digit in the binary number 10101_2

Position	5	4	3	2	1	0
Weight	2^5	2^4	2^3	2^2	2^1	2^0
Positional value		16			2	
Place the number			0			1
Weighted value of the number		16				

- What is the Least significant Bit? LSB =
- What is the most significant Bit? MSB =
- What is the MSB of 110001_2 ?
- What is the LSB of 11111110_2 ?

Q2) Use the ASCII table to find the ASCII code for the word “Ali”?

[illegible]

A	0100 0001	Y	0101 1001
B	0100 0010	Z	0101 1010
C	0100 0011	a	0110 0001
D	0100 0100	b	0110 0010
E	0100 0101	c	0110 0011
F	0100 0110	d	0110 0100
G	0100 0111	e	0110 0101
H	0100 1000	f	0110 0110
I	0100 1001	g	0110 0111
J	0100 1010	h	0110 1000
K	0100 1011	i	0110 1001
L	0100 1100	j	0110 1010
M	0100 1101	k	0110 1011
N	0100 1110	l	0110 1100

Q3) Use the binary PWC to convert the following binary numbers into decimals.

[illegible]

- a) $1000_2 = (\dots\dots\dots)_{10}$
b) $1001_2 = (\dots\dots\dots)_{10}$
c) $1010_2 = (\dots\dots\dots)_{10}$
d) $11001_2 = (\dots\dots\dots)_{10}$
e) $100011_2 = (\dots\dots\dots)_{10}$
f)

Q4) Use the binary PWC in Q3 to convert the following decimal numbers into their binary equivalent.

- a) $10 = (\dots\dots\dots)_2$
 b) $15 = (\dots\dots\dots)_2$
 c) $21 = (\dots\dots\dots)_2$
 d) $60 = (\dots\dots\dots)_2$
 e) $81 = (\dots\dots\dots)_2$

Q5) convert the following binary numbers into their Hexadecimal equivalent.
The first one is done for you.

a) $1111000010101001_2 =$

Step 1: divide the binary number into groups of 4 digits starting from right.

$1111\mathbf{0000}1010\mathbf{1001}$

Step 2: Convert each group into the Hexadecimal equivalent. If the number is greater than 9 then you replace it by the letters A, B, C, D, E and F.

$1111\mathbf{0000}1010\mathbf{1001}$

F 0 A 9

Then $1111000010101001_2 = \mathbf{F0A9}_{16}$

b) $101011_2 =$

c) $1001101011_2 =$

d) $10101_2 =$

e) $11011_2 =$

Q6) Convert the following Hexadecimal numbers into binary. First one is done for you.

Hint: You need to convert each digit into 4 bits binary equivalent starting from right.

Hex	Binary
A01	1010 0000 0001
100B	
1C	
AA	
123	
10F	

Q7) complete the following table.

Decimal	Binary	Hexadecimal
0		
1		
2		
3		
4		
5		
6		
7	111	
8		
9		
10		
11		
12		
13		
14		
15		
16		