DIGITAL LOGIC & DESIGN (EE-1005)
ASSIGNMENT #1

ID: _____ **NAME: _____** SECTION: ____

Read the Instructions Carefully

- Base 3, base 4, base 5, base 6 means the one you used in QUESTION 1
- Your assigned number is given in csv file along with this assignment.

FOR EXAMPLE: Assigned Number if your assigned number is **7821**

	Assign Digit 0	Assign Digit 1	Assign Digit 2	Assign Digit 3
Short for Assigned Digit	**A0**	**A1**	**A2**	**A3**
Write Assigned Number Digit By Digit	7	8	2	1

FOR EXAMPLE: Name is **HAMAZADAUD**

- *Use your name instead of HAMZA*
- *If your name starts with **MUHAMMAD** kindly use your second name*
- *Convert repeated character to small letter or to other symbols to make them unique (see example for **A, a & @**)*

	SIXTH CHARACTER OF YOUR NAME	FIFTH CHARACTER OF YOUR NAME	FOURTH CHARACTER OF YOUR NAME	THIRD CHARACTER OF YOUR NAME	SECOND CHARACTER OF YOUR NAME	FIRST CHARACTER OF YOUR NAME	ZERO CHARACTER OF YOUR NAME
Short for CHARACTER	**C0**	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**
YOUR NAME CHARACTER BY CHARACTER	@	D	a	Z	M	A	H

ID:_____ ASSIGNMENT # 1 [EE-1005] Assigned Number:_____

1. Fill the table given below and Count in given base

NOTE: *Use Assigned number & Your Name*

- **Base 3** (Zero Digit is Assign0 **(A0)**, First Digit is Assign1 **(A1)**, Second Digit is Assign2 **(A2))**
- **Base 4** (Zero Digit is Assign0 **(A0)**, First Digit is Assign1 **(A1)**, Second Digit is Assign2 **(A2)**, and Third Digit is Assign3 **(A3))**
- **Base 5** (Zero Digit is Character0 **(C0)** of your name, First Digit is Character1 **(C1)** of your name, Second Digit is Character2 **(C2)** of your name, Third Digit is Character3 **(C3)** of your name, Four Digit is Character04 **(C4)** of your name)
- **Base 6** (Zero Digit is Character0 **(C0)** of your name, First Digit is Character1 **(C1)** of your name, Second Digit is Character2 **(C2)** of your name, Third Digit is Character3 **(C3)** of your name, Four Digit is Character04 **(C4)** of your name and Fifth Digit is Character05 **(C5)** of your name)

TABLE

BASE 10 DECIMAL	BASE 2 BINARY	BASE 3	BASE 4	BASE 5	BASE 6	BASE 8 OCTAL	BASE 16 HEXA
0	0						
1	1						
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

ID:_____ **ASSIGNMENT # 1 [EE-1005]** **Assigned Number:**

BASE 10	BASE 2 BINARY	BASE 3	BASE 4	BASE 5	BASE 6	BASE 8 OCTAL	BASE 16 HEXA
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							

42							
43							
44							
45				-			
46							
47							
48							
49							
50							

2. Perform the following conversion to check your counting in question 1

- $(34)_{10} = (\ ?\ )_3$ ***Base 3 used in Question # 1***

- $(52)_{10} = (\ ?\ )_4$ ***Base 4 used in Question # 1***

- **$(49)_{10} = (\ ?\ )_5$** ***Base 5 used in Question # 1***

- **$(53)_{10} = (\ ?\ )_6$** ***Base 6 used in Question # 1***

3. Convert Decimal $(\text{Assigned Number})_{10}$ to $(\ ?\ )_3$, $(\ ?\ )_4$, $(\ ?\ )_5$ and $(\ ?\ )_6$ check results by recovering them to decimal

4. Convert Decimal fraction $(0.\ \text{Last two digits of the Assigned Number})_{10}$ to $(\ ?\ )_3$, $(\ ?\ )_4$, $(\ ?\ )_5$ and $(\ ?\ )_6$ check results by reconverting them to decimal

5. Perform addition to result of Question 3 to base in Question 1 as follow
   - $(\text{Assigned number})_3$ + (question 1 number $43)_3$
   - $(\text{Assigned number})_4$ + (question 1 number $45)_4$
   - $(\text{Assigned number})_5$ + (question 1 number $38)_5$
   - $(\text{Assigned number})_6$ + (question 1 number $29)_6$

6. Perform subtraction to result of Question 3 from base in Question 1 as follow**:**
   - $(\text{Assigned number})_3$ - (question 1 number $50)_3$
   - $(\text{Assigned number})_4$ - (question 1 number $42)_4$
   - $(\text{Assigned number})_5$ - (question 1 number $37)_5$
   - $(\text{Assigned number})_6$ - (question 1 number $48)_6$

7. Perform R 's and (R-1)'s complement to the results of question 3 to generate negative number
   - R 's and (R-1)'s of $(\text{Assigned number})_3$ of results from Q3
   - R 's and (R-1)'s of $(\text{Assigned number})_4$ of results from Q3
   - R 's and (R-1)'s of $(\text{Assigned number})_5$ of result from Q3
   - R 's and (R-1)'s of $(\text{Assigned number})_6$ of results from Q3

8. Perform R-1 ’s complement subtraction using values from Question 7 and Question 1

- $(\text{question 1 number 23})_3$ - (R-1)’s of $(\text{Assigned number})_3$ results from Q7
- $(\text{question 1 number 29})_4$ - (R-1)’s of $(\text{Assigned number})_4$ results from Q7
- $(\text{question 1 number 31})_5$ - (R-1)’s of $(\text{Assigned number})_5$ results from Q7
- $(\text{question 1 number 42})_6$ - (R-1)’s of $(\text{Assigned number})_6$ results from Q7

9. Perform R ’s complement subtraction using values from Question 7 and Question 1

- $(\text{question 1 number 15})_3$ - (R)’s of $(\text{Assigned number})_3$ results from Q7
- $(\text{question 1 number 19})_4$ - (R)’s of $(\text{Assigned number})_4$ results from Q7
- $(\text{question 1 number 25})_5$ - (R)’s of $(\text{Assigned number})_5$ results from Q7
- $(\text{question 1 number 42 })_6$ - (R)’s of $(\text{Assigned number})_6$ results from Q7

10. Number Multiplication

- Multiply first two digits of your assigned number **$(A0A1)_{10}$** with **$(21)_{10}$**
- Multiply **$(17)_3$ x $(7)_3$ =$(?)_3$** Result should be in base 3 as well
- Convert assigned Number **A2** to binary and multiply with given number **$(A2.101)_2$** with **$(110.101)_2$**

11. Number Division

- Divide last two digits of your assigned number **$(A2A3)_{10}$** with **$(5)_{10}$**
- Convert assigned Number **$(A2A3)_{10}$** to binary and divide in given number **$(A2A3)_2$** with **$(9)_2$**

12. BCD Addition

- Add your assigned number to **(3291)** using **BCD**

13. Convert your assigned number to binary (**base2**) and covert that binary to gray code.