# ASSIGNMENT # 01 Submitted to: SIR NAFFES AYUB Submitted by: SADAF SALEEM Rou no: 2929 Class: BS 2nd (M) Department: Computer Science 2019-23 Section: GC UNIVERSITY FSD.

QUESTION: List the octal and hexadecimal numbers from 16 to 32 - Using A and B for the last two digits, list the numbers from 8 to 28 in base 12-

#### Decimal to Octal & Hexadecimal.

Decimal	odal	Hexadecimal
16	020	010
17	021	011
18	022	012
19	023	013
20	024	014
21	025	015
22	026	016
23	027	017
24	030	018
25	031	019
26	032	01 A
27	033	018
28	034	010
29	035	010

30	036	01E		
30	037	016		
39	040	020		

### Decimal to Base 12

Base 12	Decimal	Base 12
8	19	17
9	20	18
A	21	19
В	22	1A
10	23	18
21	24	. 20
12	26	21
13	26	22
24	27	23
15	28	24
16		
	8 9 A.B 10 11 12 13 14 15	8 19 20 A 21 B 22 A 23 A 1 A 24 A 27 A 28

DARSTNOTES

QUESTION: What is the largest binary number that can be expressed with 16 bits? What are the equivalent decimal and hexadecimal numbers?

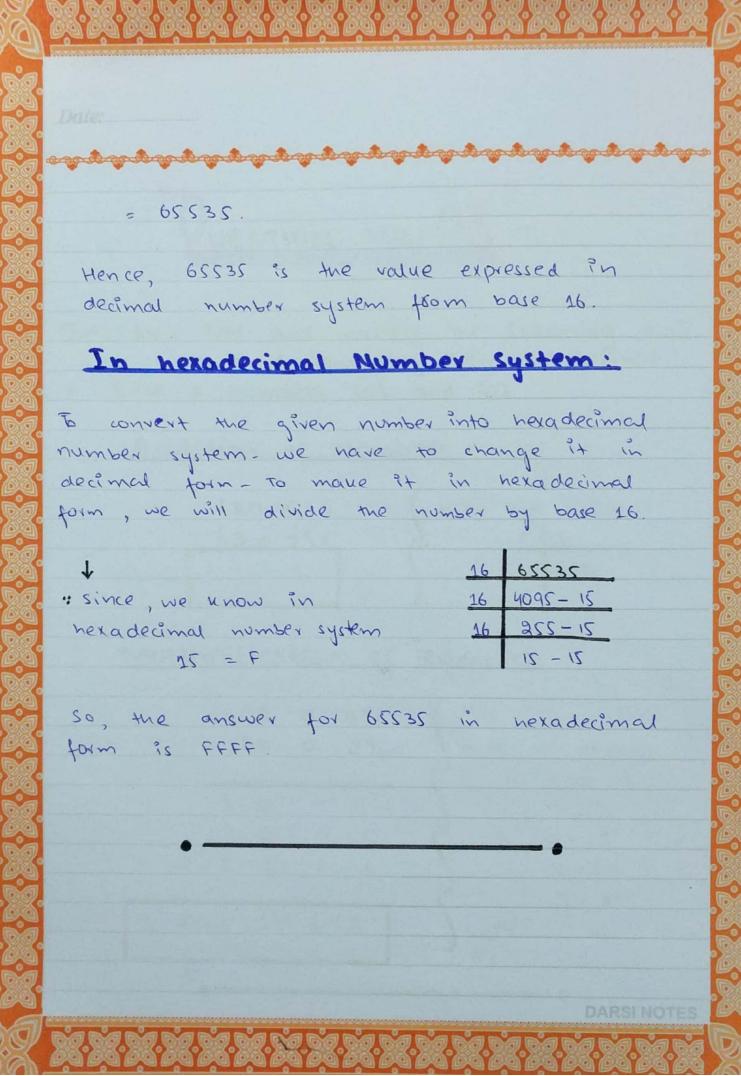
SOLUTION: 11111111111111 (16 13) is the largest binary number that can be expressed with 16 bits.

#### In decimal Number system

For conversion of a number into decimal number system, we have to multiply each digit with base a having its own index- and then sum up the value-

 $= 1 \times 2^{5} + 1 \times 2^{7} + 1$ 

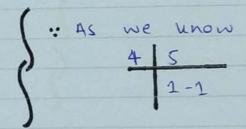
= 32,768 + 16,384 + 8,192 + 4,096 + 2,048 + 512 + 256 + 128 + 69 + 32 + 16 + 8 + 4 + 2 + 1



QUESTION: Add and multiply the following no's without converting them to decimal.

Base - 4 numbers 203 and 302.

### Addition of Numbers



### Multiplification of Numbers

QUESTION: Find the 16's compliment of C3DF

SOLUTION: "Radix compliment!"

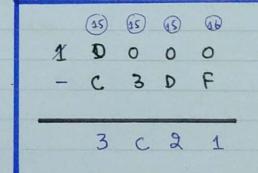
#### Formula used = v=N

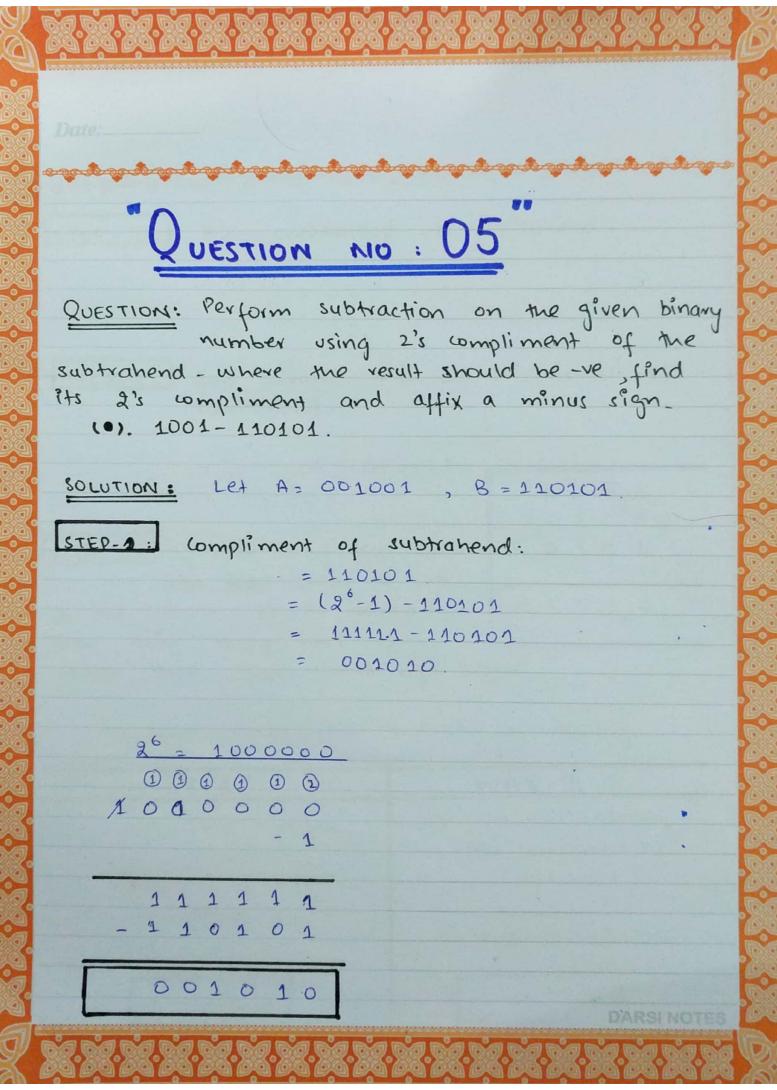
 $= (16)^{4} - C3DF$  = 10000 - C3DF

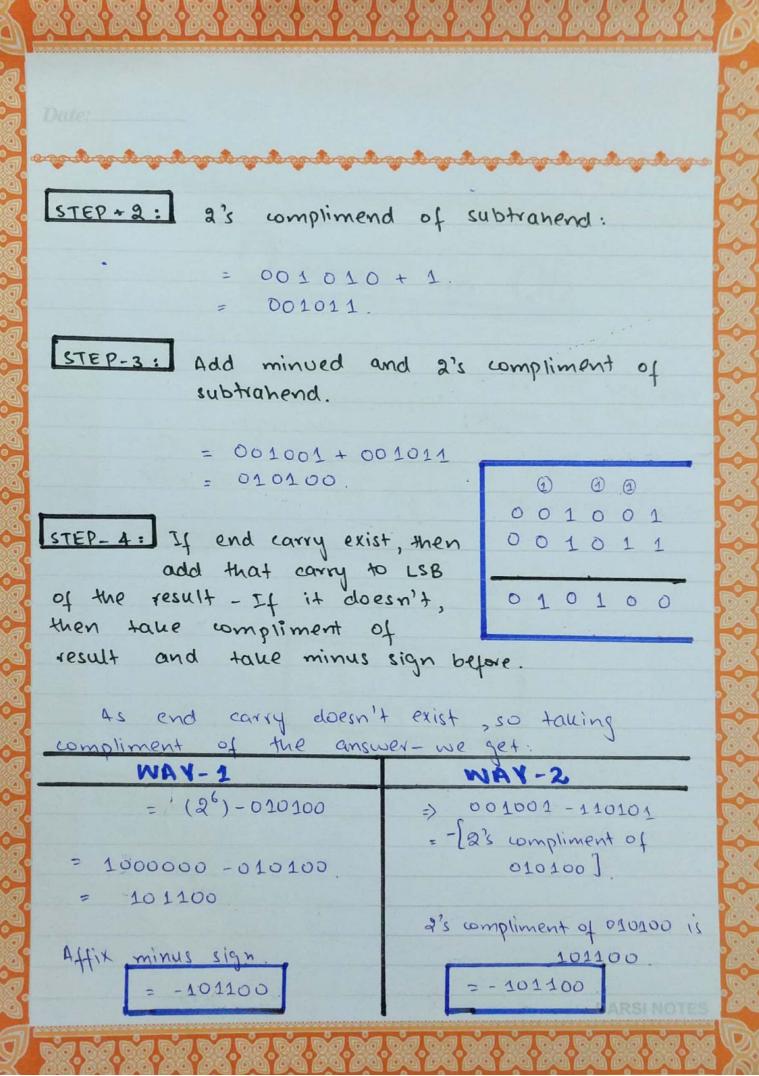
= 3021

$$16 - F = 01$$
  
 $15 - 0 = 02$   
 $15 - 3 = 12$   
 $15 - C = 03$ 

Y = Base N = No. of Digits N = Number







QUESTION: The state of a 12 bit register is 100010010111 - what is its content

if it represents:

(i) Three decimal digit in BCD

(ii). Three decimal digits in the excess-3 code?

SOLUTION: In BCD.

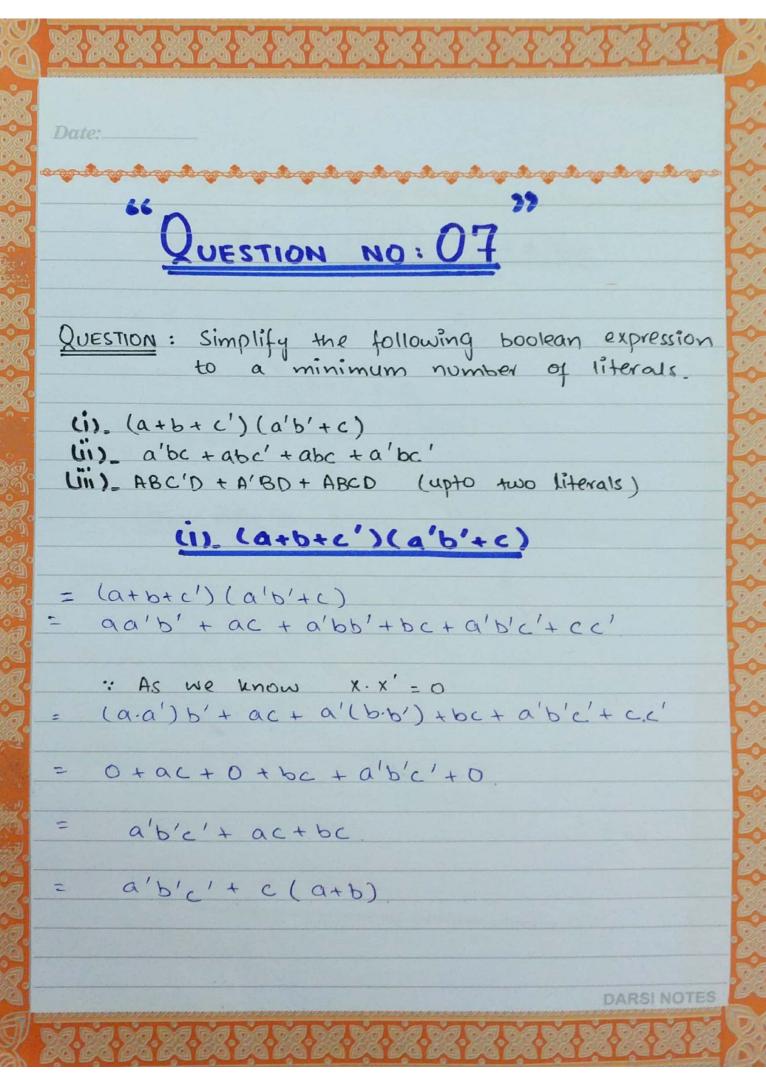
8	4	2	1
1	0	0	0
1	0	0	1
0	1	1	1

STEP-1: To convert the digits into BCD code, we have to make pair of 4,4 digits.

STEP-9: Adding the binary codes to the digits, we will get the required answer.

$$1000 = 8 + 0 + 0 + 0 = 8$$
  
 $1001 = 8 + 0 + 0 + 1 = 9$ 

and not and not and not and not and not and not be a design to an all and the second 0111 = 0+4+2+1 = 7 80, In 800 100010010111 is equal to 897. In excess-3 In Excess-3, we have to subtract the binary code of 3 from the given digits - or, simply subtract their binary codes. 1000 - 0011 = 0101 - In BCD 8 - 3 = 5. In Excess -3 1001 - 0011 = 0110 9 - 3 = 6 0111 - 0011 = 0100 7-3 = 4 so, the Excess-3 of 100010010111 is 564



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(ii). a'bc+abc'+abc+a'bc'
= a'bc+abc+abc'+a'bc'
= bc (a+a') + bc' (a+a')
  " As we know ox+x'=1
= bc + bc'
 = b (c+c')
      (iii) ABC'D + A'BD + ABCD
= ABC'D+ ABCD+ A'BD.
   ABD ( c'+c) + A'BD
   ": As we know X+X'=1
= ABD + A'BD
= BO ( A+A').
    BO (upTo Two Literals)
```