1.14 Obtain the 1's and 2's complements of the following binary numbers:

(a) 10000000
(b) 00000000
(c) 11011010
(d) 01110110
(e) 10000101
(f) 11111111.

Binary	→ One's Complement	→ Two's Complement
1000 0000	0 111 1111	1000 0000
0000 0000	1111 1111	0000 0000
1101 1010	0010 0101	0010 0110
0111 0110	1000 1001	1000 1011
1111 1111	0000 0000	0000 0001

1.15 Find the 9's and the 10's complement of the following decimal numbers:

(a) 52,784,630 (b) 63,325,600

(c) 25,000,000 (d) 00,000,000.

Complements dont change number of digits but rather discards most significant digit

Decimal →	9's Complement →	10's Complement
52784630	47215369	47215370
63325600	36674399	36674400
25000000	74999999	75000000
00000000	99999999	100000000

1.24 Formulate a weighted binary code for the decimal digits, using weights

(a) *6, 3, 1, 1

(b) 6, 4, 2, 1

a) 6311

0. 0000
1. 0001
2. 0011
3. 0100
4. 0110
5. 0111
6. 1000
7. 1010
8. 1011
9. 1100

b) 6421

0. 0000
1. 0001
2. 0010
3. 0011
4. 0100
5. 0101
6. 0110
7. 1001
8. 1010
9. 1011

1.25 Represent the decimal number 5,137 in (a) BCD, (b) excess-3 code, (c) 2421 code, and (d) a 6311 code.

Decimal : 5137

BCD : 0101 0001 0011 0111

Excess-3 code : 1000 0100 0110 1011

2421 code : 1011 0001 0011 1101

6311 code : 1000 0100 0001 0001

1.33* The state of a 12-bit register is 100010010111. What is its content if it represents

(a) three decimal digits in BCD?
(b) three decimal digits in the excess-3 code?
(c) three decimal digits in the 84-2-1 code?
(d) a binary number?

a) 3 decimal digits in BCD : 897

b) 3 decimal digits in excess-3 code : 564

c) 3 decimal digits in 8421 code : 8 97

d) a binary number : 1000 1001 0111