COURSE TITLE: MATHEMATICS FOR I.T PROFESSIONALS

COURSE CODE: DCIT 105

ASSIGNMENT ON NUMBER SYSTEMS

1. Steve Jobs

2. (a) 1000100101112 = 897 (BCD)

(b) 1000100101112 = 1011 1100 1010 (excess -3)

(c) 1000100101112 = 1000 1111 1010 (84-2-1 Code)

(d) 1000100101112 = 219910

3. (a) Sum=100002

Product =1101112

(b) Sum=95816

Product =6216

4.64CD16=1100100110011012

Binary to Octal: 1100100110011012 =623158

5. (a) For 32k bytes:

1 kilobyte (KB) = 1024 bytes

So, 32 kilobytes = 32 \* 1024 bytes = 32,768 bytes

(b) For 64 Megabytes:

1 megabyte (MB) = 1024 kilobytes (KB)

So, 64 megabytes = 64 \* 1024 \* 1024 bytes = 67,108,864 bytes

(c) For 6.4g bytes:

1 gigabyte (GB) = 1024 megabytes (MB)

So, 6.4 gigabytes = 6.4 \* 1024 \* 1024 \* 1024 bytes = 6,871,948,800 bytes

**6.** (a) 14/2 = 5 is base 6

(b) 54/4 = 13 is base 8

(c) 24 + 17 = 40 is base 11

**7.** (a) 11002 = 1210

(b) 1111 1111 11112 = 409510

(c) 778 = 6310

(d) 2218 = 14510

(e) 5BC16 = 146810

**8.** (a) 5610 = 1110002

(b) 5610 = 708

(c) 5610 = 3816

(d) 22110 = 110111012

(e) 22110 = 3358

(f) 22110 = DD16

**9.** (a) (2020)10

(b) (2020.65625)10

(c) (172)10

(d) (172.983)10

**10.** 34.3410 = 100010.01012

34.3410 = 1021.10123

34.3410 = 42.25608

34.3410 = 22.570A16

**11.** 43.28 = 100011.012

43.28 = 1022.02023

43.28 = 35.2510

43.28 = 23.416

**12.**

1111 1111

1101 0101

1 1101 0100

Signed overflow occurred.

1010 1111

1111 1111

Signed overflow did not occur.

1100 1100

1110 1010

1 1011 0110

Signed overflow occurred.

1111 1111

1111 1111

1 1111 1110

Signed overflow occurred.

0100 1101

0011 0011

1000 0000

Signed overflow did not occur.

0111 1111

1001 1001

1 0001 1000

Signed overflow occurred.

**13.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Base | 10 | Signed Magnitude    Binary Representation | One’s Complement    Binary Representation | Two’s Complement    Binary Representation |
|  | 43 | 001010111 | 001010111 | 001010111 |
|  | -43 | 10101011 | 11010100 | 11010101 |
|  | -128 | Invalid | Invalid | Invalid |
|  | 127 | 01111111 | 10000000 | 10000001 |
|  | -1 | 100000001 | 11111110 | 11111111 |