1. Convert the binary number 10101.11011011 to octal.

|010|101|.110|110|110| = 25.666

**(10101.11011011)2 = (25.666)8**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 000 | 001 | 010 | 011 | 100 | 101 | 110 | 111 |

1. Convert the decimal number 2429.625 to octal.

**(2429.625)10 = (4575.5)8**

1. Convert the decimal number 532.97 to octal.

**(532.97)10 = (1024.7605075)8**

1. Convert the binary number 0.0110111 to hexadecimal.

0|.0110|1110| = 0.6E

**(0.0110111)2 = (0.6E)16**

1. How many different BCD numbers can be stored in 12 switches? (Assume two-position, or on-off switches.) 12 switches equal three sets of four bits. With the maximum amount of 10 numbers per BCD **there would be 103 (1000) different BCD numbers stored.**
2. Determine the value of base x if (211)x = (152 )8

(152)8 = 1 x 82 + 5 x 81 + 2 x 80 = (106)10

(211)x = 2 x X2 + 1 x X1 + 1 x X0 = 2X2 + X + 1

2X2 + X +1 = (106)10

Base 7 = 2(7)2 + (7) + 1 = (106)10

**(211)7 = (152)8**

1. Convert the hexadecimal number F3A7C2 to octal.

F = 1111 3 = 0011 A = 1010 7 = 0111 C = 1100 2 = 0010

**(111 100 111 010 011 111 000 010)2 = (74723702)8**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 0000 | 0001 | 0010 | 0011 | 0100 | 101 | 110 | 111 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 9 | A | B | C | D | E | F |
| 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111 |

1. Decode the following ASCII code : 1001010 1101111 1101000 1101110 0100000 1000100 1101111 1100101

1001010 = J 1101111 = o 1101000 = h 1101110 = n 0100000 = (space)

1000100 = D 1101111 = o 1100101 = e

**John Doe**

1. Convert the binary number to decimal : 1110101.101

1 x 20 + 0 x 21 + 1 x 22 + 0 x 23 + 1 x 24 + 1 x 25 + 1 x 26 = 117

1 x 2-1 + 0 x 2.2 + 1 x 2.3 = 0.625

**(1110101.101)2 = (117.625)10**