

**Practice questions on number systems****A. For the following 6-bit binary numbers, a) convert to decimal, b) convert to octal, c) convert to hexadecimal**

1. 110101 [Ans: a) 53 b) 65 c) 35]
2. 001011 [Ans: a) 11 b) 13 c) 0B]
3. 111111 [Ans: a) 63 b) 77 c) 3F]
4. 011101 [Ans: a) 29 b) 35 c) 1D]

**B. Convert the following numbers from the base shown to base 10:**

1. 222 (base 8) [Ans: 146]
2. 001 (base 16) [Ans: 1]
3. CE (base 16) [Ans: 206]
4. 170 (base 8) [Ans: 120]
5. 1234 (base 5) [Ans: 194]

**C. Perform the following additions:**

1. 00101 + 11110 (base 2) [Ans: 100011]
2. 10101 + 10101 (base 2) [Ans: 101010]
3. 01101 + 10111 (base 2) [Ans: 100100]
4. 55 + 77 (base 8) [Ans: 154 (base 8)]
5. 17 + 17 (base 8) [Ans: 36 (base 8)]
6. 1F + E2 (base 16) [Ans: 101 (base 16)]
7. 9A + 17 (base 16) [Ans: B1 (base 16)]

**D. Convert the following hexadecimal numbers to base 8:**

1. AB [Ans: 253]
2. DEC [Ans: 6754]
3. EE1520 [Ans: 73412440]

**E. Perform the following subtractions:**

1. 10101 - 01010 (base 2) [Ans: 01011]
2. 10110 - 00111 (base 2) [Ans: 01111]
3. 33 - 17 (base 8) [Ans: 14 (base 8)]
4. 520 - 175 (base 8) [Ans: 323 (base 8)]
5. 45 - 29 (base 16) [Ans: 1C (base 16)]
6. 52E0 - 16AA (base 16) [Ans: 3C36 (base 16)]