

EE200 Sec 2 Quiz #1

ID. #:

Name: Key

Question: 1

Convert the hexadecimal number 7C9F to binary then from binary to octal.

$$\begin{array}{cccc} (7 & C & 9 & F)_{16} \\ (0111 & 1100 & 1001 & 1111)_2 = (76237)_8 \\ \underline{\quad 7 \quad} & \underline{\quad 6 \quad} & \underline{\quad 2 \quad} & \underline{\quad 3 \quad} & \underline{\quad 7 \quad} \end{array}$$

Question: 2

Express the following numbers in decimal:

$$\begin{aligned} (10110.0101)_2, (16.5)_{16}, \text{ and } (26.24)_8 \\ (10110.0101)_2 = (16+4+2) \cdot (0.25 + 0.0625) = (22.3125)_{10} \\ (16.5)_{16} = (16+6) \cdot (5 \times \frac{1}{16}) = (22.3125)_{10} \\ (26.24)_8 = 2 \times 8 + 6 \cdot \frac{2}{8} + \frac{4}{64} = (16+6) \cdot (0.25 + 0.0625) = (22.3125)_{10} \end{aligned}$$

Question: 3

Obtain the 1's and 2's complement of the following binary numbers

- a) 11101010 b) 01111110 c) 00000001 d) 01110100

$$\begin{array}{llll} 1's \text{ comp} & 00010101 & 10000001 & 11111110 & 10001011 \\ 2's \text{ comp} & 00010110 & 10000010 & 11111111 & 10001100 \end{array}$$

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Question: 1

Convert the hexadecimal number E6B4 to binary then from binary to octal.

$$\begin{array}{cccc} (E & 6 & B & 4)_{16} = (1110011010110100)_2 \\ (1110011010110100)_2 = (163264)_8 \\ \underline{\quad 1 \quad} & \underline{\quad 6 \quad} & \underline{\quad 3 \quad} & \underline{\quad 2 \quad} & \underline{\quad 6 \quad} & \underline{\quad 4 \quad} \end{array}$$

Question: 2

Express the following numbers in decimal:

- (10110.0101)₂, (16.5)₁₆, and (26.24)₈

See Sec 2.

Question: 3

Perform subtraction on the following unsigned binary numbers using 2's complement of the subtrahend. Where the result should be negative, 2's complement it and affix a minus sign.

- a) 11011 - 11001 b) 110100 - 10101 c) 1011 - 110000

$$\begin{array}{l} \text{a) } \begin{array}{r} 11011 \\ - 11001 \\ \hline \text{result } 100010 \\ - 100000 \\ \hline \text{ans: } \boxed{00010} \end{array} \qquad \text{b) } \begin{array}{r} 110100 \\ - 10101 \\ \hline \text{result } 101111 \\ - 1100000 \\ \hline \text{ans: } \boxed{01111} \end{array} \end{array}$$

$$\begin{array}{r} \text{c) } \begin{array}{r} 001011 \\ - 110000 \\ \hline \text{result } 011011 \\ - 110000 \\ \hline \text{ans: } \boxed{-(100101)} \end{array} \end{array}$$