

Circuit 1 ENGR 201
Electrical Engineering

Hardware

Computer Logic

CE 241
Computer Engineering

software

CE 122
C++ 1
CE 222: C++
CE 232 Python
ENGR 104 Matlab

Computer Science

Electrical and Computer Engineering

CE 222
Data Structures and Algorithms.

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$$\underline{0.625}_{(10)} \rightarrow \underline{0.101}_{(2)}$$

$$\frac{1}{2} \overline{)0.625}$$

$$\frac{1}{2} \overline{) \overset{0}{\cancel{0}}.25}$$

$$\frac{1}{2} \overline{) \overset{0}{\cancel{0}}.5}$$

$$\overset{0}{\cancel{0}}$$

$$\begin{array}{c} 1 \\ 0 \\ 1 \end{array} \downarrow$$

$$3(a) \quad 17.\underline{2}_8 \rightarrow (15.25)_{10}$$

$$\downarrow$$
$$1 \times 8^1 + 7 \times 8^0 + 2 \times \underline{8}^{-1} = 8 + 7 + 0.25 = 15.25_{(10)}$$

(2)

<u>AND</u>	1	<u>0</u>
1	1	0
<u>0</u>	0	0

OR	1	0
1	1	1
0	1	0

$$\begin{cases}
 1 \text{ OR } 0 = 1 \\
 0 \text{ OR } 1 = 1
 \end{cases}$$

OR	A	\bar{A}	1	0
<u>A</u>	A	1	1	A
\bar{A}	1	\bar{A}	1	\bar{A}
1	1	1	1	1
0	A	\bar{A}	1	0

3)

AND	1	0	A	\bar{A}
1	1	0	A	\bar{A}
0	0	0	0	0
A	A	0	A	0
\bar{A}	\bar{A}	0	0	\bar{A}

$$1x^2 + 0x^2 + 1x^2 + 1x^2 = 8 + 0 + 2 + 1 = 11$$

FYL_Fall 2020_Robot

Quiz 2

1. Convert the following binary numbers to decimal: (15 points)

- (1) 1011
- (2) 1000
- (3) 1111
- (4) 10101.11
- (5) 11101.001

$$0.11 \rightarrow 1 \times 2^{-1} + 1 \times 2^{-2} = 0.5 + 0.25 = 0.75$$

2. Convert the following decimal numbers to binary: (15 points)

- (1) 10
- (2) 8
- (3) 16
- (4) 52
- (5) 12.625

$$\begin{array}{r} 2 \overline{) 10} \\ \underline{2} \\ 8 \\ \underline{2} \\ 10 \\ \underline{8} \\ 2 \\ \underline{2} \\ 0 \end{array} \quad \begin{array}{r} 2 \overline{) 8} \\ \underline{2} \\ 6 \\ \underline{2} \\ 4 \\ \underline{2} \\ 2 \\ \underline{2} \\ 0 \end{array} \quad \begin{array}{r} 2 \overline{) 16} \\ \underline{2} \\ 12 \\ \underline{2} \\ 10 \\ \underline{2} \\ 8 \\ \underline{2} \\ 6 \\ \underline{2} \\ 4 \\ \underline{2} \\ 2 \\ \underline{2} \\ 0 \end{array} \quad \begin{array}{r} 2 \overline{) 52} \\ \underline{2} \\ 48 \\ \underline{2} \\ 44 \\ \underline{2} \\ 40 \\ \underline{2} \\ 36 \\ \underline{2} \\ 32 \\ \underline{2} \\ 28 \\ \underline{2} \\ 24 \\ \underline{2} \\ 20 \\ \underline{2} \\ 16 \\ \underline{2} \\ 12 \\ \underline{2} \\ 8 \\ \underline{2} \\ 6 \\ \underline{2} \\ 4 \\ \underline{2} \\ 2 \\ \underline{2} \\ 0 \end{array}$$

3. (10 points)

(a) Convert to Decimal: 17.2₈. Round to two digits past the ~~the~~ decimal point.

(b) Convert your answer to binary.

(c) Convert to binary DEC.A₁₆. 1.01 1110 1100.1010

4. Add, subtract, and multiply in binary: (15 points)

(a) 1111 and 1010 (b) 110110 and 11101 (c) 100100 and 10110

5. Complete the following logic expressions: (25 points)

$$A \times A = A \quad A \times 0 = 0 \quad A \times 1 = A \quad A \times A' = 0$$

$$A + A = A \quad A + 0 = A \quad A + 1 = 1 \quad A + A' = 1$$

6. Complete the following logic expressions: (20 points)

$$A \times A \times A = A$$

$$A \times 1 \times 0 \times B = 0$$

$$((A + A) \times A) + A = A$$

$$A + 1 + A + B + 0 = 1 + B$$

$$(A \times A) + (A + A) = A + A$$

$$1 + 1 = 1$$

$$A' + A + A' = A'$$

$$(A' + A) \times A = A$$

$$A' \times (A + A \times B) \times 0 = 0$$

$$1 + 0 = 1$$

Append D
A · B
A × B
AB