

Quiz #1

10:30 am, Monday, April 10th

ALL QUESTIONS ARE MULTIPLE CHOICE:

1. What is the decimal equivalent of the unsigned base 5 number 423_5 ?

- a. **113_{10}**
- b. 143_{10}
- c. 341_{10}
- d. None of the above

$$\begin{aligned} 423_5 &= 4 \times 5^2 + 2 \times 5^1 + 3 \times 5^0 \\ &= 4 \times 25 + 2 \times 5 + 3 \times 1 \\ &= 100 + 10 + 3 \\ &= 113_{10} \end{aligned}$$

2. What is the base 7 equivalent of the unsigned decimal number 106_{10} ?

- a. 112_7
- b. 210_7
- c. **211_7**
- d. None of the above

$$\begin{aligned} 106 \div 7: & \text{ Q}=15, \text{ R}=1 \rightarrow 1. \\ 15 \div 7: & \text{ Q}= 2, \text{ R}=1 \rightarrow 11. \\ 2 \div 7: & \text{ Q}= 0, \text{ R}=2 \rightarrow 211. \end{aligned}$$

3. What is the base 4 equivalent of the unsigned decimal number 0.5625_{10} ?

- a. 0.12_4
- b. **0.21_4**
- c. 0.22_4
- d. None of the above

$$\begin{aligned} 4 \times .5625 &= 2.25 \rightarrow .2 \\ 4 \times .25 &= 1.0 \rightarrow .21 \end{aligned}$$

4. What is the base 9 equivalent of the unsigned base 3 number 12021_3 ?

- a. **167_9**
- b. 407_9
- c. 523_9
- d. None of the above

$$\begin{array}{rcl} 12021_3 & \rightarrow & \begin{array}{ccc} 1 & 20 & 21_3 \\ & 01 & 20 & 21_3 \\ & & 1 & 6 & 7_9 \end{array} \end{array}$$

Base 9	Base 3
0	00
1	01
2	02
3	10
4	11
5	12
6	20
7	21
8	22

5. What is the result of applying the 2's complement algorithm to 0111.1110_2 .

- a. 1001.0001_2
- b. 1000.1110_2
- c. **1000.0010_2**
- d. None of the above

$$\begin{array}{rcl} 0111.1110 & \rightarrow & \begin{array}{r} 1000.0001 \\ +0000.0001 \\ \hline 1000.0010 \end{array} \end{array}$$