

1) Using Appendix C from the book, please answer the following questions based on the code given:

PC = 3

2001

2105

2207

5312

4034

2323

5534

C000

A) After the first three instructions are executed, what are the values being stored in R1, R2 and R3?

B) After the 4th instruction is executed, what is the Program Counter at?

C) After the 4th instruction is executed, what is the value of R3?

D) Name each op code and what they do specifically

E) What is the 2nd number in each command represent?

2) Given the following numbers, convert to the following:

100100101 – Convert to base 10

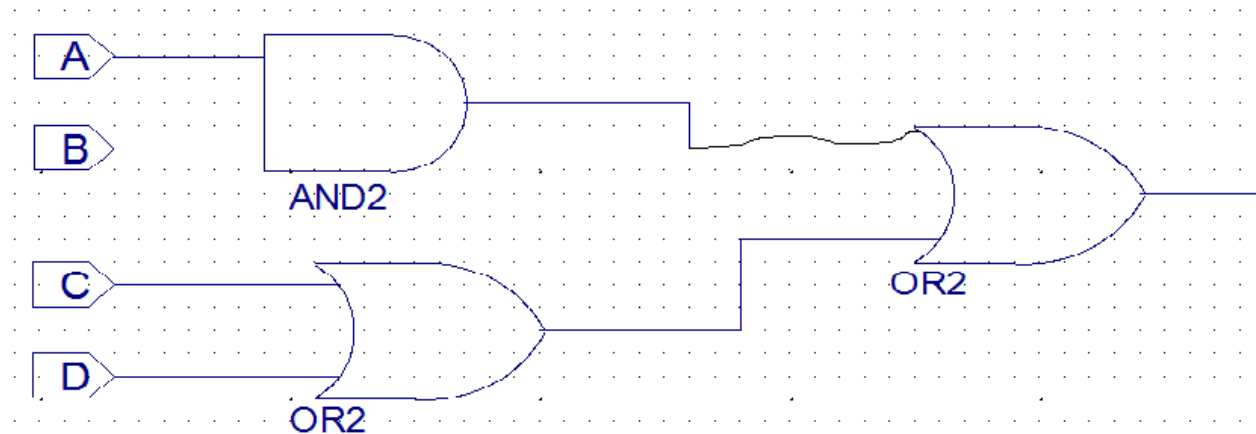
5237 – Convert to Binary

1A43B – Convert to Base 10

5237 – Convert to Hexadecimal

3) What does “ALU” stand for and what is its purpose?

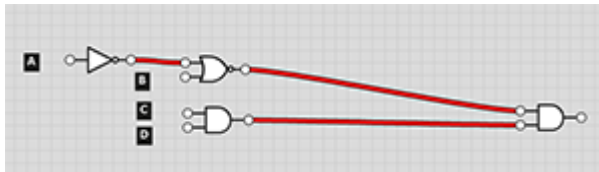
4) Given the following Gate, create the truth table



5) Give the truth table for the following circuits:

- a. $\sim(A + B) * (C * D)$
- b. $(\sim A + \sim B)$
- c. $(P + \sim Q)$
- d. $\sim(P * R) + (A * B)$
- e. $\sim(\sim A + B) * (C + D)$

6) Give the Truth table for the following gate:



7) Algorithms:

- a) What is pseudo code?
- b) Identify best case, worst case and average case scenarios for algorithms (Order of magnitude and Big-O notation) for the sorting algorithms
- c) **Know the Algorithmic Operation Types:** Sequential, Conditional, Iterative