ECE 3724/CS 3124 Quiz #1 – Reese NAME: _____

You may NOT use a calculator.

```
  0x4A
- 0x7E
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  0xCC
```
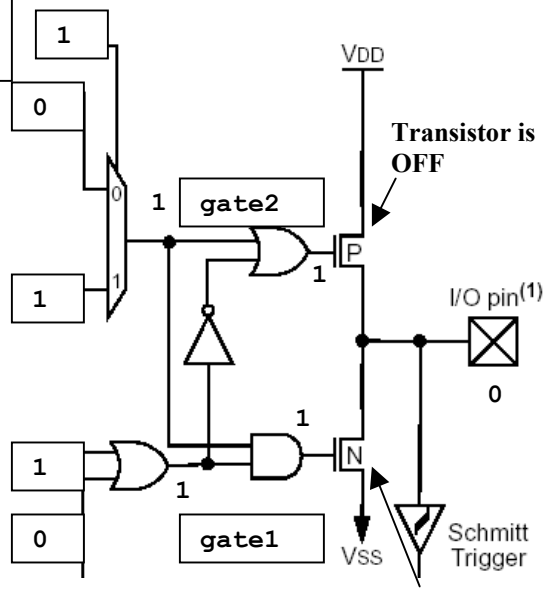

1. (2 pts) Give the 8-bit result in hex.

2. (3 pts) The diagram to the right is from the PIC18F242 datasheet.
Given the logic values shown, what is the output of Gate2, Gate1, and the I/O pin?

VDD is power supply = '1'.
VSS is ground = '0'.
P is a P-type CMOS transistor.
N is a N-type CMOS transistor.



3. (5 pts)
For the number sequencing computer covered in class, assume the LOC input bit is tied to the MOST significant bit of the DATA output (the data output displays the binary code for the digit that is currently in the output register. Also assume that a new instruction called DEC (decrement) has been added. When DEC is executed, the value in the output register is **decremented** by one. For the following program, list the instruction sequence that is executed – give the first 10 instructions that are executed by LOCATION and instruction. Remember the OUT register is 4 bits. Keep track of the current value of the OUT register to help you.

```
Location        instruction
   0              OUT 0x9   (this bit value is 1001)
   1              DEC
   2              JC  1
   3              OUT 0
   4              JMP 1
```

	Location Executed	Instruction	OUT
1.	0	OUT 9	9 = 1001
2.	1	DEC	9-1 = 8 = 1000
3.	2	JC 1	8 = 1000
4.	1 (jump taken)	DEC	8-1 = 7 = 0111
5.	2	JC 1	7 = 0111
6.	3 (jump not taken)	OUT 0	0 = 0000
7.	4	JMP 1	0 = 0000
8.	1	DEC	0 – 1 = 15 = 1111 (underflow)
9.	2	JC 1	2
10.	3 (jump taken)	DEC	15-1 = 14 = 1110