ECE 3724/CS 3124 Quiz #1 -- Reese

NAME: _____

You may NOT use a calculator.

```
    0x3A
+   0xE8
  ------
    0x22
```

problem 2.

```
    0x24
-  0xE8
  ------
    0x3C
```

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

rightmost digit: 0xA + 0x8 = 10 + 8 = 18; 18 > 16, so carry into next digit; result digit = 18 – 16 = 2.
leftmost digit: 0x3 + 0xE + 1(carry from previous digit)
        = 3 +   14 + 1 = 18; (18 > 16), so 18-16 = 2 (leftmost digit result, carry out of most significant digit)

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

rightmost digit: 0x4 - 0x8 = 4 - 8 ; (4 < 8),need borrow from next digit = (16 + 4) – 8 = 20 – 8 = 12 = 0xC , result digit
leftmost digit: 0x2 - 0xE - 1(borrow from previous digit)
        = 2 -   14 - 1 = 2 - 15; (2 < 15), so need borrow from next digit = (16+2)-15 = 18-15 = 3 (borrow out of most significant digit).

3. (2 pts) What is the value 0x80 in decimal?

0x80 = 8*16 + 0*16 = 128 + 0 = 128

4. (2 pts) The diagram to the right is from the PIC18F242 datasheet.
If A = '1', B= '0', C = '1', then give
the logic values on the outputs of gate1,
gate2, 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 transitor.

gate1(OR) output is 1 (OR gate), gate2 (AND) output is 1, IO pin value is 0.

gate1 VDD open

A 1 P

B 1 N I/O pin[1]

gate2 VSS closed, pulls IO to VSS (0)

C
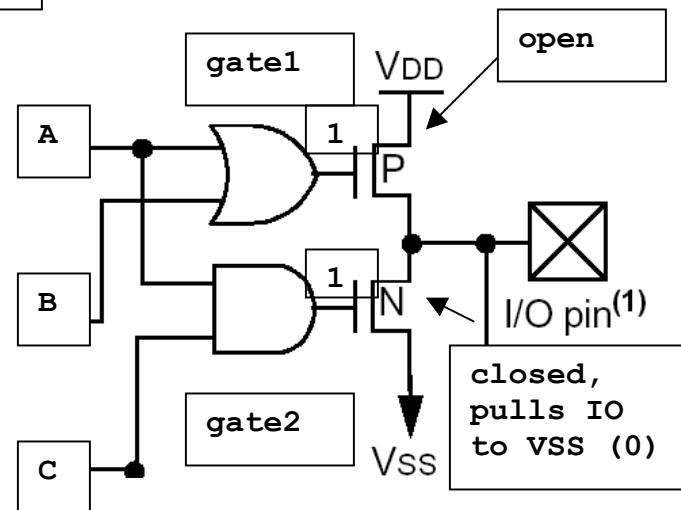
5. (2 pts) What values do T0CS (0 or 1), PSA (0 or 1) have to be for the TMR0L counter clock input to see the FOSC/4 input?

FOSC/4 input

T0CS = 0, PSA = 1

TMR0L counter

Fosc/4 0

RA4/T0CKI pin

T0SE 1

Data Bus 8

Sync with Internal Clocks

TMR0L

Programmable Prescaler

(2 Tcy delay)

3 PSA

T0PS2, T0PS1, T0PS0

2-to-1 mux, T0CS is select input

T0CS

Clock input to TMR0L

Set Interrupt Flag bit TMR0I on Overflow