Sample programs you should know

1. Suppose I want to set up the serial port to transmit at 4800 baud using a single clocked 8051. The crystal is running a 28.2076 MHz. What values should be loaded into RCAP0L and RCAP0H.

2. The A/D converter has a reference voltage of 2.5 volts. If the input voltage is 1.0 volts what 10-bit binary number will this convert to?

3. The A/D converter has a reference voltage of 2.5 volts. It does an input and gets the number 0xAA. What was the input voltage on the A/D port?

4. An interrupt routine for timer 0 has been written to complement the bit at P3.2. The listing below shows both the C-code and the corresponding assembly code created by the compiler. What is the instruction RETI in the assembly code? Why isn't this just RET?

******** C – Code ********
//Timer 0 comes in on Interrupt 1.
void SqWave() interrupt 1 using 1
{P3 = P3 ^ 4; //Exclusive or with 00000100 for bit 3.2
}

******** Assembly Code ********
C:0x0003 63B004 XRL P3(0xB0),#0x04x01
C:0x0006 32 RETI

5. Suppose that a PWM channel has been set up for 8-bit PWM and I send it the number 0xAA. What will be the duty cycle of the PWM signal?
6. What does the following code send to P1?
   ```c
   int i = 0x1234;
   unsigned char j;
   j = i;
   P1 = j;
   ```

7. Add a line to the code below to output the value of the variable \( n \) to P1.
   ```c
   float n = 125.0;
   ```

8. Explain how the arguments \( w, x, y, \) and \( z \) are passed to the function named `Myfunction`.
   ```c
   int w, x, y, z;
   w = 1;
   x = 2;
   y = 3;
   z = 4;
   Myfunction(w, x, y, z);
   ```

9. Write a function called `Combine` which inputs a byte from P1 and P2 and combines them into a single int and returns that int. Make P1 the least significant.

10. What number will be sent to P1 as a result of the following operation.
    ```c
        int n, j;
        unsigned char c;
        n = 10;
        j = 32;
        c = n * j;
        P1 = c;
    ```