NAME: _____ GRADE: _____

EE492 / EE592 Real-Time Digital Signal Processing
Quiz #5
Open Books, Notes, Calculators (no programs, no graphing)

Each question is worth 10 points unless otherwise noted.

1. For the first three projects, we used the Motorola DSP56302 processor and the Motorola DSP56302EVM development board. What Texas Instruments processor and development board are we using?

2. Is the TI processor that we are using floating-point or fixed-point?

For the following programming tasks in Problems 3 and 4, assume the TI passcode and the process_stereo.c code:

process_stereo.c

```
void process_stereo(Int16 right_in, Int16 left_in, Int16 *right_out, Int16
*left_out)
{
*right_out = right_in;   /* pass right sample thru */
*left_out = left_in;     /* pass left sample thru */
}
```

3. Write a code *and* appropriate comments, which will filter right channel samples through an FIR filter whose coefficients are

$$h(n) = \begin{cases} 0.1, & 0 \le n \le 9 \\ 0.0, & \text{otherwise} \end{cases}.$$

Your code (placed inside process_stereo) should first insert the input sample into a delay line and then perform the convolution. Be sure to declare any global and local variables. Do not worry about initializing the delay line to zero.

This page for EE592 students only.

4. Write a code *and* appropriate comments, which will filter right channel samples through an IIR filter whose state equations are given by

$$w_0(n) = x(n) + 0.5w_1(n) + 0.25w_9(n)$$
$$y(n) = w_9(n) - 0.5w_{10}(n) \quad .$$
$$w_k(n+1) = w_{k-1}(n), \quad k = m+1, m, \ldots, 1$$

Your code (placed inside process_stereo) should first insert the input sample into a delay line and then perform the convolution. Be sure to declare any global and local variables. Do not worry about initializing the delay line to zero.