ME333 Introduction to Mechatronics Name _____
2021 Quiz 5: Chapter 5 & 6

1. Draw the voltage that is generated by a “bouncey” push button, and describe a method for debouncing it using code in an interrupt.

2. What are each of the IFSx, IECx, and IPCx registers used for?

3. What is “context save and restore”, and how do you avoid using it?

4. For the SFR SPI1CON, demonstrate two different SFR manipulation techniques that would turn on bit MODE16 and make the value of FRMCNT equal to 5.

Register Name(1)	Bit Range	Bits																All Resets
		31/15	30/14	29/13	28/12	27/11	26/10	25/9	24/8	23/7	22/6	21/5	20/4	19/3	18/2	17/1	16/0	
SPI1CON	31:16	FRMEN	FRMSYNC	FRMPOL	MSSEN	FRMSYPW	FRMCNT<2:0>			—	—	—	—	—	—	SPIFE	ENHBUF	0000
	15:0	ON	—	SIDL	DISSDO	MODE32	MODE16	SMP	CKE	SSEN	CKP	MSTEN	—	STXISEL<1:0>		SRXISEL<1:0>		0000

5. The following methods of calculating velocity produce about the same results. What is the advantage of the second method, and how could you use the .dis file to prove it?

```
...
//method 1
float distance_F=3.0, time_F=2.0, speed_F; //units are in m and s
speed_F = distance_F / time_F; //units are m/s
//method 2
int distance_I=3, time_I=2, speed_I; //units are in m and s
speed_I = (distance_I*1000) / time_I; //units are mm/s
...
```