

16.317: Microprocessor Systems Design I

Fall 2013

Lecture 27: Key Questions

November 15, 2013

1. Describe the instruction formats of the PIC 16F684.
2. Describe how variables can be declared in PIC assembly language.

3. Describe the PIC instructions for clearing or moving registers.

4. Describe the PIC instructions for manipulating a single bit.

5. **Example:** Show the values of all changed registers after the following sequence

```
cblock      0x30
    x
    y
endc
clrw
movwf      x
movlw      0xFE
movwf      y
swapf      y, F
bcf        y, 3
bsf        x, 3
movf       y, W
```

6. Describe the PIC instructions for increment, decrement, and complement operations.

7. Describe the PIC instructions for addition and subtraction.

8. **Example:** Show the values of all changed registers after the following sequence

```
cblock    0x20
    varA
    varB
    varC
endc
clrf      varA
clrf      varB
clrf      varC
incf      varA, W
sublw     0x0F
addwf     varB, F
decf      varB, F
comf      varB, W
subwf     varC, F
```

9. Describe the PIC instructions used for multi-bit bitwise operations.

10. Describe the PIC rotate instructions.

11. **Example:** Show the values of all changed registers after the following sequence.
Assume the carry bit is initially 0

```
cblock    0x40  
    z
```

```
endc
```

```
clrf      z  
movlw     0xF0  
iorwf     z, F  
xorlw     0xFF  
rrf       z, F  
andwf     z, W  
rlf       z, F
```