

16.317: Microprocessor Systems Design I

Summer 2012

Lecture 9: Key Questions August 6, 2012

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

2. Describe the PIC rotate instructions.

3. **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
```

4. Describe the PIC goto, call, and return instructions.

5. Describe the instructions used for conditional execution on the PIC 16F684.

6. **Example:** Show the values of all changed registers after each of the following sequences. What high-level operation does each perform?

a. movf a, W
 sublw 0xA
 btfsc STATUS, Z
 goto L1
 incf b, W
 goto L2
L1
 decf b, W
L2
 movwf a

b. movf NUM2, W
 subwf NUM1, W
 btfss STATUS, C
 goto BL
 movf NUM1, W
 goto Done
BL
 movf NUM2, W
Done
 movwf MIN

7. Describe the `clrwdt`, `sleep`, and `nop` instructions.