16.317: Microprocessor Systems Design I
Spring 2013

Lecture 26: Key Questions
April 8, 2013

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

2. (Review) 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.