

16.317: Microprocessor Systems Design I

Fall 2012

Lecture 22: Key Questions

November 2, 2012

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.