

EECE.3170: Microprocessor Systems Design I

Fall 2019

Key Questions PIC instructions (Lectures 26, 28, 29)

QUESTIONS:

1. Describe the instruction formats of the PIC 16F1829.
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. Describe the PIC instructions for increment, decrement, and complement operations.
6. Describe the PIC instructions for addition and subtraction.
7. Describe the PIC instructions used for multi-bit bitwise operations.
8. Describe the PIC shift and rotate instructions.
9. Describe the PIC control flow instructions.
10. Describe the instructions used for conditional execution on the PIC 16F1829.

EXAMPLES

1. 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
```

2. 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
```

3. **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 0x1A`
`btfs STATUS, Z`
`goto L1`
`incf b, W`
`goto L2`
L1
`decf b, W`
L2
`movwf a`

b. `movf NUM2, W`
`subwf NUM1, W`
`btfs STATUS, C`
`goto BL`
`movf NUM1, W`
`goto Done`
BL
`movf NUM2, W`
Done
`movwf MAX`