EELE-1232, Introduction to Microcontrollers, February 11th, 2022

Test#1, Total Mark: 21

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1) Answer the following questions: (2 points)

a) The PIC18 is a(n) 8-bit microcontroller.

b) Write a program to move 34H into WREG register.

```
 org 0x00
goto start

Start:
movlw 0x34
bra $
```

c) The file register space in PIC18 can be a maximum of 4096 bytes.

d) "ADDWF PORTB, W" puts the result in WREG register

2) Write an assembly program which calculates S = 1 + 2 + ... + 100. Assume S is in address 0x20. (7 points)

```
S equ 0x20
counter equ 0x21

org 0x00
goto start

start:

clrf S
movlw .100

movwf counter,f
loop:
movf S
addwf counter, w
movwf S
decf counter
bnz loop

Bra $
```

3) Write an assembly program that reads from PORTA. If bit 5 of PORTA is high then it writes 4× PORTA in PORTB; otherwise, it writes PORTA+3 in PORTB. You cannot use multiply instruction in your program. (12 points)

```
temp equ 0x20

org 0x00
goto start
start:

bsf TRISA, 5
nop
clrf TRISB

btfss PORTA,5
bra thisiszero
movf PORTA, temp
movf temp
addwf temp,w
addwf temp,w
addwf temp,w
addwf temp,w
movwf PORTB
bra ending

thisiszero:
movf PORTA, temp
movf temp
addwf temp,w
addwf temp,w
addwf temp,w
movwf PORTB
bra ending


ending:
bra $
```