National University of Computer and Emerging Sciences, Lahore Campus

0017

Microprocessor Interfacing and Programming (EE3002)
Date: November 4th 2024
Course Instructor(s)
Mr. Maaz Rizvi

Sessional-II Exam
Total Time (Hrs): 1
Total Marks: **15**
Total Questions: **3**

Roll No _____ Section _____ Student Signature _____

Instructions
Solve the paper on a separate answer sheet
You can use the Instruction Set provided to you on page 2 of the question paper

Attempt all questions

Question No. 1 (CLO No. 3) **Marks: 5**

Produce a code in PIC Assembly to add four **8-bit** numbers placed at the following locations. Store the higher byte and lower byte in registers named H_BYTE and L_BYTE respectively.

4C ---- 0x40
3F ---- 0x41
D3 ---- 0x42
A1 ---- 0x43

Question No. 2 (CLO No. 3) **Marks: 5**

Assuming that XTAL is 16 MHz, **Produce** a code in PIC Assembly using **Timer 1** to generate a square wave of 40 ms on PORTB, 7. Show the calculations.

Question No. 3 (CLO No. 2) **Marks: 5 (3+2)**

a) **Explain** the role of Stack and subroutines in PIC. What happens when the Stack overflows?

b) A developer is using PIC18 microcontroller for a product. The Chip has only 4K on-chip flash ROM. **Explain** which of the two instructions **CALL** or **RCALL** is more useful in programming this Chip.

- ADDLW, Literal
- ANDLW, Literal
- SUBLW, Literal
- XORLW, Literal
- MULLW, Literal
- ADDWF fileReg, d
- ADDWFC fileReg, d
- ANDWF fileReg, d
- IORWF fileReg, d
- SUBFWB fileReg, d
- SUBWF fileReg, d
- SUBWFB fileReg, d
- XORWF fileReg, d
- COMF fileReg, d
- DECF fileReg, d
- DECFSZ fileReg, d
- DECFSNZ fileReg, d
- INCF fileReg, d
- INCFSZ fileReg, d
- INCSNZ fileReg, d
- MOVF fileReg, d
- NEGF fileReg, d
- RLCF fileReg, d
- RLNCF fileReg, d
- RRCF fileReg, d
- RRNCF fileReg, d
- SWAPF fileReg, d
- BTG fileReg, d
- IORLW, Literal
- MOVFF fileReg1, fileReg2
- BC
- BNC
- BZ
- BNZ
- BN
- BNC
- BOV
- BNOV
- BRA
- GOTO
- CALL
- RCALL
- RETURN
- NOP
- CLRF
- SETF
- BCF fileReg, bit
- BSF fileReg,bit
- BTFSS fileReg,bit
- BTFSC fileReg,bit
- BTG fileReg,bit
- STATUS
- C - Carry flag
- DC - Digital Carry flag
- Z - Zero flag
- OV - Overflow flag
- N - Negative flag
- CPFSGT fileReg, d
- CPFSEQ fileReg, d
- CPFSLT fileReg, d
- VAR_NAME EQU Literal/Location
- ORG

- TMR0H/TMR1H
- TMR0L/TMR1L
- TMR0IF/TMR1IF
- INTCON
- PIR1

T0CON:-

- TMR0ON D7 Timer0 ON and OFF control bit
- T08BIT D6 Timer0 8-bit/16-bit selector bit
- T0CS D5 Timer0 clock source select bit
- T0SE D4 Timer0 source edge select bit
- PSA D3 Timer0 prescaler assignment bit
- T0PS2:T0PS0 D2D1D0 Timer0 prescaler selector

T1CON:-

- RD16 D7 16-bit read/write enable bit
- T1CKPS2:T1CKPS0 D5D4 Timer1 prescaler selector
- T1OSCEN D3 Timer1 oscillator enable bit
- T1SYNC D2 Timer1 synchronization
- TMR1CS D1 Timer1 clock source select bit
- TMR1ON D0 Timer1 ON and OFF con