ACS COLLEGE OF ENGINEERING

DEPARTMENT OF BIOMEDICAL ENGINEERING

8051 Microcontroller lab

Cycle-1

Prelab questions

1.List out some of the features of the 8051?

ROM - 4K bytes
RAM - 128 bytes
Timer - 2 no
I/O Pins - 32
Serial Port - 1
Interrupt sources - 6

2.What is meant by Flipflop?

A Flip-flop is a basic electronic circuit used for storing information in a digital machine.
It is a bistable device. It means it has two stable states.
It has one or more inputs and two complement outputs.

3.What is bit,byte,nibble?

4.What is width of data bus and address bus?

Cycle-2

1. **List Out Addressing Modes In Mcs-51?**

- Direct Addressing
- Register Addressing
- Register Indirect Addressing
- Implicit Addressing
- Immediate Addressing
- Index Addressing

2. What Is Special Function Registers (sfr)?

The memory addresses from 80H to 0FFH are called SFR. These are 128 bytes registers specially designed for interrupts and few other operations

3. What Are The Types Of Interrupts In 8051?

- External interrupt 0 (IE0) has highest priority among interrupts.
- Timer interrupt 0 (TF0)
- External interrupt 1 (IE1)
- Timer interrupt 1 (TF1) has lowest priority among other interrupts.
- Serial port Interrupt
- Reset.

4) What are the various jump instructions in microcontroller?

It is of two types- conditional jump and unconditional jump. Conditional jump is of two types byte level instruction an bit level instruction. Similarly unconditional jump is also divided into 3 sub-jump and these are- Short jump, Absolute jump, Long jump.

Cycle-3

1) What is an Interrupt service routine?

When micro controller is under sudden interrupt, it will call ISR (Interrupt service routine) that will store the address of current memory address and takes the control to new interrupt memory address. After the interrupt, the control will transfer back to its previous address.

Ans: A subroutine is a program that may be used many times in the execution of a larger program.

2) What is the difference between timer and counter of microcontroller?

Timer counts internal clock cycles while counter counts external events

3) **What is the significance of EA pin?**

EA stands for External Access. By applying LOW to this pin, makes 8051 toomit internal 4KB on-chip ROM and use only external memory for programstorage. By applying HIGH to this pin, makes 8051 to use internal 4KB on-chip ROM along with external memory for program storage

Cycle-4

1List the modes of timer in 8051

What is the significance of C/T bit in TMOD register of 8051?

The C/T bit in the TMOD register is a selector bit for the type of operation we want to perform in the timer register.

HIGH in that bit indicates Counter operation and LOW in that bit indicates Timer operation.

0	**Timer operation**
1	**Counter operation**

2.What is Serial communication?

3.What is significance of RI & TI flag?

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8051 Microcontroller lab(2015-16)

Prelab questions

Cycle-1

1.List out some of the features of the 8051?

2.What is meant by Flipflop?

3.What is bit,byte,nibble?

4.What is width of data bus and address bus?

Cycle-2

1. List out addressing modes in 8051?
2. What Is Special Function Registers (sfr)?
3. What are the types of interrupts in 8051?
4. What are the various jump instructions in microcontroller?

Cycle-3

1. What is an Interrupt service routine?
2. What is the difference between timer and counter of microcontroller?
3. What is the significance of EA pin?
4. Explain TCON register

Cycle-4

1.List the modes of timer in 8051.
2.What is Serial communication?
3.What is significance of RI & TI flag?
4.Explain SCON register?

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8051 Microcontroller lab(2016-17)

Prelab questions

Cycle-1

1.List out some of the features of the 8051?

2.What is meant by Flipflop?

3.What is bit,byte,nibble?

4.What is width of data bus and address bus?

5. Indicate the size (8- or 16-bit) of each of the following registers.

PC = A= B=

R0= R1= R2= R7=

6. Explain the difference between the ADD and ADDC instructions.

Postlab questions

Write an ALP to add five 8 -bit numbers.

Cycle-2

1. List out addressing modes in 8051?
2. What is special function registers (sfr)?
3. What Are The Types Of Interrupts In 8051?
4. What are the various jump instructions in microcontroller?
5. Explain the difference between the following two instructions:

a. MOV A,40H

b. MOV A,#40H

6. Give the RAM address for the following registers.

a. A = B = R0 = R2 =

b. PSW = SP = DPL = DPH =

Postlab questions

Write an ALP to find smallest number in an array.

Cycle-3

1. What is an Interrupt service routine?
2. What is the difference between timer and counter of microcontroller?
3. What is the significance of EA pin?
4. Explain TCON register.
5. Find the value of the CY flag after the execution of the following code.

(a) MOV A,#85H
ADD A,#92H

Postlab questions

1.Find the value in A, the accumulator, after the following code.

MOV A, #45H
RR A
RR A
RR A
A = in hex

Cycle-4

1.List the modes of timer in 8051.
2.What is Serial communication?
3.What is significance of RI & TI flag?
4.Explain SCON register?
5. Explain the role of the C/T bit in the TMOD register.

Postlab questions

Write an ALP to transfer characters serially “YES”

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8051 Microcontroller lab(2017-18)

Prelab questions

Cycle-1

1.List out some of the features of the 8051?

2.What is meant by Flipflop?

3.What is bit,byte,nibble?

4.What is width of data bus and address bus?

5.Explain PSW register?

6.How many I/O ports are available in 8051?

Postlab questions

Write an ALP to multiply 8-bit number with 16-bit number.

Cycle-2

1.List out addressing modes in 8051?

2. What is special function registers (sfr)?

3. What are the types of interrupts in 8051?

4. What are the various jump instructions in microcontroller?

5.Explain the function of CJNE instruction?

6.List out bit addressable instructions in 8051?

Postlab questions

Find the value in A after the following code.

CLR A

CPL A

XRL A,#0FFH

A = in hex

Cycle-3

1. What is an Interrupt service routine?
2. What is the difference between timer and counter of microcontroller?
3. What is the significance of EA pin?
4. Explain TCON register.
5. What is the difference between MOV and MOVX instruction?
6. The stack uses the same area of RAM as bank _____.

Postlab questions

Write an ALP to generate a square with an ON time of 3ms and an OFF time of 10ms on all pins of Port0.Assume an XTAL=22MHZ

Cycle-4

1. List the modes of timer in 8051.
2. What is Serial communication?
3. What is significance of RI & TI flag?
4. Explain SCON register?
5. Explain SMOD register?
6. Upon popping data from the stack, the SP register is ---------(incremented/decremented)

Postlab questions

Write a program to generate sawtooth waveform.