School of Information Technology and Engineering

ITE306: Embedded Systems Lab

Lab Cycle Sheet-I

FALL Semester 2016-17

Programme: B.Tech IT **Cycle I**

1. **Study of MICROCONTROLLER 8051**
2. **Program to perform 8-bit arithmetic operations (addition,subtraction,multiplication,division)**
3. **Program to swap two variables**
4. **Program to perform Factorial of given value**
5. **Program to perform Fibonacci of given value**
6. **Program to find sum of n numbers (using memories to enter data).**
7. **Program to transfer n address location data (using memories)**
8. **Program to perform sorting (ascending and descending order any technique)**
9. **Program to transfer data from port 1 to port 2(using peripherals ports)**
10. **Program to perform 16 bit BCD arithmetic operations**
11. **Program to perform all logic operations**
12. **Program to display Message.**

Note : Make use of instruction sets and sample programs discussed and uploaded)

1. Program to perform 8-bit addition,subtraction,multiplication,division

```
MOV  R0,#02H
MOV  R1,#03H
MOV  R2,#04H
MOV  R3,#05H
MOV  A,R0
ADD  A,R1
MOV  R0,A
MOV A,R2
SUBB  A,R1
MOV  R1,A
MOV  A,R1
MOV  B,R2
MUL  AB
MOV  R2,A
MOV  A,R3
MOV  B,R0
DIV  AB
MOV  R3,A
END
```

2. Program to swap two variables

```
MOV R0,#00H
MOV A,#01H
MOV B,#05H
MOV R0,B
MOV B,A
MOV A,R0
END
```

3.Program to perform maximum of two numbers.

```
MOV DPTR,#1000H
MOV R1,#5H
MOV B ,#00H
AGAIN: MOVX A,@DPTR
      CJNE A,B ,L1
      SJMP L2
L1: JC L2
   MOV B,A
   INC DPTR
L2: DJNZ R1,AGAIN
END
```

4. Program to perform Fibonacci series
//Correct program input 10 fibonacci value 55 in hex 37

```
ORG 0H
MOV R0,#30H
MOV @R0,#00H
MOV R1,#31H
MOV @R1,#01H
MOV R2,#09H
MOV A,#01H
BACK:ADD A,@R0
INC R0
INC R1
MOV @R1,A
DJNZ R2,BACK
HERE:SJMP HERE
MOV @R0,#00H
END
```

5. Program sort n numbers(Bubble sort)

```
//Check  r1 and r2  the values will be reversed continuously
MOV R0,#09H
AGAIN:MOV DPTR,#1000H
      MOV R1,#09H
BACK:MOV R2,DPL
    MOVX A,@DPTR
    MOV B,A
    INC DPTR
    MOVX A,@DPTR
    CJNE A,B ,NEXT
    AJMP SKIP
NEXT:JNC SKIP
   MOV DPL,R2
   MOVX @DPTR,A
   INC DPTR
   MOV A,B
   MOVX @DPTR,A
SKIP:DJNZ R1,BACK
    DJNZ R0,AGAIN
END
```

6. Program to find the sum of 10 numbers stored in the array.

```
MOV R0,#50H
MOV R2,#6
CLR A
MOV R7,A
XYZ: ADD A,@R0
JNC NEXT
INC R7
NEXT: INC R0
DJNZ R2 , XYZ   END
```

7. Program for block transfer

```
MOV R0,#30H
MOV R1,#50H
MOV R3,#8
RETURN : MOV A,@R0
MOV @R1,A
INC R0
INC R1
DJNZ R3, RETURN
END
```

8. Program to transfer n numbers from port 1 to port 2. (hexdecimal in port1 and decimal to port 2)

```
MOV A,#0FFH

MOV P0,A

MOV A,P0

MOV B,#10

DIV AB

MOV R7,B

MOV B,#10

DIV AB

MOV R6,B

MOV R5,A

END
```

9. Program to perform 16 bit BCD addition

PROGRAM : 16 BIT BCD ADDITION

```
MOV DPTR,#2080H

MOV A,#20H

MOV B ,#10H

ADDC A,DPL

DA A
```

```
MOV A,B
DA A
ADDC A,DPH
MOV B,A
DA A
MOV A,DPL
END
```

10 Program to perform factorial.

```
MOV DPTR,#1000H
MOVX A,@DPTR
MOV R1,A
MOV A,#01H
LOOP: MOV B,R1
    MUL AB
    INC DPTR
    DJNZ R1,LOOP
END
```

11. Program to display the message

```
ORG 0000
MOV DPTR,#MY_DATA
MOV R0,#50H
MOV R2,#5H
REPEAT : CLR A
MOVC A,@A+DPTR
MOV @R0,A
INC DPTR
INC R0
```

```
DJNZ R2,REPEAT
HERE :SJMP HERE
ORG 240H
        MY_DATA : DB "VIT"
END
```