Review Questions for Self Evaluation

Review Questions - Lecture 1

1) What is the range of external memory address space of 8051? What is the corresponding size of the data?

2) Think of an example where you would actually use the MOVC instruction. If the contents of program memory cannot be modified, then what would be the purpose of accessing program memory?

Review Questions - Lecture 2

1) Take a look at the following snippet of code:

```
MOV A, #4CH
MOV B, #02H
MUL AB
MOV R1,A
A1: MOV 50H, 98H
A2: MOV 51H, @R1
```

Will the statements A1 and A2 access the same memory location? (Note: MUL AB returns the lower byte in A, and higher byte in B)

2) What would be the state of Auxiliary Carry (AC) flag after the following set of instructions are executed?

```
MOV  A, #58H
ADD  A,  #62H
```

Review Questions - Lecture 3 and 4

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1) What is the address span of AJMP instruction?

2) What will be the value stored at the memory location 53H, after the execution of the below program?

```
        ORG 0000H
        LJMP START

        ORG 0100H
START:  MOV R1,#5BH
        MOV R2,#5AH
LOOP:   INC R1
        DJNZ R2, LOOP
        INC R1
        MOV 53H, R1
HERE:   SJMP HERE
END
```

Review Questions - - Lecture 3 and 4 contd

3) Assume the frequency of crystal given to microcontroller is 24 MHz. Each machine cycle is 12 clock cycles, and MOV and DJNZ instructions take 1 and 2 machine cycles respectively. Calculate the approximate total delay the following snippet of code will produce:

```
        MOV R2, #200
BACK1:  MOV R1, #0FFH
BACK :  DJNZ R1, BACK
DJNZ R2, BACK1
```

Review Questions - Lecture 5

1) Which of the following instructions are invalid ?

a) MOV DPTR, A b) MOV R3, R2 c) MOV R3, 02H d) MOV R1, #259 e) MOV DPL, #50H

2) What is the value in memory location 53H after the execution of the following program ?

```
ORG 0000H
LJMP START

ORG 0100H
START:  MOV DPTR, #400H
        MOV A,#5
        MOVC A, @A+DPTR
```

(contd.)

Review Questions - Lecture 5 contd

```
        SWAP A
        MOV 53H, A
HERE:   SJMP HERE

ORG 400H
NUMBERS:
        DB  2, 3, 25, 51, 88, 109, 181
 END
```

Review Questions - Lecture 6

1) Assume the following values are stored in memory locations 70H to 72H:
(70H) = 73H, (71h) = 58H, (72h) = 67H, what would be the value of R7 and A after the execution of the following program?

```
ORG 0000H
    LJMP START

    ORG 0100H
    START:    MOV R0, #70H
              MOV R1, #3
              CLR C
              CLR A
              MOV R7, #0
    LOOP:
              ADD A, @R0
```

(contd)

Review Questions - Lecture 6 contd

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```
        DA A
        JNC SKIP
        INC R7
SKIP:   INC R0
        DJNZ R1, LOOP
HERE:   SJMP HERE
END
```

NPTEL

Review Questions - Lecture 7

1) SETB 86H - The following instrn is a read modify write instruction. TRUE or FALSE?

2) If the code given below is executed, what is the value of the tuple (N, A)? Here
   N: The number of unexecuted code lines
   A: The final contents of the A register

   In calculating N, don't count lines involving the org directive. These lines are directives to the compiler for code placement. They don't result in any instructions being written to the code memory.

   In order to calculate the addresses of instructions, the following information will be useful.
   MOV, ADD, ACALL instructions occupy two bytes of program memory.
   SWAP, NOP occupy one byte of program memory.

(contd)

Review Questions - Lecture 7 contd

```
ORG 0000H
LJMP START

ORG 100H
START:  MOV A,#0FEH
        SWAP A
        ADD A,#23H
        ACALL LOGIC
        XRL A,#0FFH
        SWAP A
        ORL A,#0FH
        LJMP NEW
```

1

```
ORG 150H
LOGIC:  POP 0
        POP 1
        ANL A,#0A0H
        PUSH 0
        PUSH 1
        RET

ORG 700H
NEW:    NOP
        MOV B,#0E1H
        ADD A,B
HERE:   SJMP HERE
END
```

2

Review Questions - Lecture 8

1) What should be done in order to use port 0 as output? Why is it done so?

2) How is read write and modify instructions executed?