VIT UNIVERSITY
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School of Information Technology and Engineering
Practice Continuous Assessment Test – 1
Course Code: ITE 305
Course Name: Embedded Systems
B.Tech, Information Technology

Slot : F1+TF1

Common to all batches / Dr. Balaji Raman

Date: 17-08-2016

Time: 1 hr 30 min **Max. Marks: 50**

Answer All questions
PART-A (4*5=20 Marks)

1. *Think and Solve:* Why Princeton architecture was not used in 8051?
2. *Think and Solve:* Which of the following two instructions would be more appropriate to increment the accumulator by one? INC A or ADD A, #01H? Justify your answer.
3. Show the status of the CY, AC, and P flags after the addition of 9Ch and 64h in the following instructions.

```
MOV A, #9Ch
ADD A, #64h
```

4. Put the number 8Dh in RAM locations 30h to 34h using a program, which has 6 lines and the program on the whole uses only 12 bytes of ROM space.

PART-B (3*10=30 Marks)

5. Sketch the pin diagram of 8051. Explain briefly the functions of all the pins.
6. Write a program to copy the value 55h into RAM memory locations 40H to 45H using (a) direct addressing mode, (b) register indirect addressing mode without a loop.
7. Write a program to generate and store natural numbers starting from 1 to 'N' terms and also find the sum of these numbers. Assume that the value of 'N' is stored in location 30H. Store generated natural numbers from 40H. Leave the sum in the accumulator.

*******ALL THE BEST *******

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Practice Continuous Assessment Test – 1
Course Code: ITE 305
Course Name: Embedded Systems
B.Tech, Information Technology

Slot : F2+TF2

Faculty Name: Dr. Balaji Raman

Date: 17-08-2016

Time: 1 hr 30 min **Max. Marks: 50**

Answer All questions
PART-A (4*5=20 Marks)

1. *Think and Solve*: Can the memory area unoccupied by SFRs be used as general purpose storage area?
2. *Think and Solve*: Why are some area of internal RAM of 8051 only directly addressable and some other part only indirectly addressable?
3. What would happen after execution of the following four instructions?

```
MOV A, #55H
MOV 11H, #77H
MOV 0D0H, #10H
MOV @R1, A
```

4. Assuming bank #0 is selected, how many addressing modes of ADD instruction might be applicable if it is to add two numbers stored in locations E0H and 00H.

PART-B (3*10=30 Marks)

5. Sketch the pin diagram of 8051. Explain briefly the functions of all the pins of 8051.
6. Show the contents of the PSW register after the execution of the following instructions.

```
MOV A, #0BFh
ADD A, #1Bh
```

7. Sixteen consecutive bytes starting from 50H have unsigned integers. Develop a program to add all these 16 integers and store the 8 bit sum in memory location 60H.

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Continuous Assessment Test – 1
Course Code: ITE 305
Course Name: Embedded Systems
B.Tech, Information Technology

Slot : F1 + TF1

Faculty Name: Dr. Balaji Raman

Date: 26th August 2016

Time: 1 hr 30 min **Max. Marks: 50**

Answer All questions

PART-A (4*5=20 Marks)

1. Define Embedded Systems in three different ways.
2. *Think and Solve:* Interpret why it is not possible to protect a microprocessor based system from software piracy.
3. Internal RAM location E0H of an 8051 microcontroller contains a data which should be copied to internal RAM location 18H. Develop an assembly language program to accomplish the above mentioned move operation.
4. How can we make 0, 1, and 5 of port 1 function as input pins and remaining pins as output pins? Develop an assembly language program for 8051 to accomplish the mentioned above configurations of port bits of 8051.

PART-B (3*10=30 Marks)

5. Enumerate the four addressing modes of 8051. Illustrate each addressing mode with a small program.
6. Answer the following questions on Special function registers of 8051:
    a. Expand PSW? Give the direct address of PSW.
    b. Sketch the details of bits of PSW. Draw a table with bit number, bit Symbol, Name, direct bit address, alternate Address, and function of PSW.
    c. Outline the details of Register A and Register B (direct address, individual bit address, function of the register).
7. Develop a program to copy a block of 20 bytes of data available from address 60H to 73H to the location starting from 40H.

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Course Code: ITE 305
Course Name: Embedded Systems
B.Tech, Information Technology

Slot: F2 + TF2

Faculty Name: Dr. Balaji Raman

Date: 26th August 2016

Time: 1 hr 30 min **Max. Marks: 50**

Answer All questions

PART-A (4*5=20 Marks)

1. Define an Embedded System and list the general characteristics of Embedded Systems.
2. Think and solve: Interpret why all ports output FFH after a system reset in 8051?
3. Illustrate how the flags of PSW would be affected if 01111111B or 7FH in accumulator is added with 01H.
4. Assume that register bank #0 is selected for 8051, how would a data R7 of this bank be copied to R3 of the same bank?

PART-B (3*10=30 Marks)

5. Differentiate Microprocessors and Microcontrollers. Give at least 5 advantages of Microcontrollers over Microprocessors.
6. Sketch the internal architecture 0f 8051 and explain briefly various internal architecture units.
7. Develop an 8051 assembly program to add two 16 bit numbers, say B7C2H and 549AH. The first 16 bit number is located in registers R2 and R3 of bank #0 (currently selected) with lower of the two bytes in R2 and the higher in R3. The second 16-bit number is located in memory location 09H and 0AH with its lower byte in 09H and higher byte in 0AH. Store the results in 2FH (lower byte) and 30H (higher byte).
    a. Before writing the program write down the steps of the program.
    b. Justify your choice of specific addition instructions over other addition instructions available in the instruction set architecture of 8051.

*******ALL THE BEST *******