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SE-8288

B. E. - III (Sem. V) (Instrumentation & Control) Examination

May / June – 2011

Microcontroller & Interfacing

Time :3 Hours] [Total Marks : **100**

Instructions :

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ B. E. - 3 (SEM. 5) (INSTRUMENTATION & CONTROL)

Name of the Subject :

☛ Microcontroller & Interfacing

☛ Subject Code No. : 8 2 8 8 ☛ Section No. (1, 2,.....) : NIL

Seat No. :

Student's Signature

(1) Attempt all Questions.
(2) Figure to the right indicates marks.
(3) Answer of two sections must be written in separate answer books.

Q1(A)	**Give the answers in brief:**	**(10)**
1	Define an embedded system.	1
2	State the main difference between 8085 and 8051 microcontroller.	1
3	Explain the function of RESET pin in 8051 microcontroller.	1
4	_____ directive is used for ASCII strings.	1
5	True or False: All conditional jumps are short jumps.	1
6	Which port in 8051 has no dual functions?	1
7	Is this instruction valid or invalid? Why? RL B	1
8	Which port in 8051 requires external pull-up resistors?	1
9	Which two ports provide the address bits while accessing the external memory?	1
10	Write down the address range supported by ACALL and LCALL instructions.	1
Q1(b)	i) Compare and contrast microprocessor with microcontroller.	**(4)**
	ii) Mention any six features of 8051 microcontroller.	
Q1(c)	1) Explain in short all the assembler directives.	**(6)**
	2) Explain the use of DA instruction with the help of example.	

Q2(a) 1) Write an assembly language program to toggle the bits of Port 1 alternately. **(5)**

(b) Calculate the time delay for the given below loop. Assume the crystal frequency to be 11.0592 Mhz. **(5)**

```
DELAY:                    NO. OF MACHINE CYCLES
      MOV R2,#200                  1
AGAIN:
      MOV R3,#250                  1
HERE:
      NOP                          1
      NOP                          1
      DJNZ R3, HERE                2
      DJNZ R2, AGAIN               2
      RET                          2
```

OR

(b) Write an assembly language program to get value x from Port-1 and send it to Port-2 continuously. **(5)**

(c) Draw and explain the Flag register format in 8051. Explain the use of each bit. **(5)**

Q3 **Answer any three:** **(15)**

1 Write an assembly language program to find the no of 1's in a given byte. Explain your program with a flow chart.

2 Draw and explain the RAM memory structure for 8051.

3 Explain with example the use of PUSH and POP instruction with the help of example.

4 Explain all jump instructions in detail.

Q-4(a) **Give the answers in brief:** **(10)**

1 What is the function of SMOD?

2 How many timers does 8051 have? Name them.

3 Name the IC's used for serial communication.

4 Which register is used to store data to be transmitted or received during serial communication?

5 What is the function of 0808 IC?

Q-4 (b) Explain the different modes of timer in 8051? **(8)**

Q-5 (a) Explain with neat sketch ADC0808 interfacing with 8051. **(8)**

(b) Write the assembly language program for the above interfacing assuming 2 analog data inputs to read. **(8)**

OR

Q-5 (a) Explain with a neat sketch LCD interfacing with 8051. **(8)**

(b) Also write down the assembly language program to display your name on the LCD. **(8)**

Q-6 **Attempt any two questions:** **(16)**

(a) Write an assembly language program to generate a Fibonacci series.

(b) Write an assembly language program to generate 1 second delay.

(c) Write an assembly language program to convert a decimal number into its hexadecimal equivalent number.
