* R M - 7 1 2 9 / 1 0 0 *

RM-7129

B. E. - III (I. C.) (Sem. VI) Examination

May / June – 2010

Micro Controller Prog. & Interfacing : Paper - III

Time : Hours] [Total Marks :

Instruction :

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 (I. C.) (Sem. 6)

Name of the Subject :

☛ Micro Controller Prog. & Interfacing-3

☛ Subject Code No. : 7 1 2 9 ☛ Section No. (1, 2,.....) : 1&2

Seat No. :

Student's Signature

SECTION - I

1 (a) Answer the following :

(1) What address in the interrupt vector table is assigned to the timer 0 interrupt (TF0) ? **1**

(2) Find the value (in hex) loaded into TH0 in the instruction 'MOV TH0, # -12". **1**

(3) State true/false. Upon reset, the external hardware interrupt is edge-triggered. **1**

(4) A 16MHz 8051 system has a machine cycle of _____ seconds. **1**

(5) Which of the 8051 ports need pull-up resistors to function as an I/O port ? **1**

(6) To put the entire ISR in interrupt vector table of 8051, it must be no more than _____ bytes. Why ? **1**

(7) What is the value of register A after execution of the following instructions : **2**

```
SETB C
MOV A, # 7AH
SWAP A
RLC A
RLC A
```

(8) Draw bit-wise formats of PSW and TMOD registers of 8051. **2**

(9) Which mode of timer of the 8051 is used to set the baud rate for serial communication ? **2**

(10) How many interrupts are there in 8051 ? Give the interrupt priority list upon reset. **2**

(b) Answer the following questions in brief :

(1) Describe "direct addressing mode" and "register indirect addressing mode" with respect to 8051. Give suitable examples. **4**

(2) State the differences between the instructions "RET" and "RETI". **2**

2 (a) What is ISR ? Describe the steps in executing an interrupt in 8051. **4**

(b) Explain the following instructions with suitable examples : **6**

(i) ACALL

(ii) ANI

(iii) XCHD.

(c) Write the following programs : **5**

(i) Create a square wave of 50% duty cycle on bit 0 of port 1.

(ii) Create a square wave of 60% duty cycle on bit 3 of port 1.

3 Attempt any three : **15**

(a) Write a program that displays a value of 'Y' at port 0 and 'N' at port 2 and also generates a square wave of 10 kHz with Timer 0 in mode 2 at port pin P 1.2. Assume crystal frequency XTAL = 22 MHz.

(b) Write a program to demonstrate communication of 8051 with LCD.

(c) Explain the mode 1 programming and steps to program in mode 1 for 8051 timers.

(d) What is SBUF ? Give structure of SCON register with explanation of each bit..

(e) Write a short note on RAM memory space allocation in 8051.

SECTION - II

4 (a) (i) How much is the maximum accessible memory of 8086 ? Explain. **10**

(ii) Explain pipelining and its importance.

(iii) Which bit of 8086 flag register is used by string instruction ? How ?

(iv) If the stack segment register contains 3000H and the stack pointer contains 8434H, what is the physical address of the top of the stack ?

(v) Compare : CISC and RISC type of architecture.

(b) (i) Draw block diagram of 8086. **8**

(ii) Explain instructions : STD and CLD. **2**

5 (a) Write a program to convert two ASCII characters to packed BCD. Write the algorithm and explain it clearly. **8**

(b) What are assembler directives ? Explain : **5**

(i) OFFSET

(ii) PUBLIC

(iii) EXTERN.

(c) Which instruction is used for look up table manipulation ? Give example. **3**

OR

5 (a) Assume that 8086 is executing DIV instruction and divide zero error occurs and at the same time a rising signal occurs at NMI input. How will the 8086 handle both interrupts ? **6**

(b) Write the steps of response of 8086 when an interrupt is requested. **5**

(c) Draw the interrupt pointer table of 8086. **5**

6 Attempt any **two** :

(a) (i) Compare rotate and shift instructions in8086. **4**

(ii) Explain flag register of 8086. **3**

(b) Why do we need a wait state generator circuit ? Draw and explain the working of a wait state generator. **7**

(c) Draw BIU and explain the prefetch-and-queue scheme of BIU of 8086. **7**