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**Second Semester M.Tech. Degree Examination, June/July 2011**  
**Microprocessors and Microcontrollers**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions.**

- 1 a. Discuss briefly how microprocessor has evolved with relevance to its capacity, bit size and application. (06 Marks)  
b. Compare microprocessor and microcontroller. (04 Marks)  
c. Explain the functions of the following pins of 8086:  
i) RESET ii)  $\overline{DT/R}$  iii)  $\overline{TEST}$  iv) NMI v) ALE (10 Marks)
- 2 a. Explain the architecture of 8086 microprocessor with a neat diagram along with the function of each block. (12 Marks)  
b. What are the advantages of segmentation? (04 Marks)  
c. If CS = 6000H, DS = A810H, SI = 4567H and IP = 4097H, what is the address of the instruction that is fetched? What is the address of the data for instruction MOV AX, [SI] (10 Marks)
- 3 a. What do you mean by assembler directives? Explain the following assembler directives:  
i) PROC.....ENDP ii) PUBLIC.....EXTRN  
iii) offset iv) SEGMENT (06 Marks)  
b. Explain the addressing modes for accessing data in memory with an example for each. (06 Marks)  
c. Write an ALP to add N one byte BCD numbers. Store the result in memory location. (08 Marks)
- 4 a. Write the functions of the following instructions:  
i) ADD ii) XLAT iii) SHL AX, 01H iv) LODSB v) DIV BX vi) JNE SKIP (06 Marks)  
b. Write an interrupt procedure to set and reset the Trap Flag. (04 Marks)  
c. Write an ALP to arrange N number of bytes of data in ascending order. Write relevant comments for each of the instruction used. (10 Marks)
- 5 a. Give the classification of 8086 interrupts. Describe the action taken by 8086, when NMI/INTR is activated. (08 Marks)  
b. Explain the following DOS system call ; Int 21H function:  
i) Function 01H ii) Function 0AH iii) Function 06H  
iv) Function 2BH v) Function 08H vi) Function 2DH (12 Marks)
- 6 a. Compare I/O mapped I/O and memory mapped I/O configurations. (04 Marks)  
b. With a neat diagram, explain how a stepper motor is interfaced to 8086. (10 Marks)  
c. Describe the 8-bit I/O address decoding. (06 Marks)
- 7 a. With a neat diagram, explain the functional blocks of 8051 microcontroller. (12 Marks)  
b. Describe the bit addressable RAM of 8051 microcontroller. (08 Marks)
- 8 Write short notes on the following :  
a. Difference between MACRO and PROCEDURE  
b. Minimum mode operation of 8086  
c. Internal RAM organization of 8051 microcontroller.  
d. Timer and counter of 8051 microcontroller. (20 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

