METHODIST
COLLEGE OF ENGINEERING AND TECHNOLOGY
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Assignment - 1

Short Answer Questions:

1. a) Name all of the general purpose registers in INTEL 8086 MP and some of their special functions.
   b) What is the need of memory segmentation in 8086?
2. a) Brief the evolution of Intel x86 series microprocessor.
   b) Draw the write cycle timing diagram for 8086 minimum mode operation.
3. What are the functions of 8086 pins
   a) DT/R b) DEN c) READY d) BHE e) TEST f) LOCK
4. a) What is the purpose of instruction Queue in 8086?
   b) Describe about flag register in 8086 processor.
5. a) How is physical address generated in 8086?
   b) What is stack? Write its role in CALL instruction.
6. a) What are assembler directives? How are they different from instructions?
   b) List out the differences between procedures and macros.
7. a) How many interrupts are available in an 8086? How are they classified?
   b) Describe the steps when 8086 responds to an interrupt
8. a) What is the necessity of memory interface?
   b) Write important features of 8255 PPI.
9. Explain the CWR format of the 8255 and write the control word to set PC3 in BSR mode.
10. List the features of DMA controller 8257.

Long Answer Questions (All are compulsory)

1. Draw and explain the architecture of 8086 Microprocessor.
2. Explain in detail 8086 memory segmentation.
3. Draw and explain minimum and maximum mode pin operations of 8086.
4. What is meant by addressing mode? Explain the different addressing modes available in 8086 processor with examples.
5. (a)Explain the arithmetic instructions, Shift and Rotate instructions with examples?
   (b)Explain the Data transfer and Branching Instructions with examples?
6. Explain the logical and string manipulation instructions of 8086 with examples.
7. Draw 8255 architecture and explain the modes of operation of 8255 PPI.
8. Explain the control word register format of 8255 PPI.
9. Describe the internal architecture of 8251 USART and interface with 8086.
10. With neat diagram explain the internal architecture of 8257 DMA controller.

Tutorials:

1. a. If CS contain 03E0H and IP contain 1F20H, from what is the address is the next instruction fetched?

   b. if a SS contain 04100H and SP contain 3FFEH, where is the top of the stack located?

   c. if a DS begins at address 24000H, what is the address of the last location in segment?

2. a) If the data segment register contains 4000H, What physical address will the instruction MOV AL, [234BH] read?

   b) What is the physical address generated by the instruction MOV DL, [SI] if register SI contains 2000H and DS register contains 0800H?

3. a) What is the physical address generated by the instruction MOV [DI-8], BL? Assume that DS register contains 0200H and register DI contains 0030H.

   b) Describe the difference between the instructions MOV AX, 2437H and MOV AX, [2437H].

4. Design a memory interface with 8086 for the following specification. Two 8KB EPROMs ending at FFFFFH. Two 8KB SRAMs starting from C0000H.
5. Design a memory interface with 8086 for the following specification. Two 4KB EPROMs ending at FFFFFH. Two 4KB SRAMs starting at 00000H.
6. Interface two 8K chips of RAM and two 8K chips of EPROM with 8086.
7. Write 8086 ALP to perform arithmetic operations, logical operations.
8. Write 8086 ALP to multiply two 16 bit numbers.
9. Write an 8086 ALP to convert packed BCD to unpacked BCD & vice-versa.
10. Write an ALP to perform ASCII multiplication of two ASCII numbers.
11. Write an ALP in 8086 to sort a given list in ascending order.
12. Write 8086 program to find the maximum number from a given 8-bit ten numbers.
13. Write an 8086 ALP to arrange a series of words in descending order by using bubble sort algorithm.
14. Write an 8086 ALP to find square root of a two digit number (assume that the number is a perfect square) using assembler directives.
15. Write an 8086 ALP to find whether the given string is palindrome or not.