Registration no: ☐☐☐☐☐☐☐☐☐☐

Total Number of Pages: 2

5ᵗʰ Semester Regular / Back Examination 2016-17
MICROPROCESSORS
BRANCH(S): AEIE, BIOMED, ECE, EIE, ETC, FASHION, FAT, METTA, MME
Time: 3 Hours
Max Marks: 70
Q.CODE: Y459
Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1   **Answer the following questions:**   **(2 x 10)**
   a) What do you understand by the meaning of word length of a microprocessor?
   b) Find the unknown value?
       A000H : ? = A3123H
   c) What are the different interrupt signals available in 8086? Which of these is maskable and how to mask?
   d) How large is a memory segment in 8086 microprocessor and why is it so?
   e) What is the difference between the following two instructions:
       MOV BX, [2500]
       LEA BX, [2500]
   f) Assume that a microprocessor has an address bus of 16-bit. What will be the memory capacity and address range of this microprocessor?
   g) What kind of data shift operation will be done in transmitter and receiver section of 8251 USART?
   h) What is the meaning of REP prefix?
   i) How to handle the I/O port if it has 16 bit port address?
   j) How many channels are there in 8237 DMA Controller and name the two registers available in a channel of 8237.

Q2 **a)** With suitable diagram explain how physical address for the memory will be calculated by the 8086 processor? Write the Default segment and its offset used to calculate the physical address.   **(2+2)**
   b) What are the different Arithmetic groups of instructions available in 8086 microprocessor? Explain each of them with the help of examples.   **(6)**

Q3 **a)** Draw and explain the minimum mode Read Bus Cycle of 8086 microprocessor.   **(5)**
   b) Explain about the different registers of 8086 microprocessor that can be used as memory pointer. Use appropriate examples in your explanation.   **(5)**

Q4 What is the limitation of source and destination operands within in an instruction? Explain the different memory addressing modes of 8086 microprocessor with the help of one example for each of them. What do you understand by intra-segment and intersegment concept in 8086 microprocessor? Explain. **(2+6+2)**

Q5 **a)** Draw the block diagram of 8255 PPI and explain the architecture and port selection. **(5)**

b) What is the control register format of PPI in I/O mode? Write a sequence of instructions in order to write the control word A4H in control register of address 0300H. What is the mode and I/O configuration of Port-A and Port-B after writing this control word in control register? **(5)**

Q6 **a)** What are the different operating modes of 8254 timer? Explain about Interrupt on terminal count, Square wave Generator and Programmable One-Shot mode of 8254. **(5)**

b) Write an instruction sequence to set up the two counters of 8254 as follows: **(5)**
Counter 1: Binary counter operating in mode 0 with an initial value of A010H.
Counter 2: BCD counter operating in mode 1 with an initial value of 0100H.
[Let the port addresses of Counter0: 40H, Counter1: 41H, Counter2: 42H and control register: 43H]

Q7 **a)** Write an 8086 assembly language program in order to dissembling of the given two digit decimal number into two nibbles. Assume that given number is available at offset address 6000H and store the result at the offset address 4300H and 4301H. **(5)**

b) Explain the meaning of following 8086 microprocessor instructions: **(5)**
1. PUSH & POP
2. SHR & SAR
3. LOOP & JCXZ
4. MOVSB & MOVSW
5. NOT & NEG

Q8 **Write short notes on any two:** **(5 x 2)**
a) 8086 segment registers
b) USART
c) 8086 flag register
d) Keyboard and Display controller