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BICS-012

00536

B.Tech. COMPUTER SCIENCE AND ENGINEERING

Term-End Examination

June, 2013

BICS-012 : MICROPROCESSOR

Time : 3 hours *Maximum Marks : 70*

Note : *(i) Attempt **any seven** questions.*
*(ii) Question **one** is **compulsory.***

1. (a) How does a minicomputer differ from a mainframe computer ? **2x5=10**

(b) What is the difference between a microcomputer and a microprocessor ?

(c) What are the conditions that will cause the BIU to suspend fetching instructions ?

(d) Is it true that the four 8086 memory segments can be located anywhere within the 1 MB of address space of the 8086. Illustrate with an example.

(e) Under what conditions will an overflow occur when performing signed arithmetic illustrate with example.

2. Describe memory-mapped I/O and direct I/O. Give the main advantage and main disadvantage of each. **10**

3. (a) Why is the 8086 memory setup as 2-by te-wide banks ? Explain. **2x5=10**
   (b) Why is some ROM put at the top of the address space in an 8086 system ? Explain.

4. (a) Describe the 8086 bus operations required to write a word to address 04373H **2x5=10**
   (b) Describe the sequence of events on the 8086 data/address bus, the ALE, line the - $M/\overline{IO}$ line, and the $\overline{RD}$ line as the 8086 fetches an instruction word.

5. (a) Briefly describe the condition(s) which cause the 8086 to perform each of the following types of interrupts : type 0, type 1, type 2, type 3, type 4.
   (b) Describe the main use of the 8086 type 1 interrupt. **2x5=10**

6. Write the algorithm and the program for an interupt-service procedure which turns an LED connected to bit D0 of port FFFAH on for 25s and off for 25s. The procedure should also turn a second LED connected to bit D1 of port FFFAH on for 1 min. and off for 1 min. Assume that a 1-Hz interrupt signal is connected to the NMI input of an 8086 and that a high on a port bit turns on the LED Connected to it. **10**

7. (a) An 8255A has a system base address of FFF9H. What are the system address for the three ports and the control register for this 8255A ? **2x5=10**

   (b) Show the assembly language Instructions you would use to send these control words to the 8255A.

8. Write an 8086 procedure to round a 32-bit BCD number in DX : AX to a 16-bit BCD number in DX. **10**

9. Why is DMA data transfer faster than doing the same data transfer with program instructions. Explain with a block diagram showing how a DMA controller operates in a microcomputer system. **10**

10. Write short notes on *any two* : **2x5=10**

    (a) Interupts in 8086

    (b) Debuggur

    (c) Comparison between 8086 and 80386