(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0210   Roll No. ☐☐☐☐☐☐☐☐☐☐

B.Tech.

(SEMESTER-IV) THEORY EXAMINATION, 2012-13

MICROPROCESSORS

Time : 3 Hours]   *[Total Marks : 100*

SECTION – A

1.   Attempt **all** parts.   **10 × 2 = 20**

(a)   What are the low and high level languages ?

(b)   What are the advantages of memory mapped I/O over I/O mapped I/O ?

(c)   Differentiate between Microprocessor and Microcontroller ?

(d)   Write an ALP to transfer 10 numbers stored from locations 2000H to locations starting from 2020H.

(e)   What should be the size of the instruction register if an arbitrary microprocessor has only 25 instructions ?

(f)   Why the data bus is bi-directional ?

(g)   List the function of the two DMA signals HOLD and HLDA.

(h)   List the functions of the ALE and IO/M' signals of the 8085 microprocessor.

(i)   If the CS register contains the number 5ACEH and the IP contains the number FA3CH, what is the address of the instruction ?

(j)   List the main features of maximum mode of 8086.

SECTION – B

2. Attempt any **three** parts. $3 \times 10 = 30$

(a) (i) What is a transparent latch, and why is it necessary to use a latch with output devices such as LEDs ?

(ii) Explain how many times the following loop will be executed in INTEL 8085 microprocessor :

LXI B, 0007H

LOOP: DCX B

JNZ LOOP

(b) (i) List the 8086 compare and jump instructions.

(ii) Write an 8086 assembly program to perform 3 byte unpacked number addition.

(c) (i) List the sequence of events that occurs when the 8085 MPU reads from a memory.

(ii) What are tri-state devices and why are they essential in a bus-oriented system ?

(d) Write a program to perform a Binary to ASCII Hex code conversion. Use subroutines.

(e) Illustrate the interfacing I/O devices to 8255 for the MCTS project using an ADC0831. Implement I/O schematic, control words and subroutine.

SECTION – C

Attempt **all** parts. $5 \times 10 = 50$

3. Attempt any **one** part.

(a) Draw the block schematic of a typical data word flow diagram and explain the same.

(b) Draw the architecture of 8085 and mention its various functions.

4. Attempt any **one** part.

   (a)   What is an Interrupt ? Explain all 8085 Vectored Interrupts.

   (b)   What is the function of ALE and how does it function ? Write a program to count from 0 to 9 with a one-micro second delay between each count. At the count of 9, the counter should reset itself to 0 and repeat the sequence continuously.

5. Attempt any **one** part.

   (a)   Discuss all the 8086 Addressing Modes with one example.

   (b)   What are the contents of data bus and the states of A_0 and BHE' when the following instructions are executed in 8086 ?

      (i)   CPU writes a byte 11H at memory locations 1000: 0002H.

      (ii)   CPU writes a word 2211H at memory location 1000: 0003H.

6. Attempt any **one** part.

   (a)   Explain Cross Assemblers and list all the files generated by it.

   (b)   Write an assembly program to sort the set of five numbers in descending order.

7. Attempt any **one** part.

   (a)   Design an interfacing circuit to set up bidirectional data communication in the master-slave format between two 8085A computers. Use the 8255A as the interfacing device. Write an assembly code for communication.

   (b)   Draw the block diagram of 8254 and explain all its features.

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