

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

PAPER ID : 0109

Roll No.

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B.Tech.

**(SEMESTER-IV) THEORY EXAMINATION, 2012-13
INTRODUCTION TO MICROPROCESSOR**

Time : 3 Hours]

[Total Marks : 100

SECTION – A

1. Attempt all parts. 10 × 2 = 20
- (a) What is the concept of segmented memory ? What are its advantages ?
 - (b) In the op-code fetch cycle, what are the control and status signals asserted by the 8085 to enable the memory buffer.
 - (c) If the clock frequency is 5 MHz, how much time is required to execute an instruction of 18 T states ?
 - (d) What operation can be performed by using the instruction XRA A ?
 - (e) List the different modes of operation of 8255.
 - (f) What is the sensor matrix mode of 8279 ?
 - (g) What is the difference between 8259 and 8259A ?
 - (h) List the advances in 8237 over 8257.
 - (i) How does 8086 differentiate between op-code and instruction data ?
 - (j) How does 8259A differentiate between an 8-bit and 16-bit processor ?



SECTION – B

2. Attempt any **three** parts.

10 × 3 = 30

- (a) Show the timing of how a data byte is transferred from memory to the MPU.
- (b) Draw and explain the read and write cycle timing diagrams of 8086 in minimum mode.
- (c) Illustrate the memory address range of the chip with 256 bytes of memory and explain how the range can be changed by modifying the hardware of the chip select CS'.
- (d) Write a program to add the following data bytes stored in memory locations starting from XX60H and display the sum at the output port if the sum does not generate a carry. If a result generates a carry, stop the addition, and display 01H at the output port.

Data (H) First Set : 37, A2, 14, 78, 97

 Second Set : 12, 1B, 39, 42, 07

- (e) How will you provide more than eight interrupt input lines to an 8085 based system ? Explain.

SECTION – C

Attempt **all** parts.

10 × 5 = 50

3. Attempt any **one** part.

- (a) Explain the concept of interfacing the 8155 memory segment.
- (b) Write an 8085 assembly program to generate a continuous square-wave with the period of 50 μ s. Assume the system clock period is 30 ns and use bit D₁ to output square-wave. Show the delay calculations.

4. Attempt any **one** part.

- (a) Implement, using the 8085 interrupt, program to count continuously in binary with two second delay between each count and write a service routine at XX90H to flash AAH three times when the program is interrupted, with some appropriate delay between each flash.
- (b) List and explain all 8085 vectored interrupts with internal hardware – schematic.

5. Attempt any one part.

- (a) Draw the register organization of 8086 and explain typical applications of each register.
- (b) (i) State and explain the different instruction formats of 8086/8088.
(ii) Explain the addressing modes for control transfer instructions.

6. Attempt any one part.

- (a) Write a 20 ms time delay subroutine using register pair BC. Clear the Z flag without affecting any other flags in the flag register and return to the main program.
- (b) Write an 8085 program to count continuously in binary with a one-second delay between each count.

7. Attempt any one part.

- (a) Draw and discuss the different modes of operation of 8253.
 - (b) Explain the key code format and mode set register of 8279.
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