

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-IV Examination June- 2010****Subject code : 140701****Subject Name: Microprocessor and Interfacing****Date: 17 / 06 /2010****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) (i) Some of the pins of 8085 are listed below. For each pin (line) show whether it is an input line or output line and mention its function. (Any Four) **06**
(1) ALE (2) HOLD (3) SID (4) READY (5) TRAP
(ii) The memory address of the last location of a 1 K byte memory chip is given as FBFF H. Specify the memory map. **01**
- (b) (i) Explain the following instructions of 8085. Also mention about the addressing mode and flags the instruction affects. (Any Four) **06**
(1) LHLD 1000H (2) RAL (3) DAD D (4) PUSH PSW (5) PCHL
(ii) What is meant by Bus ? Why is the address bus unidirectional and the data bus bidirectional ? **01**

- Q.2** (a) What do you understand by the term Addressing mode ? Explain the Addressing modes supported by 8085 by giving suitable examples. **07**
- (b) Design a memory system that contains 2K byte of EPROM, immediately followed by 1K byte of RWM. The EPROM starts at address 0000H and it is implemented by using 1K byte of EPROM. The RWM is implemented using 1K byte RAM chips. Use decoder and gates (if required) for the interfacing circuit. **07**

OR

- (b) In instruction requires 3 machine cycles and 10 T states for the execution. Explain using timing diagram, sequence of events taking place in each machine cycle with reference 3000HIN 05H instruction. **07**

- Q.3** (a) A set of ten BCD numbers are stored in memory locations starting from 2500H. Write an ALP to convert each BCD number to binary hex number and store the result in memory locations starting from address 4000H **07**
- (b) Design a modulo-12 down counter to count from 0BH to 00H. After count 00H, the count should go back to 0BH and repeat the sequence. Provide 1 Sec. delay between count and display the count at an output port 01H. The clock freq. is 1 Mhz. Show your timing calculations assuming suitable value of T states for various instructions. Draw also the flow chart. **07**

OR

- Q.3** (a) An array of binary numbers are stored in memory starting from address 3000H. There are ten numbers in the array. Write an ALP which finds out quantity of positive numbers, negative numbers and zeros in the data array and stores the result in memory location starting from address 3050H. **07**
- (b) Write an ALP to multiply the contents of memory location 3040H by the contents of memory location 3041H and store the result in memory locations 3042H and 3043H with LS byte of the product at memory location 3042H. Draw also the flow chart. **07**

- Q.4 (a)** Explain Memory Mapped I/O and Peripheral I/O and make the comparison between them. **07**
- (b)** Explain the function of RIM and SIM instructions. **07**
- OR**
- Q.4 (a)** Write a detailed note on Memory Classification. **07**
- (b)** Explain clearly the interrupt arrangement in 8085 microprocessor with appropriate diagram. How the interrupts are activated ? To which memory location an interrupt points ? How the priority is arranged ? How the interrupts can be cleared ? **07**
- Q.5 (a)** With the help of simplified block diagram explain the internal architecture of 8255. How various sections can be addressed ? **07**
- (b)** List the major components of the 8279 keyboard / display interface, and explain their functions. **07**
- OR**
- Q.5 (a)** Write a note on the 8251A programmable communication interface. **07**
- (b)** List the major components of the 8259A interrupt controller , and explain their functions. **07**
