Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – V (NEW) EXAMINATION – WINTER 2015

Subject Code: 2150707 Date:08/12/ 2015

Subject Name: Microprocessor And Interfacing

Time:10:30am to 1:00pm 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)** Answer the following Questions:

i. How many maximum memory locations and I/O devices can be addressed by an 8085 microprocessor? **01**

ii. How much time will be required to execute the STAX B instruction if the clock frequency is 4 MHz? **01**

iii. Explain the CMP instruction with the help of an example. **02**

iv. Explain the use of HOLD and HLDA pins of 8085 microprocessor. **02**

v. State the difference between opcode fetch (OF) and memory read (MR) cycles. **01**

(b) Draw the timing diagram of the instruction: LXI B, 2100H. Explain all the stages of instruction execution. **07**

Q.2 **(a)** Explain following instructions with no. of bytes, machine cycles and T-states required for execution: 1. LHLD 2. RAR 3. XTHL 4. ADI **07**

(b) Write an 8085 assembly language program to separate out the numbers between 20_{10} and 40_{10} from an array of Ten numbers stored on memory locations 2000H onwards. Store the separated numbers on a new array from 3000H onwards. **07**

OR

(b) An array of Ten numbers is stored from memory location 2000H onwards. Write an 8085 assembly language program to separate out and store the EVEN and ODD numbers on new arrays from 2100H and 2200H, respectively. **07**

Q.3 **(a)** Design an 8085 microprocessor system such that it should contain 16KByte of EPROM and 4KByte of RAM with starting addresses 0000H and 4000H respectively. Use two 8KByte of EPROMs (2764) and two 2KByte of RAMs (6116) for this system. **07**

(b) Write an 8085 assembly language program to generate a decimal counter (which counts 0 to 9 continuously) with a one second delay in between. Also write a subroutine DELAY for generating a 1 second delay. Assume a crystal frequency of 2MHz. **07**

OR

Q.3	**(a)**	Draw an interfacing diagram to connect 8 DIP switches through input port with address 55H and 8 LEDs through output port with address AAH with 8085 microprocessor.	**07**
	(b)	What is an ISR? Differentiate between a Subroutine and an ISR. Write an 8085 assembly language program to continuously read an input port with address 50H. Also write an ISR to send the same data to output port with address A0H when 8085 receives an interrupt request on its RST 5.5 pin.	**07**
Q.4	**(a)**	Explain the block diagram of 8255- Programmable Peripheral Interface.	**07**
	(b)	Write an 8085 assembly language program to convert a two-digit BCD number into its equivalent hexadecimal number.	**07**

OR

Q.4	**(a)**	Explain the block diagram of 8259- Programmable Interrupt Controller.	**07**
	(b)	Write an 8085 assembly language program to convert an 8-bit hexadecimal number into its equivalent decimal number.	**07**
Q.5	**(a)**	List the four major processing units in an 80286 microprocessor and briefly describe the function of each.	**07**
	(b)	Explain the Page Table and Page Directory Entry with example.	**07**

OR

Q.5	**(a)**	Briefly explain the virtual 8086 mode of 80386 microprocessor.	**07**
	(b)	What is a descriptor table? What is its use? Dedifferentiate between GDT and LDT.	**07**

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