Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) EXAMINATION – WINTER 2017

Subject Code: 2150707 Date: 08/11/2017

Subject Name: Microprocessor and Interfacing

Time: 10:30 AM TO 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)**	Explain the following pins of the 8085 microprocessor: $IO/\bar{M}$, INTR, $\overline{RESETIN}$	**03**
	(b)	How will the multiplexed address/data bus (AD0-AD7) of the 8085 microprocessor be demultiplexed?	**04**
	(c)	Explain the following instructions of the 8085 microprocessor with suitable example: STA, LDAX, XTHL	**07**
Q.2	**(a)**	Explain the flag register of the 8085 microprocessor with examples.	**03**
	(b)	Draw the timing diagram of **OUT 50h** instruction of the 8085 microprocessor.	**04**
	(c)	An array of ten data bytes is stored on memory locations 2100H onwards. Write an 8085 assembly language program to arrange them in *ascending order.*	**07**
		OR	
	(c)	Write an 8085 assembly language program to count the number of bytes that are greater than 20_{10} and lesser than 40_{10} from an array of ten bytes stored on memory locations 2000H onwards. Store such numbers on memory locations 3000H onwards.	**07**
Q.3	**(a)**	Differentiate between *memory-mapped I/O* and *peripheral-mapped I/O.*	**03**
	(b)	Write a set of 8085 assembly language instructions to generate a 0.5 second delay, if the crystal frequency is 4 MHz.	**04**
	(c)	Draw the interfacing of a 4KB EPROM having a starting address 2000h and two 2KB static RAMs having starting addresses 4000h and 8000h, respectively, with 8085 microprocessor. Use demultiplexed address/data lines and use 3-to-8 decoder (74LS138).	**07**
		OR	
Q.3	**(a)**	Draw and explain the format of a flag register of the 8086 microprocessor.	**03**
	(b)	Write an 8085 assembly language program to convert a two-digit BCD number into its equivalent hexadecimal number.	**04**
	(c)	Show all the necessary connections to interface eight LEDs using an output port with address 35h and eight DIP switches using an input port with address 45h with 8085 microprocessor. Assume demultiplexed address/data lines and use 3-to-8 decoder (74LS138).	**07**
Q.4	**(a)**	What is an interrupt? Explain various interrupts of the 8085 microprocessor.	**03**
	(b)	Explain the **PUSH** and **POP** instructions of the 8085 microprocessor with example.	**04**

	(c)	Draw and explain the block diagram of the programmable interrupt controller (8259A).	**07**

OR

Q.4	**(a)**	What is an ISR? Differentiate between a Subroutine and an ISR.	**03**
	(b)	Enlist and explain various conditional CALL instructions of the 8085 microprocessor.	**04**
	(c)	Draw and explain the block diagram of the programmable peripheral interface (8255A).	**07**
Q.5	**(a)**	Explain the concept of segmented memory. What are its advantages?	**03**
	(b)	Briefly explain the architecture of the 80386 microprocessor.	**04**
	(c)	Explain the real mode and protected mode of the 80286 microprocessor.	**07**

OR

Q.5	**(a)**	Explain the following pins of the 8086 microprocessor: $\overline{TEST}$, $\overline{LOCK}$, MN / $\overline{MX}$	**03**
	(b)	Briefly explain the architecture of the SUN SPARC microprocessor.	**04**
	(c)	Draw and explain the block diagram of an ARM 7 processor.	**07**

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