Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(New) EXAMINATION – SUMMER 2016

Subject Code:2141001 **Date:30/05/2016**

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.**

			MARKS
Q.1		**Short Questions**	**14**
	1	What is the use of bidirectional buffer in 8085?	
	2	Define the function of parity flag in 8085.	
	3	What is clock signal?	
	4	Define machine cycle.	
	5	Write instruction which rotate accumulator left with carry.	
	6	What is the value of SP after execution of PUSH D instruction. (SP=3000, DE=8050).	
	7	What is direct addressing mode? Give an example.	
	8	How many bytes instruction HLT has?	
	9	How many T-States are required for LXI instruction?	
	10	If memory has 8192 memory locations, then how many address lines are required?	
	11	If the memory size is 256 x 1 bits. How many chips are required to make up-to 1 Kbyte of memory?	
	12	What is the total number of T-States required to execute below program. MVI C,05H Back: DCR C JNZ Back	
	13	Which interrupt has the highest priority?	
	14	Explain the instruction: EI	
Q.2	**(a)**	Describe the instruction with example and also show the contents of register/memory locations before and after execution of instruction: XTHL	**03**
	(b)	Show the diagram to generate control signal using NAND gate in 8085.	**04**
	(c)	Write 8085 assembly language program for Modulo-10 down counter. After count 00H, the count should go back to repeat the sequence. Provide 1 Sec delay between count and display the count at an output port 01H. The clock frequency is 1 MHz. Show timing calculations assuming suitable value of T states for various instructions.	**07**
		OR	
	(c)	Write 8085 assembly language program to perform the following, $a^2 + b^2$, where a and b are 8-bit binary numbers.	**07**
Q.3	**(a)**	Compare memory mapped I/O and I/O mapped I/O.	**03**
	(b)	Show only memory map for the 8085 microprocessor such that it should contain 8 kbyte of EPROM and 8 kbyte of RAM.	**04**

	(c)	Draw timing diagram for DAD instruction.	**07**
		OR	
Q.3	**(a)**	What is the difference between absolute decoding and linear decoding. Explain with example.	**03**
	(b)	Draw memory system and show memory map for the microprocessor system such that it should contain 2 kbyte of EPROM and 2 kbyte of RAM with starting addresses 0000H and 6000H	**04**
	(c)	Draw timing diagram for STA instruction.	**07**
Q.4	**(a)**	Draw control word format for Bit Set/Reset for 8255 IC.	**03**
	(b)	Write a program to initialize 8255 in the configuration given below: Port A as simple input, Port B as simple output, Port C_L as output and Port C_U as input. Assume address of the control word register of 8255 as 83H.	**04**
	(c)	Consider that 4 LEDs are connected to port C_L of 8255 chip. Address of port C is 82H and control register is 83H. Write a program to flash 4 LEDs 10 times. Assume persistence of vision to be 0.1 seconds. Consider operating frequency 2.5 MHz.	**07**
		OR	
Q.4	**(a)**	Draw control word format for I/O mode of 8085.	**03**
	(b)	Write a BSR control word subroutine only to set PC7 and PC3 and reset them after 10ms delay. (do not calculate for delay)	**04**
	(c)	Write a program to generate square wave using digital to analog converter 0808.	**07**
Q.5	**(a)**	State any three features of 8259 programmable interrupt controller.	**03**
	(b)	What are the function of below pins of 8251 USART 1. DSR', DTR', RTS', CTS'.	**04**
	(c)	Draw and explain the functional block diagram of 8253 timer IC.	**07**
		OR	
Q.5	**(a)**	State any three features of Intel 8086 Microprocessor.	**03**
	(b)	What are the advantages of Memory segmentation in 8086	**04**
	(c)	Draw and explain the functional block diagram of interrupt controller IC 8259.	**07**

****