Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – WINTER • 2014

Subject Code: 140701 **Date: 22-12-2014**

Subject Name: Microprocessor and Interfacing

Time: 02:30 pm - 05:00 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)**	Interface 8K of EPROM and 4K of RAM with 8085 microprocessor. EPROM memory address begins at 0000H and RAM address begins at 8000H. Write memory address ranges used for EPROM and RAM in your design.	**10**
	(b)	Draw schematic to generate read/write control signals for memory and input/output of 8085 microprocessor.	**04**
Q.2	**(a)**	Assume that ROM location 201AH contains instruction MOV C, A having opcode 4FH. Draw and explain timing diagram for opcode fetch machine cycle of this instruction.	**07**
	(b)	Write instruction format and explain with the help of appropriate example showing contents of registers/memory locations before and after execution of the instruction. (i) STAX (ii) DAD	**07**
		OR	
	(b)	Write instruction format and explain with the help of appropriate example showing contents of registers/memory locations before and after execution of the instruction. (i) LDAX (ii) DAA	**07**
Q.3	**(a)**	Two 8-bit numbers are stored in memory locations D000H and D001H. Write an assembly language program to multiply them and store the result in memory locations E000H (LSB) onwards.	**07**
	(b)	Five data bytes are stored in memory location C001H to C005H. Count number of ones in each byte and store this count in corresponding memory locations D001H to D005H.	**07**
		OR	
Q.3	**(a)**	An array of data bytes is stored beginning from memory location 2001H. Length of this array is stored in location 2000H. Find largest number of the array and store it in memory location 3000H.	**07**
	(b)	Ten 8-bit signed numbers are stored in memory locations beginning from 8000H. Move all negative numbers in memory locations beginning from 9000H.	**07**
Q.4	**(a)**	Generate a square wave of 5KHz on D0 of output port 80H using appropriate DELAY subroutine assuming crystal frequency of 4MHz. Show your delay calculations.	**07**
	(b)	Interface 8255 with 8085 microprocessor and connect DIP switches to port A and LEDs to port B of 8255. Write an assembly language program to read the DIP switches connected to port A and display its status on corresponding LEDs connected to Port B of 8255.	**07**
		OR	
Q.4		With the help of neat diagram explain data transfer during the execution of CALL 507BH instruction stored in memory beginning from 40A2H.	**14**
Q.5	**(a)**	Compare memory mapped and peripheral mapped I/O in detail.	**07**

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

OR

Q.5	**(a)**	Interface 8-bit digital to analog converter with 8085 microprocessor. Write a program to generate sawtooth wave using DAC.	**07**
	(b)	Draw and explain block diagram of 8255A programmable peripheral interface device. What do you mean by BSR mode?	**07**

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