GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– V (New) EXAMINATION – WINTER 2019

Subject Code: 2152006 **Date: 21/11/2019**

Subject Name: Basics of Micro Computer Systems

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	**(a)**	Explain advantages of assembly language programming over high level language programming.	**03**
	(b)	Explain de-multiplexing of address/data lines in 8085.	**04**
	(c)	Define addressing modes? List out the various addressing modes supported by 8085 microprocessor with example of each addressing mode.	**07**
Q.2	**(a)**	For the microprocessor 8085, explain following instructions with example. (i) MOV (ii) DAD (iii) LXI	**03**
	(b)	One array of five elements is stored at memory location starting from 2500H. Write an assembly language program for the microprocessor 8085 to copy this array in memory location starting at 3000H.	**04**
	(c)	Draw and explain timing diagram for MVI instruction used in microprocessor 8085.	**07**

OR

	(c)	For the microprocessor 8085, explain functions of following pins (i) ALE (ii) IO/M (iii) HOLD (iv) READY (v) TRAP (vi) INTR (vii) Vss	**07**
Q.3	**(a)**	What is subroutine? Explain need of the subroutines.	**03**
	(b)	Explain following instructions in the microcontroller 8051. (i) DJNZ (ii) CJNE	**04**
	(c)	For the microprocessor 8085, write an assembly language program to generate time delay of 200 ms. Assume clock frequency of 4MHz. Show the delay calculations.	**07**

OR

Q.3	**(a)**	An 8-bit hex number is stored in internal RAM location 40H. Write an assembly language program for the microcontroller 8051 to get the square of this number and store the answer in any internal RAM locations.	**03**
	(b)	Give bit format of PSW register for the microcontroller 8051. Explain significance of each bit of the PSW register.	**04**
	(c)	A string of nine data bytes are stored in memory locations starting from 2050H onwards. Write an ALP for the microprocessor 8085 to sort these data bytes in descending order and store the result in the same memory locations.	**07**
Q.4	**(a)**	Explain the comparison between MOVX and MOVC instructions for the microcontroller 8051.	**03**
	(b)	Two 8-bit BCD numbers are stored in internal RAM locations 40H and 41H. Write an assembly language program for the microcontroller 8051 to add these BCD numbers and store the result in internal RAM location 55H.	**04**
	(c)	Using suitable diagrams, explain internal RAM structure of the microcontroller 8051.	**07**

OR

Q.4 **(a)** For the microcontroller 8051, write an assembly language program to find 1's complement of the number stored in internal RAM location 60H and store the result in internal RAM location 65H. **03**

(b) Explain register bank switching in the microcontroller 8051. **04**

(c) With a suitable block diagram, explain architecture of the microcontroller 8051. **07**

Q.5 **(a)** What is interrupt? List various interrupts available in microcontroller 8051. **03**

(b) For the microcontroller 8051, find the control word to be loaded in TH0 & TL0 to generate a time delay of 20 µs with the crystal frequency of 24MHz. **04**

(c) Using suitable diagrams, explain port structure of port 0 in the microcontroller 8051. **07**

OR

Q.5 **(a)** For the microcontroller 8051, list alternate functions of all the pins of port 3. **03**

(b) Draw bit pattern of IE register and explain interrupt enable process with suitable diagram. **04**

(c) For the microcontroller 8051, explain operation of timer 1 in mode 1 using suitable diagrams. **07**

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