[p.t.o.]

[49	1	SARDAR PATEL UNIVERSITY  Vallabh Vidyanagar - 388120  B. Sc 6 <sup>th</sup> Semester (Instrumentation)  85 Microprocessor Architecture and Programming -2)  Day and Date: Monday, 25/03/2019  Time: 10:00 am to 01:00 pm		
		Maximum Marks	: 70	
Que 1	Objective Type Questi	ons.	[0]	
1	The 8085 microprocesso	or is designed to execute different instruction types.		
	a) 74	<b>b)</b> 128		
	c) 208	d) 255		
2	The first operation in an	y instruction is		
	<ul><li>a) Opcode fetch</li></ul>	<b>b)</b> I/O read		
	<b>c)</b> I/0 write	d) Memory write		
3	The opcode fetch cycle is	s called the M1 cycle and has T-states.		
	a) 4	<b>b)</b> 3		
	<b>c)</b> 2	d) 1		
4	The programming technicalled	nique used to instruct the microprocessor to repeat tasks is		
	a) Looping	<b>b)</b> Counting		
	<b>c)</b> Indexing	d) Time delay		
5	A continuous loop is set	up by using the instruction.		
	a) JMP	<b>b)</b> JC- ·		
	<b>c)</b> JZ	d) JNC		
6		et set up by the instruction.		
	a) JC	b) JNC		
	<b>c)</b> JZ	d) JMP		
7	: Each bit is shifted to	o the adjacent left position. Bit D7 becomes D0.		
	a) RAR	b) RRC		
	c) RAL	d) RLC		
8	: Rotate accumulator	· left through carry.		
	a) RAR	b) RLC		
	c) RRC	d) RAL		
9	: Retrieve register pa	ir from stack.		
	a) LXI	<b>b)</b> PUSH		
	c) LDAX	d) POP		
10	: Store register pair of	on stack.		
	a) LXI	b) POP		
	c) STAX	d) PUSH		
Que 2	Short Questions (Attem	pt Any Ten) [20	0]	
1	Write a brief note on 8085 opcode fetch machine cycle.			
2	If the clock frequency is 3 20 T-states?	MHz, how much time is required to execute an instruction of		

3	If the 8085 adds 87H and 79H, specify the contents of the accumulator and the status of		
4	the S, Z and CY flags.		
4	Explain LXI Rp.		
5	Explain LDAX B/D.  White in the table to be dether 16 hit number 2050s in the register pair HI using LYI		
6	Write instructions to load the 16-bit number $2050_{\rm H}$ in the register pair HL using LXI and MVI opcodes, and explain the difference between the two instructions.		
7	What is difference between RRC and RAR?		
8	Give applications of rotate instructions.		
9	Differentiate: RLC and RAL.		
10	Explain PUSH and POP.		
11	What is stack and subroutine?		
12	Explain CALL and RET.		
Que 3	[A] [B]	With necessary timing diagram, explain IN instruction. Write a note on 8085 machine cycles and bus timings.  OR	[06] [04]
	rc1		[06]
	[C] [D]	With necessary timing diagram, explain OUT instruction. What do you mean by interfacing? Enlist the instructions used for data transfer between the processor and the I/O device. Explain why the number of output ports in the peripheral-mapped I/O is restricted to 256 ports.	[04]
Que 4	[A]	Sixteen bytes of data are stored in memory locations at $XX50_{\rm H}$ to $XX5F_{\rm H}$ . Transfer the entire block of data to new memory locations starting at $XX70_{\rm H}$ .	[06]
	[B]	Write on arithmetic operations related to memory.  OR	[04]
	[C]	Six bytes of data are stored in memory locations starting at XX50 <sub>H</sub> . Add all the data bytes. Use register B to save any carries generated, while adding the data bytes. Display the entire sum at two output ports, or store the sum at two	[06]
	[D]	consecutive memory locations, XX70H and XX71H.  Write on programming techniques: looping, counting and indexing.	[04]
Que 5	[A]	A set of current readings is stored in memory locations starting at XX50 <sub>H</sub> . The end of the data is indicated by the data byte 00 <sub>H</sub> . Add the set of readings. The	[06]
	[B]	answer may be larger than FF <sub>H</sub> . Display the entire sum at PORT <sub>1</sub> and PORT <sub>2</sub> . Enlist different time delay techniques. Explain how one millisecond delay can be achieved with the help of one register (clock frequency 3 MHz).	[04]
	[C]	Write a program to count continuously in hexadecimal from FFH to $00_{\rm H}$ in a system with a $0.5~\mu s$ clock period. Use register C to set up a 1 ms delay between each count and display the numbers at one of the output ports.	[10]
Que 6	[A]	A BCD number between 0 and 99 is stored in an R/W memory location. Write a main program and a conversion subroutine to convert the BCD number into its equivalent binary number. Store the result in any memory location.	[10]
	[B]	OR Write an assembly language program to convert BCD number into common cathode LED codes.	[10]