Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI (NEW) EXAMINATION – WINTER 2024

Subject Code:3160712 Date:25-11-2024

Subject Name:Microprocessor and Interfacing

Time:02:30 PM TO 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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	List the key parts of a microprocessor and give a short explanation of their functions.	**03**
	(b)	Explain memory and I/O operations in a microprocessor.	**04**
	(c)	Describe the architecture of the 8085 microprocessor with a neat diagram.	**07**
Q.2	**(a)**	Explain Assembler, Debugger and Linker with an example.	**03**
	(b)	Explain Read/ Write control signals for memory and I/O.	**04**
	(c)	Draw and Explain Timing Diagram of MVI A, 45h.	**07**
		OR	
	(c)	Identify the machine cycles in the following instructions 1. SUB B 2. ADI 47H 3. STA 2050H 4. PUSH B	**07**
Q.3	**(a)**	Explain the function of the program counter and stack pointer in the 8085 microprocessor.	**03**
	(b)	Describe the instruction cycle and machine cycles of the 8085 microprocessor.	**04**
	(c)	Create an assembly program that demonstrates the process of demultiplexing the address and data bus in the 8085 microprocessor, and provide an explanation of how it works.	**07**
		OR	
Q.3	**(a)**	What is the role of the ALU and control unit in the 8085 microprocessor?	**03**
	(b)	Explain the memory interfacing with the 8085 microprocessor.	**04**
	(c)	Construct an 8085-assembly language program that takes two values and executes arithmetic addition, subtraction, and a logical AND operation.	**07**
Q.4	**(a)**	Define I/O ports and describe their role in the process of microprocessor interfacing.	**03**
	(b)	Explain the working of the 8255 Programmable Peripheral Interface.	**04**
	(c)	Discuss the interrupt architecture of the 8085 microprocessor, focusing on both hardware and software interrupt types.	**07**
		OR	
Q.4	**(a)**	Define the concepts of stack and subroutines in the context of the 8085 microprocessor.	**03**

	(b)	Describe how the 8259A Programmable Interrupt Controller functions and how it is utilized in microprocessor systems.	**04**
	(c)	Create an 8085-assembly language routine to implement a delay, utilizing both counters and the stack.	**07**
Q.5	**(a)**	Describe the concept of segmentation in the 8086 microprocessor.	**03**
	(b)	Compare the minimum mode and maximum mode of the 8086 microprocessor.	**04**
	(c)	Summarize the architecture and programming model of the 80386 microprocessor.	**07**

OR

Q.5	**(a)**	Describe the pin configuration of the 8086 microprocessor in detail.	**03**
	(b)	How does the 80286 microprocessor improve upon the 8086, particularly in terms of memory management?	**04**
	(c)	Summarize the programming model and data types available in the 80286 microprocessor.	**07**

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