Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (R,S) (FT/WP)(S3 PT) Examination November 2025 (2019 Scheme)

Course Code: CST307

Course Name: MICROPROCESSORS AND MICROCONTROLLERS

Max. Marks: 100 Duration: 3 Hours

PART A

(Answer all questions; each question carries 3 marks) Marks

1	Write any three differences between 8086 and 8088 architectures.	3
2	Specify the significance of 6-byte pre-fetch Queue in the architecture of 8086.	3
3	List any three flag manipulation instructions of 8086 and their functions.	3
4	Write about the uses of following assembler directives: 1) SEGMENT 2) ASSUME 3) EQU	3
5	An assembly language program has an instruction INT 20H. Find the segment address and offset address of its ISR.	3
6	Explain any three modes of operations of 8259.	3
7	Draw the architecture of 8254.	3
8	Explain about the handshaking signals of 8255.	3
9	Differentiate the features of microprocessor and microcontroller.	3
10	List any three addressing modes of 8051 with examples.	3

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

11	a)	A data having segment address is 4235H and offset address is 2198H. Calculate the actual physical address of data. Show the steps involved in the physical address calculation.	6
	b)	Explain the register organization of 8086 with figures.	8

12	a)	Explain the physical memory organization of 8086 with figures.	6
	b)	List any eight signals of 8086 with their functions.	8

Module -2

13	a)	Explain the data transfer instructions of 8086 with examples.	8
	b)	Write an assembly language program for 8086 to find whether the given 8-bit number is positive or negative.	6
14	a)	Explain the shift and rotate instructions of 8086 with examples.	8
	b)	Write an assembly language program for 8086 to find the square root of an 8-bit number. (Assume the given 8-bit number is a perfect square)	6

Module -3

15	a)	Explain the interrupt processing cycle of 8086 with flowchart.	7
	b)	Define the term interrupt. Explain the different types of interrupts in 8086.	7
16	a)	Explain the architecture of 8259.	7
	b)	Explain the stack structure of 8086.	7

Module -4

17	a)	Explain the architecture of 8255.	8
	b)	Explain the modes of operations of 8254.	6
18	a)	Explain the architecture of 8257.	8
	b)	Explain the modes of operations of 8255.	6

Module -5

19	a)	Explain the internal memory organization of 8051.	8
	b)	Write an 8051 program to find the largest number in an array of 8-bit numbers.	6
20	a)	Explain about TCON and TMOD registers of 8051.	8
	b)	Write an 8051 program to find the sum of odd number in an array of 8-bit numbers.	6

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