

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (S,FE) (FT/WP), (S3 PT) Examination May 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	Discuss the features of 8085 microprocessors?	3
2	Describe the functions of following signals in 8086 microprocessors i) ALE ii) BHE iii) INTR	3
3	What is the difference between JMP and CALL instruction?	3
4	Mention the use of the assembler directives: i) END ii) EQU iii) SEGMENT	3
5	What do you mean by interrupt service routine?	3
6	Explain the stack structure and operations of 8086.	3
7	List the features of 8257 DMA controller.	3
8	If the control register is loaded with 10001XXX, what is the configuration for the 8255 PPI?	3
9	Draw and explain the format of program status word in 8051.	3
10	Explain MOV, MOVC, MOVX instructions of 8051 microcontroller.	3

PART B*(Answer one full question from each module, each question carries 14 marks)***Module 1**

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|----|---|----|
| 11 | a) Discuss the architectural and signal differences between 8086 and 8088. | 5 |
| | b) With a neat sketch explain the read and write cycle timing diagram of 8086 in minimum mode. | 9 |
| 12 | a) Explain how 20-bit physical address is generated in 8086 microprocessors with suitable examples. | 4 |
| | b) Draw and explain the internal architecture of 8086. | 10 |

Module 2

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|----|---|----|
| 13 | a) Discuss addressing modes supported by 8086 with suitable examples. | 10 |
| | b) Discuss about the data transfer instructions with examples. | 4 |
| 14 | a) Discuss about conditional and unconditional branch instructions of 8086 with | 8 |

examples.

- b) Write an assembly language program to find the total number of even and odd numbers from an array of 16-bit numbers. Assume the array contains 20 numbers and the starting location as 5500H. 6

Module 3

- 15 a) Draw and explain the internal architecture of 8259. 6
 b) Explain the interrupt cycle of 8086. 8
 16 a) Differentiate hardware and software interrupts in 8086. 4
 b) Design an interface between 8086 and two 4K x 8 EPROMs and two 4K x 8 RAM chips. Select suitable address maps. 10

Module 4

- 17 a) Explain the operation modes of 8255 PPI with a neat diagram. 10
 b) Draw the architecture of 8254 Programmable Interval Timer. 4
 18 a) Explain the different modes of operation of 8254 in detail. 10
 b) Draw the internal architecture of 8257. 4

Module 5

- 19 a) Compare microprocessor with microcontroller. List the factors that affect selection of a microcontroller. 6
 b) Explain the addressing modes of 8051 with example. 8
 20 a) Explain internal architecture of 8051 with neat diagram. 9
 b) Explain the interrupt and stack structure of 8051. 5
