

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (S, FE) / S3 (PT) (S) Examination June 2024 (2019 Scheme)

**Course Code: CST 307****Course Name: MICROPROCESSORS AND MICROCONTROLLERS**

Max. Marks: 100

Duration: 3 Hours

PART A*(Answer all questions; each question carries 3 marks)*

		Marks
1	List the architectural difference between 8085 and 8086.	3
2	Describe function of the following signals of 8086: a) READY b) HOLD c) ALE	3
3	Differentiate jump and loop instructions in 8086 with suitable examples.	3
4	List any three String instructions supported by 8086.	3
5	Find the interrupt vector addressing of following interrupts in IVT of 8086: a) NMI b) INT 20H c) Divided by Zero	3
6	Explain the stack operations and structure of 8086 with suitable examples.	3
7	Explain how 8254 is used as a square wave generator.	3
8	Justify the statement: "DMA controlled data transfer faster than CPU controlled data transfer".	3
9	Differentiate between Microprocessor and Microcontroller.	3
10	Explain the IO ports available in 8051.	3

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

11	a) Draw the register organization of 8086 and explain the application of each.	10
	b) Explain how 20-bit physical address is generated in 8086 microprocessors with suitable examples.	4
12	a) Explain the physical memory organization of 8086 with suitable diagram.	6
	b) Draw and discuss the read and write timing diagram of 8086 in minimum mode.	8

Module -2

13	a) State what is addressing modes and explain various addressing modes supported by 8086, with suitable examples.	10
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- b) State the purpose of assembler directives and explain SEGMENT, OFFSET, PROC directives. 4
- 14 a) Explain rotate and shift instructions with suitable examples. 8
- b) Write an 8086-assembly language program to find even numbers from an array of n, 8-bit numbers and store the even numbers in a separate array. 6
- Assume Location (Loc) 2000h holds the value of 'n', The Array elements are stored from Loc. 2001 up to to 'n' continues locations. Even numbers need to be stored Loc 2500h onwards.

Module -3

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

Module -4

- 17 a) Suppose 8 LEDs connected to 8255 Port-C Pins (PC 0 – PC 7), what will be the sequence of control words to be pushed to the 8255 for turning-on the LEDs connected at Odd Pins (PC0, PC2, PC4, PC6). 8
- Hint: Assume a High in Port C Pin will turn-on the LED.
- b) Draw and discuss the internal architecture of 8254. 6
- 18 a) Explain the 8255 PPI with a neat diagram. 8
- b) With a neat diagram describe the architecture of 8257. 6

Module -5

- 19 a) Explain the architecture of 8051 with neat diagram. 9
- b) Explain the register banks 8051 with neat diagram. 5
- 20 a) Explain addressing modes of 8051 microcontroller. 9
- b) Draw the structure of Program Status Word (PSW) of 8051. 5
