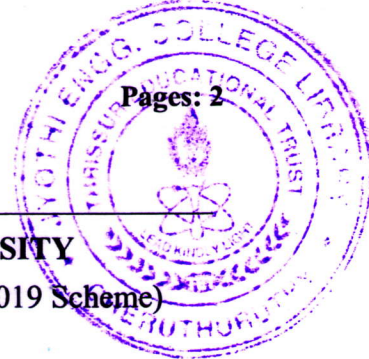


Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (S,FE) (FT/WP/S3PT) Examinations June 2026 (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 microprocessors. | 3 |
| 2 | Describe the functions of following signals in 8086 microprocessors.
i) RESET ii) HOLD iii) LOCK | 3 |
| 3 | Write an 8086 program for finding factorial of a given number. Assume that the number is stored at location 4000H, and the result needs to be stored at location 5000H. | 3 |
| 4 | Write about the uses of following assembler directives:
i) PROC ii) OFFSET iii) DB | 3 |
| 5 | Explain the need for 8259 Programmable Interrupt Controller IC. | 3 |
| 6 | An assembly language program has an instruction INT 05H. Find the segment address and offset address of its ISR. | 3 |
| 7 | Find the control word register value to configure 8255 ports in Mode 0. Initialize port A as input port, Port B as output port and Port C as input port. | 3 |
| 8 | Draw and label the Mode Set register of 8257 DMA controller. | 3 |
| 9 | Compare microprocessors and microcontrollers. | 3 |
| 10 | List the six vectored interrupts of 8051 with its vector address. | 3 |

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

- | | | |
|----|--|----|
| 11 | a) Draw the architecture of the 8086 microprocessor and explain each component. | 10 |
| | b) Find the physical address of the memory locations referred by the following instructions when DS:24D3H, CS:0058H, BX:0312H, SI:0055H.
i) MOV AL, [BX]
ii) MOV [BX] [SI] 15H, DL | 4 |
| 12 | a) Draw and explain the minimum mode configuration of the 8086 microprocessor. Also, describe the read operation with the help of a timing diagram. | 10 |

- b) Compare minimum mode and maximum mode configuration of 8086. 4

Module -2

- 13 a) Explain Arithmetic instructions in 8086 with an example. 7
 b) An array of 8 bit numbers is stored starting from the memory location 3000H. 7
 Write an 8086 program to search the number stored in the location 2000H in this array. If the number is present in the array store 01H to location 3500H and if not present, store 00H to 3500H.
- 14 a) Explain addressing modes of 8086 with example. 7
 b) An array of 8 bit numbers is stored starting from the memory location 3000H. 7
 Write an 8086 program to count even and odd numbers present in the array. Store the even count at 3500H and odd count at 3501H.

Module -3

- 15 a) Draw and explain the internal architecture of 8259 Programmable Interrupt Controller. 10
 b) Draw the structure of Interrupt Vector Table. 4
- 16 a) Describe the interrupt cycle of 8086 with necessary diagrams. 10
 b) Explain the stack structure of 8086. 4

Module -4

- 17 a) Draw and explain the internal architecture of 8255 Programmable Peripheral Interface. 10
 b) What is the mode and I/O configurations for various ports in 8255 after its control word register is loaded with 86H? 4
- 18 a) With a neat diagram, explain the architecture of 8253 Programmable Interval Timer. 10
 b) With neat waveforms, explain the effect of GATE signal in the Mode 0 operation of 8253 Programmable Interval Timer. 4

Module -5

- 19 a) Explain the program/ code memory and data memory organization of 8051 with a neat diagram. 7
 b) List any eight SFRs of 8051 and explain its use. 7
- 20 a) Draw and explain the architecture of the 8051 microcontroller. 7
 b) Consider 16 consecutive bytes starting from 50H have unsigned integers. Develop an 8051 program to add all these integers and store the 8 bit sum in memory location 60H. 7
