



Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S4 (R) Examinations April 2026 (2024 Scheme)

Course Code: PCMRT403

**Course Name: COMPUTER ARCHITECTURE AND
MICROCONTROLLER**

Max. Marks: 60

Duration: 2 hours 30 minutes

PART A

(Answer all questions. Each question carries 3 marks)

CO Marks

- | | | | |
|---|--|-----|-----|
| 1 | Differentiate RISC and CISC architecture | CO1 | (3) |
| 2 | What is Stack Pointer, Program Counter and Accumulator? | CO1 | (3) |
| 3 | What are the features of 8051 microcontroller? | CO2 | (3) |
| 4 | Differentiate microcontroller and microprocessor | CO2 | (3) |
| 5 | Explain TMOD register in detail | CO3 | (3) |
| 6 | Write an 8051 C program to toggle bit D0 of the port P1 (P1.0) 50,000 times. | CO3 | (3) |
| 7 | Explain 'Locality of reference' in Cache memory system | CO4 | (3) |
| 8 | Differentiate SRAM and DRAM memory cells | CO4 | (3) |

PART B

(Answer any one full question from each module, each question carries 9 marks)

Module -1

- | | | | |
|----|---|-----|-----|
| 9 | a) Explain processor operation with neat flow chart | CO1 | (9) |
| 10 | a) Explain booth algorithm for multiplication in detail with an example | CO1 | (9) |

Module -2

- | | | | |
|----|---|-----|-----|
| 11 | a) Draw and explain the architecture of 8051 microcontroller | CO2 | (9) |
| 12 | a) With neat examples, explain data transfer and bit manipulation | CO2 | (9) |

Module -3

- 13 a) Explain the steps to transfer data serially in 8051. Write an 8051 assembly language program to transfer 'B' serially at baud rate, 9600 continuously through Port 1. CO3 (9)
- 14 a) Draw the block diagram and write an 8051 Program to interface stepper motor with 8051 CO3 (9)

Module -4

- 15 a) Explain Direct Memory Access in detail with neat diagram CO4 (9)
- 16 a) Explain programmed I/O and interrupt driven I/O for data transfer in computers CO4 (9)
