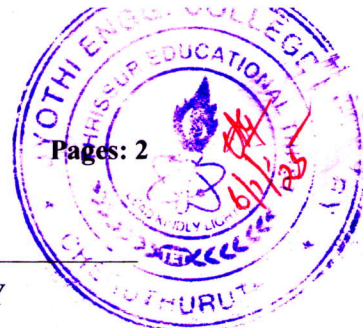


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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech Degree S4 (S, FE) / S2 (PT) (S, FE) / S4 (WP) (S) Examination December 2024 (2019 Scheme)

**Course Code: ECT206**

**Course Name: COMPUTER ARCHITECTURE AND MICROCONTROLLERS**

Max. Marks: 100

Duration: 3 Hours

**PART A**

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

		Marks
1	Explain the functional units of a computer.	3
2	List the difference between Harvard and Von Neumann architecture.	3
3	Explain TMOD register in 8051.	3
4	Explain PUSH and POP operations with a suitable example.	3
5	List any three datatypes of variables in 8051 C programming.	3
6	Write an embedded C program to toggle bits of port P1 with a delay.	3
7	Explain how to double the baud rate for data transfer in 8051 serial communication.	3
8	Explain the Mode 2 of Timer in 8051.	3
9	What is virtual memory?	3
10	List the difference between SRAM and DRAM.	3

**PART B**

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

**Module -1**

- |    |  |    |
|----|--|----|
| 11 | a) Explain IEEE 754 single precision format with the help of an example. | 6  |
|    | b) Illustrate division of numbers 23/17 using any restoring algorithm.   | 8  |
| 12 | a) Explain instruction Cycle with the help of a timing diagram.          | 10 |
|    | b) Explain the Stack Pointer and Program Counter.                        | 4  |

**Module -2**

- |    |   |   |
|----|---|---|
| 13 | a) Explain any four addressing modes of 8051 with an example.                           | 8 |
|    | b) Explain the difference between rotate instructions RL and RLC with suitable example. | 6 |
| 14 | a) Sketch and explain the architecture of 8051.   | 8 |
|    | b) Name the different interrupts in 8051 and their vector locations.                    | 6 |

**Module -3**

- 15 a) Explain the interfacing of Seven Segment Display with 8051. Write an assembly language program to display 2. 8  
b) Write an assembly language program to find the sum of 10 numbers stored from location 2000H and store the results in the consecutive locations. 6
- 16 a) With relevant diagram, explain the program for interfacing LCD with 8051. 7  
b) Explain how to interface ADC to 8051 with suitable diagram and program. 7

**Module -4**

- 17 a) Explain the steps and program to receive data serially in 8051. 8  
b) Write an assembly language program to generate 1ms frequency on port P1 using Timer0. Assume crystal frequency is 11.0592 MHz. 6
- 18 a) With relevant diagram, explain the architecture of ARM7. 8  
b) Explain Compiler, Interpreter and Linker. 6

**Module -5**

- 19 a) Explain address translation in virtual memory. 5  
b) Explain different cache mapping techniques. 9
- 20 a) Explain the difference between Programmed I/O and Interrupt driven I/O. 5  
b) What is DMA? Explain the role of DMA controller in data transfer of block of data. 9

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