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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 8051serial 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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