

U.S.N.

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February 2025 Semester End Main Examinations**Programme: B.E.****Semester: IV****Branch: ES Cluster (EEE/ET/ECE/EIE/MD)****Duration: 3 hrs.****Course Code: 22ES4PCAPP****Max Marks: 100****Course: Arm Processor and Programming**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.			UNIT - I	CO	PO	Marks
	1	a)	Draw the basic processing units of a computer and explain in brief.	CO1	-	10
		b)	Describe the concept of pipeline with an example	CO1	-	10
			OR			
	2	a)	List the different types of computer peripherals and explain in brief	CO1	-	10
		b)	(i) Distinguish between cache memory and virtual memory (ii) Distinguish between RISC and CISC	CO1	PO1	10
			UNIT II			
	3	a)	Draw the ARM core dataflow model and describe its components	CO1	-	10
		b)	Write a ALP to illustrate ARM-THUMB interworking	CO2	PO1	05
		c)	Write a ALP to find the sum of first 10 natural numbers	CO2	PO1	05
			OR			
	4	a)	Differentiate between RISC and CISC machine	CO1	-	06
		b)	Illustrate arithmetic operations using suitable ARM instruction sets.	CO2	PO1	08
		c)	Write a ALP to find the greatest number in a given series of numbers.	CO2	PO1	06
			UNIT III			
	5	a)	What is loop unrolling? Explain with an example C code	CO1	-	07
		b)	Describe load scheduling by preloading with an example assembly program	CO1	-	07
		c)	Write assembly codes for the following C functions given below			06

		<pre> int checksum_v1(int *data) { char i; int sum=0; for (i=0; i<64; i++) { sum += data[i]; } return sum; } </pre>			
		OR			
6	a)	Describe how to efficiently optimize the loops in case of assembly programming	CO1	-	08
	b)	Explain instruction scheduling with an example.	CO1	-	06
	c)	Describe mixing of C and assembly codes using an embedded assembler.	CO2	PO1	06
		UNIT - IV			
7	a)	Illustrate PUSH and POP operations using a stack	CO2	PO1	10
	b)	Illustrate enabling and disabling IRQ exceptions.	CO2	PO1	10
		OR			
8	a)	Illustrate enabling and disabling FIQ exceptions.	CO2	PO1	10
	b)	Write a block diagram illustrating exceptions and associated processor modes. Also explain in brief.	CO1	-	10
		UNIT - V			
9	a)	List the features of LPC 2148 and explain their use in brief.	CO1	-	10
	b)	Write a program to generate triangular wave using DAC of LPC 2148	CO2	PO1	10
		OR			
10	a)	Write a program to generate square wave using DAC of LPC 2148	CO2	PO1	10
	b)	List and explain the important components of embedded operating system.	CO1	-	10
