

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

M.E DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Third Semester

Applied Electronics

AP4008 - Advanced Microprocessors and Microcontrollers Architectures

Regulations - 2021

Duration : 3 Hrs

Maximum: 100 Marks

*PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Define addressing modes.	RE	1	2
2.	What is meant by paging?	RE	1	2
3.	Define multitasking.	RE	2	2
4.	Classify the addressing modes with their types.	UN	2	2
5.	Which features does ARM have in common with many other RISC architectures?	UN	3	2
6.	Propose any 3 tools used to optimize ARM assembly code.	UN	3	2
7.	Mention the purpose of a constant generator in the MSP430 microcontroller.	UN	4	2
8.	Define the movement instructions of the MSP430 microcontroller.	RE	4	2
9.	What are the interrupts in the PIC microcontroller?	RE	5	2
10.	Write a short note on the C-compiler.	UN	5	2

*PART - B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)*

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Analyze the causes and effects of pipeline hazards in a pipelined processor. How does each type of hazard arise and what are the consequences for pipeline efficiency?	AN	1	13
	Or			
	b Differentiate between RISC and CISC architectures by analyzing how each impacts processing speed, complexity, and efficiency. What are the underlying reasons for these differences?	AN	1	13
12.	a Elaborate on the on-chip floating point unit of the Pentiumb processor.	AP	2	13
	Or			
	b With suitable examples, explain the addressing modes available in the Pentium processor.	AP	2	13

13. a Describe the organization of the CPU of a high-performance RISC architecture. AN 3 13
- Or
- b Illustrate the thumb instruction set of the ARM processor with examples in detail. AN 3 13
14. a Explain the arithmetic and logic instructions of the MSP430 microcontroller with an example each. AP 4 13
- Or
- b With a neat sketch explain the operation of timers in MSP430 microcontroller. AP 4 13
15. a Explain the architecture of the PIC microcontroller with neat diagram. UN 5 13
- Or
- b Discuss briefly about the UART interface of the PIC microcontroller with necessary diagram. UN 5 13

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a Evaluate the effectiveness of the PIC microcontroller instruction set and explain the programming of the PIC microcontroller with suitable examples.	EV	5	15
Or				
	b Analyze the design & functionality of the Memory Management Unit (MMU) in an ARM processor. Discussing its role in virtual memory management and protection. Use suitable diagrams to illustrate how the MMU contributes to efficient memory usage and system stability.	EV	3	15