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Question Paper Code	13740
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M.E. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Second Semester

M.E. - Embedded Systems Technologies

24PESPC203 - RISC PROCESSOR ARCHITECTURE AND PROGRAMMING

Regulations - 2024

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

	Marks	K- Level	CO
1. Write down the features implemented in AVR that prove it to be RISC architecture?	2	K1	CO1
2. Show the conditions that exist for all peripherals, parallel ports and interrupts after resetting in AVR architecture.	2	K2	CO1
3. What are the special registers used to indicate the value of the current running exception and interrupt?	2	K1	CO2
4. Compare ARM7, ARM9 and ARM11 series processors stating features and applications.	2	K2	CO2
5. What is the use of barrel shifter?	2	K1	CO3
6. Differentiate Thumb and Arm instruction set.	2	K2	CO3
7. Name the interrupt handling schemes used in ARM.	2	K1	CO4
8. Summarize the steps involved in writing DSP Code for the ARM7TDMI.	2	K2	CO4
9. How to Initialize the MPU?	2	K1	CO5
10. State the uses of FLASH code memory.	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Explain how ADC and DAC interfaced with AVR Microcontroller.	13	K2	CO1
OR			
b) Explain the function of AVR serial peripheral interface data, control and status register with neat structure.	13	K2	CO1
12. a) Explain 5 stage pipeline ARM organizations. Enumerate its deviation from that of three stage pipeline.	13	K2	CO2
OR			
b) In ARM architecture, how are the shifting of multiple bits performed in one clock cycle? Discuss the various instruction set of ARM.	13	K2	CO2

13. a) Explain the function of coprocessor registers C1, C2, C5 and C6 that control ARM memory processing unit. 13 K2 CO3

OR

- b) Explain Addressing methods for stack operations in ARM. 13 K2 CO3

14. a) Illustrate an application using ARM to implement IIR of any signal. 13 K2 CO4

OR

- b) Explain in detail the Device Driver Framework used in ARM. 13 K2 CO4

15. a) Explain the mapping of a task in virtual memory to physical memory using relocation register. Show an example for mapping pages to page frames in an ARM with an MMU. 13 K2 CO5

OR

- b) Explain the implementation of Fast Context Switch Extension for ARM processors. 13 K2 CO5

PART - C (1 × 15 = 15 Marks)

16. a) Build an ARM7 assembly program to check whether a given number (stored in a register) is even or odd. Use bitwise operations to determine the result. 15 K3 CO6

OR

- b) Build an ARM7 assembly program to compare two numbers stored in registers and store the maximum of the two in another register. 15 K3 CO6