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Question Paper Code	12839
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M.E. / M.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Second Semester

M.E. - Embedded Systems Technologies

20PESPC203 - RISC PROCESSOR ARCHITECTURE AND PROGRAMMING

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

	Marks	K- Level	CO
1. List out the addressing modes used in AVR.	2	K1	CO1
2. Draw the structure of the AVR register file.	2	K1	CO1
3. What is the difference between Interrupts and Exceptions?	2	K2	CO2
4. Mention the list of ARM instructions used for multiple register transfer.	2	K1	CO2
5. What is the difference between a core processor and coprocessor?	2	K2	CO3
6. List the functions of CDP, MRC and LDC Coprocessor Instructions.	2	K1	CO3
7. What is the use of a vector table?	2	K1	CO4
8. Recall the function of IRQ and FIQ Exceptions.	2	K1	CO4
9. What is meant by TLB?	2	K1	CO5
10. Why do we need memory management in ARM?	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Explain how ADC interfaced with AVR Microcontroller.	13	K2	CO1
OR			
b) Explain the function of AVR watchdog timer control register.	13	K2	CO1
12. a) Describe the operating modes of ARM processor.	13	K2	CO2
OR			
b) Explain the types of addressing modes used in ARM with an example.	13	K2	CO2
13. a) Explain the function of barrel shifter in ARM.	13	K2	CO3
OR			
b) Explain branch instructions in ARM with examples.	13	K2	CO3

14. a) Briefly explain firmware and boot loader of ARM. 13 K2 CO4

OR

b) Demonstrate an application using ARM to implement 4*3 FIR. 13 K2 CO4

15. a) Explain about translation look a side buffer with a neat diagram. 13 K2 CO5

OR

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

PART - C (1 × 15 = 15 Marks)

16. a) Construct an embedded program for generating hamming code. 15 K3 CO6

OR

b) Develop a subroutine to perform block copy using the ARM controller. 15 K3 CO6