

Roll No.: _____

Amrita Vishwa Vidyapeetham
Amrita School of Engineering, Coimbatore
B.Tech. Mid-Term Examinations –February 2025
Fourth Semester
Electronics and Communication Engineering
23ECE211 Microcontrollers and Interfacing

Duration: Two hours

Maximum: 50 Marks

CO	Course Outcomes
CO01	Understand the fundamentals of Microcontroller and its peripherals
CO02	Configure the internal peripherals of a Microcontroller
CO03	Interface External Peripherals with an Embedded Platform
CO04	Design a Microcontroller based System for real world applications

Answer all the questions.

1. What is the purpose of BX and BLX instructions in ARM? [3][CO02][BTL 2]
2. Draw the organization of Processor, Input/Output and memory in a system. [3][CO02][BTL 1]
3. Explain how “barrel shifter” in ARM improves its performance. [3][CO01][BTL 2]
4. Explain the sequence of steps in ‘Exception Return’ in ARM Processors. [3][CO02][BTL 2]
5. i) Assuming a little-endian memory system,
Given R6=0x89ABCDEF and R3=0x40000010
STR R6, [R3]
LDRH R12, [R3]
What would register R12 contain after executing the above instructions ?
ii) What would register R12 contain if it were a big-endian memory system? [3][CO02][BTL 3]
6. Explain the application/function of the following instructions: [3][CO02] [BTL 2]
i) BIC ii) SUBS iii) MVN
7. Explain how pipeline implementation and its issues in ARM can be addressed ? [6] [CO01] [BTL 2]
8. Write an ARM assembly code/algorithm to generate a Fibonacci series up to a length of 10. [6] [CO02] [BTL 2]
9. With a neat sketch explain binary encoding of data processing instructions. [10][CO02] [BTL 2]
10. Explain in detail “ARM’s visible registers” with the help of a neat diagram. [10] [CO01] [BTL 2]

Course Outcome /Bloom’s Taxonomy Level (BTL) Mark Distribution Table

CO	Marks	BTL	Marks
CO01	19	BTL 1	3
CO02	31	BTL 2	44
CO03	0	BTL 3	3
CO04	0	BTL 4	0