MANIPAL INSTITUTE OF TECHNOLOGY
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SECOND SEMESTER M. TECH DEGREE END SEMESTER EXAMINATION
APRIL 2019
SUBJECT: ARM PROCESSOR AND APPLICATIONS (ECE - 5233)

TIME: 3 HOURS   **MAX. MARKS: 50**

Instructions to candidates
- Answer **ALL** questions.
- Missing data may be suitably assumed.

1A. Draw a neat diagram of ARM Programmer model and explain each functional component.

1B. With a neat block diagram, describe how ARM core is used in an VLSI ISDN Subscriber Processor.

1C. Explain DMA based I/O strategy with algorithm and code used for implementation.

(5+3+2)

2A. LPC 2129 target board is in ARM state. Write a program to flash all LEDs which are connected to IODIR register starting from P1.00 to P1.31. Use maximum time delay for flashing. Repeat the sequence.

2B. Consider ARM processor to be in ARM state. Write a program to add two 32 bit numbers stored in memory locations pointed by registers r0 and r1. Store the sum in memory location pointed by register r2.

2C. With diagrams, explain different types of cache, based on its placement and architecture.

(5+3+2)

3A. What are the different types of arithmetic and logical instructions in ARM? Explain each with one example.

3B. Explain AMBA based system with multiplexed bus scheme.

3C. Discuss non nested interrupt scheme.

(5+3+2)

4A. Consider ARM processor to be in ARM state. How multiple load/store operations are carried out in ARM processor? Tabulate all addressing modes and explain with an example.

4B. Explain 32KB Cache memory system with necessary diagrams. Discuss the role of cache controller.

4C. Discuss ARM address register structure.

(5+3+2)

5A. Explain the role of barrel shifter with associated instructions.

5B. Describe the working of Floating Point Processor.

5C. Explain Random Access Memory system emphasizing on transition diagram, wait generation circuit and timing diagrams.   (5+3+2)