
MANIPAL INSTITUTE OF TECHNOLOGY
Manipal University

SECOND SEMESTER M.TECH (OPEN ELECTIVE) DEGREE END SEMESTER EXAMINATION
MAY/ JUNE 2016
SUBJECT: ARM PROCESSOR & APPLICATIONS (ECE - 565)

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

Instructions to candidates
- Answer **ANY FIVE** full questions.
- Missing data may be suitably assumed.

1A. Write a neat diagram of ARM data flow model and explain each functional component.

1B. What are the different types of data processing instructions in ARM? Explain each with one example.

1C. Discuss four major design rules in RISC design.

(4+4+2)

2A. How stack operations are carried out in ARM processor? Tabulate all addressing methods and explain with example.

2B. ARM LPC 2129 target board is in ARM state. Write a program to flash all LEDs which are connected to IODIR register starting from P1.08 to P1.27. Use maximum time delay for flashing. Repeat the sequence.

2C. Write a program to add two 64 bit numbers stored in memory locations pointed by registers r0 and r1. Store the sum in memory location pointed by register r0.

(4+4+2)

3A. Define different cache bus architectures. With each cache line of 32 bit words, explain architecture of 4 KB unified cache with necessary diagrams. Emphasize on role of cache controller.

3B. Explain Polling I/O strategy with algorithm / sample program used for implementation.

3C. With an ARM memory interface diagram, explain different bus signals.

(4+4+2)

4A. Explain AMBA based system emphasizing on bus transfers, slave, APB, AHB and ARM multiplexed bus scheme.

4B. Describe ARM floating point architecture FPA -10. Also explain Expressions, Pointer arithmetic and Conditional statements as a support for high level languages.

4C. What are the different data types ARM supports in high level languages?

(4+4+2)

5A. With a neat block diagram, describe how ARM core is used in an VLSI ruby II Advanced Communication Processor?

5B. With necessary diagrams / flow chart, explain i) Interrupt latency ii) Enabling & Disabling IRQ & FIQ with sample program instructions.

5C. Explain little and big endian memory.

(4+4+2)

6A. With block diagram, describe how ARM core is used in a VLSI ISDN Subscriber Processor?

6B. What are the different tasks of MMU. With regard to ARM MMU, explain page tables, page table entries and different types of page table walks.

6C. Discuss standard ARM C program address space model.

(4+4+2)