

CBCS SCHEME

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21EC52

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025

Computer Organization and ARM Microcontrollers

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the pipelining and superscalar operation. (05 Marks)
- b. Briefly explain the different key parameters that affects the processor performance. (05 Marks)
- c. With a neat diagram, explain basic operational concept of computer. (10 Marks)

OR

- 2 a. Mention the difference between Big-endian and Little-endian assignments. (05 Marks)
- b. Explain the different types of addressing modes. (10 Marks)
- c. With diagram explain the Interrupt Hardware. (05 Marks)

Module-2

- 3 a. With diagram explain the internal organization of a 2M×8 dynamic memory chip. (10 Marks)
- b. Explain the operations of synchronous DRAM. (10 Marks)

OR

- 4 a. Explain the different types of memories. (10 Marks)
- b. With neat diagram explain the multiple bus organization. (10 Marks)

Module-3

- 5 a. Explain the architecture of ARM core dataflow model. (10 Marks)
- b. With neat diagram explain the ARM based embedded system. (10 Marks)

OR

- 6 a. Explain the ARM condition flag register. (05 Marks)
- b. What is pipeline? Explain the 3-stage ARM pipeline. (05 Marks)
- c. Explain the architecture of ARM processor. (10 Marks)

Module-4

- 7 a. With example explain the following instructions:
i) ADC ii) EOR iii) SWI iv) UMULL v) SBC (10 Marks)
- b. With neat diagram explain the ARM stack operation. (10 Marks)

OR

- 8 a. Explain the ARM Registers and also explain each. (10 Marks)
- b. Explain the following ARMVSE extension instructions:
i) CLZ ii) QADD iii) QSUB iv) SMLAxy v) QDADD (10 Marks)

Module-5

- 9 a. Explain the following THUMB instructions:
i) TST ii) ROR iii) BX iv) BKPT v) ASR (10 Marks)
- b. Discuss the ARM support basic C data types. (10 Marks)

OR

- 10 a. Explain the ARM function calls and loop operations. (10 Marks)
- b. With example explain the single register and multiple register load store ARM instructions. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.