



Seventh Semester B.E. Degree Examination, June/July 2023

Advanced Computer Architecture

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain with a neat diagram, the element of modern computer system. (10 Marks)
- b. Briefly explain the architecture of vector super computer with a neat diagram. (10 Marks)

OR

- 2 a. With a diagram, explain the tagged token data flow computer. (10 Marks)
- b. List out metrics affecting scalability of a computer system and briefly discuss the same. (10 Marks)

Module-2

- 3 a. Compare the CISC and RISC process architectures with neat diagram. (10 Marks)
- b. Explain the architecture of VLIW processor and its pipeline system. (10 Marks)

OR

- 4 a. Explain Hierarchical memory technology with respect to inclusion, coherence and locality of references. (10 Marks)
- b. Explain the address translation mechanism using TLB and various forms of page tables. (10 Marks)

Module-3

- 5 a. With diagrams, explain central bus arbitration and distributed bus arbitration. (10 Marks)
- b. Explain Cache addressing models and direct mapping cache. (10 Marks)

OR

- 6 a. Briefly discuss sequential and weak consistency models with necessary schematic diagrams. (10 Marks)
- b. Discuss static arithmetic pipelines and distinguish between an n-bit carry propagate adder (CPA) and an n-bit Carry – Save Adder (CSA). (10 Marks)

Module-4

- 7 a. Explain with schematic diagrams inter-process cross bar network design and a row of cross point switch design in a cross bar network. (10 Marks)
- b. Explain Routing in Omega network. (10 Marks)

OR

- 8 a. Explain Snoopy bus protocol approach to ensure coherence. (10 Marks)
- b. Discuss the three generation of multi-computers. (10 Marks)

Module-5

- 9 a. Explain Inter Process Communication (IPC) mechanisms using
i) Shared variable Model ii) Message passing Model. (10 Marks)
- b. Explain different phases in optimizing compilers for parallelism. (10 Marks)

OR

- 10 a. Explain different language features for parallelism. (10 Marks)
- b. Discuss the following (any two only)
i) Tomasulo's Algorithm ii) Reorder Buffer iii) Register Renaming (10 Marks)

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.