

ADVANCED COMPUTER ARCHITECTURE

Internal Assessment: 50

Full Marks: 100

Theory Credit: 04

Module - I

Principles of Processor Performance, RISC and CISC Architectures, Pipelining fundamentals, Pipeline Hazards, Superscalar Architecture, Super Pipelined Architecture, VLIW Architecture.

Module - II

Basic Multiprocessor Architecture: Flynn's Classification, UMA, NUMA, Distributed Memory Architecture, Array Processor, Vector Processors, Associative Processor, Systolic architecture. Interconnection Networks: Static Networks, Network Topologies, Dynamic Networks.

Module -III

Hierarchical Memory Technology: Data and Instruction caches, Multi-level caches, Cache memory mapping policies, Cache Coherence, Cache Performance, Virtual memory, Page replacement techniques, Memory Inter leaving, Memory Management hardware.

Module - IV

Data Flow Computer Architecture: Static Data flow computer, Dynamic Data flow computer, Cluster computers, Distributed computing, Cloud computing.

Reference Books:

1. David A. Patterson and John L. Hennessy, Computer Organization and Design, Elsevier.
2. John L. Hennessy and David A. Patterson, Computer Architecture: A Quantitative Approach, Morgan Kaufmann
3. Kai Hwang, Advanced Computer Architecture: Parallelism, Scalability, Programmability, McGraw- Hill.
4. K. Hwang and F. A. Briggs, Computer Architecture and Parallel Processing, McGraw Hill.
5. Computer Architecture: Parhami, Oxford University Press