20ES014 - Advanced Computer Architecture

UNIT - I
Theory of Parallelism Parallel Computer models – the state of computing, Multiprocessors and Multicomputers and Multivectors and SIMD computers, PRAM and VLSI models, Architectural development tracks, Program and network properties – Conditions of parallelism.

UNIT - II
Partitioning and Scheduling Program partitioning and scheduling, Program flow mechanisms, System interconnect architectures, Principles of scalable performance – performance matrices and measures, Parallel processing applications, speedup performance laws, scalability analysis andapproaches.

UNIT - III
Hardware Technologies Processor and memory hierarchy advanced processor technology, superscalar and vector processors, memory hierarchy technology, virtual memory technology, bus cache and shared memory – backplane bus systems, cache memory organizations, shared memory organizations, sequential and weak consistency models.

UNIT - IV
Pipelining and Superscalar Technologies Parallel and scalable architectures, Multiprocessor and Multicomputers, Multivector and SIMD computers, Scalable, Multithreaded and data flow architectures.

UNIT - V
Software and Parallel Processing Parallel models, Languages and compilers, Parallel program development and environments, UNIX, MACH and OSF/1 for parallel computers.

TEXT BOOKS:
1. Kai Hwang "Advanced Computer Architecture". McGraw Hill International 2001
   Carl Homacher, Zvonko Vranesic, Sefwat Zaky, "Computer Organisation", 5th Edition, TMH, 2002

REFERENCE BOOKS:

1. Dezso Sima, Terence Fountain, Peter Kacsuk, "Advanced computer Architecture – A design Space Approach". PearsonEducation,2003.
2. DavidE.Culler,JaswinderPalSinghwithAnoopGupta"ParallelComputerArchitecture" Elsevier, 2004.
3. John P. Shen. "Modern processor design Fundamentals of super scalar processors", Tata McGraw Hill2003.