Subject Code : RN2K8A

PAPER 8: ELECTIVE - I –A. ADVANCED COMPUTER ARCHITECTURE

Unit – 1

Theory of parallelism:

The State of computing –Multi processors and multi computers-Multivector and SIMD computers –PRAM and VLSI models –Architectural development tracks.

Unit –2

Program and Network properties:

Conditions of parallelism –program partitioning and Scheduling –Program flow mechanisms –System interconnect architecture.

Principles of scalable performance:

Performance metrics and measures –Scalability analysis and approaches.

Unit –3

Processors and memory hierarchy:

Advanced processor technology-Superscaler and vector processors-Memory hierarchy technology-Virtual memory technology.

Unit –4

Bus, Cache and Shared Memory:

Backplane bus systems-Cache memory organizations-Shared memory organization-Sequential and Weak consistency models.

Unit 5

Pipelining and Superscaler techniques:

Linear pipeline processors-Non linear pipeline processors-Instruction pipeline design-Arithmetic pipeline design –Superscalar and Super pipeline designs.

TEXT BOOK:

Kai Hwang, "Advanced Computer Architecture: Parallelism, Scalability and Programmability", Mc Graw Hill, 1993 (Parts I and II only-chapters 1 to 6, except sections 3.2 and 3.3.)