

CSE-401 F

ADVANCED COMPUTER ARCHITECTURE

L     T     P  
3     1     -

Class Work:    50  
Exam:            100  
Total:            150  
Duration of Exam: 3 Hrs.

**NOTE: For setting up the question paper, question no 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.**

**Section A**

**Architecture And Machines:** Some definition and terms, interpretation and microprogramming. The instruction set, Basic data types, Instructions, Addressing and Memory. Virtual to real mapping. Basic Instruction Timing.

**Time, Area And Instruction Sets:** Time, cost-area, technology state of the Art, The Economics of a processor project: A study, Instruction sets, Professor Evaluation Matrix

**Section B**

**Cache Memory Notion:** Basic Notion, Cache Organization, Cache Data, adjusting the data for cache organization, write policies, strategies for line replacement at miss time, Cache Environment, other types of Cache. Split I and D-Caches, on chip caches, Two level Caches, write assembly Cache, Cache references per instruction, technology dependent Cache considerations, virtual to real translation, overlapping the Tcycle in V-R Translation, studies. Design summary.

**Section C**

**Memory System Design:** The physical memory, models of simple processor memory interaction, processor memory modeling using queuing theory, open, closed and mixed-queue models, waiting time, performance, and buffer size, review and selection of queuing models, processors with cache.

**Section D**

**Concurrent Processors:** Vector Processors, Vector Memory, Multiple Issue Machines, Comparing vector and Multiple Issue processors.

**Shared Memory Multiprocessors:** Basic issues, partitioning, synchronization and coherency, Type of shared Memory multiprocessors, Memory Coherence in shared Memory Multiprocessors.

**Text Book:**

Advance computer architecture by Hwang & Briggs, 1993, TMH.

**Reference Books:**

Pipelined and Parallel processor design by Michael J. Flynn – 1995, Narosa.