

VEER NARMAD SOUTH GUJARAT UNIVERSITY

Syllabus MCA (5TH Semester) (2005)

PAPER : 501 : Computer Architecture

1. Introduction to Microprocessor
 - 1.1 Overview of 8086 family architecture
 - 1.2 Architecture of 8086, 80386, 80486, 80586
 - 1.3 Associated hardware for Control, Timer, Interrupt, DMA
 - 1.4 Interfacing, Digital, Analog etc.
2. Introduction : Parallel Processing
 - 2.1 Trends towards parallel processing
 - 2.2 Parallelism in Uniprocessor systems
 - 2.3 Parallel Computer Structures
 - 2.4 Architectural classification structures
3. Pipelining
 - 3.1 Concepts of pipelining
 - 3.2 Pipelining in processors
4. Vector Processing
 - 4.1 Fundamentals of vector processing
 - 4.2 Vector characteristics
 - 4.3 Vector processors
5. Array Processors
 - 5.1 Concept of array processing
 - 5.2 Overview of array processors
6. Multiprocessors
 - 6.1 Concept of multiprocessing
 - 6.2 Multiprocessor operating system
 - 6.3 Overview of multiprocessors
 - 6.4 Cache coherence problem
7. Super Computers
 - 7.1 Introduction
 - 7.2 Applications

Reference Books :-

1. Hawang K., Briggs F. A. : Computer Architecture and Parallel Processing – McGraw Hill
2. Koggi H. : The architecture of Pipelined Computers – TMH
3. Douglass Hall : Microprocessors and Interfacing – TMH
4. Evans D.J. : Parallel Processing System – Cambridge Press
5. Hockney R.W., Jesshope C.R. : Parallel Computers : Architecture, Programming and Algorithms – Adam Hilger
6. Willis N. and Kerridge J. : Introduction to Computer Architecture – A.H. Wheeler & Company.
7. Stone H.S. : Introduction to Computer Architecture – Galgotia Publishers
8. Lorin H. Parallelism in H/W and S/W – Prentice Hall
9. Harold S. Stone : High Performance Computer Architecture – Addison – Wesley Company
10. Robert J. Brron : Computer Architecture – Addison –Wesley
11. Technical Reference Manuals : 8086, 80386, 80486

VEER NARMAD SOUTH GUJARAT UNIVERSITY

Syllabus MCA (5TH Semester)

PAPER : 502 : UNIX Internals & Shell Programming

1. Introduction
 - 1.1 Features
 - 1.2 System Structure
 - 1.3 Shell and Its Features
 - 1.4 Kernel
 - 1.4.1 Architecture of the UNIX operating system
 - 1.4.2 Kernel Data Structures
2. Overview
 - 2.1 Logging in and out
 - 2.2 Inode & File Structure
 - 2.3 File System Structure and Features
 - 2.4 Booting Sequence and init process
 - 2.5 File Access permissions
3. Shell Programming
 - 3.1 Environment and User defined Variables
 - 3.2 Argument processing
 - 3.3 Shell's Interpretation at Prompt
 - 3.4 Arithmetic Expression Evaluation
 - 3.5 Control Structures
 - 3.6 Redirection
 - 3.7 Background process & priorities of process
 - 3.8 Conditional execution
 - 3.9 Parameter and Quote Substitution
 - 3.10 Command Evaluation & Command Grouping
 - 3.11 Trapping Signals
4. Advance Shell Programming
 - 4.1 Filtering Utilities – sed, grep, egrep, fgrep
 - 4.2 Awk & nawk
 - 4.3 Batch Process
 - 4.4 Splitting, Comparing, Sorting, Merging & Ordering Files
 - 4.5 Terminal Handling
 - 4.6 Communication with other Users
 - 4.7 Spooling & Print Management
 - 4.8 Backup and Recovery
 - 4.9 Remote Login, File Transfer & Sharing

5. File System and Internal Representation
 - 5.1 Structure of Buffere Pool
 - 5.2 Superblock
 - 5.3 Inode assignment to File
 - 5.4 Reading, Writing and Allocation of Disk Blocks
 - 5.5 System calls for File System

6. Process Management
 - 6.1 States and Transactions
 - 6.2 Context and Manipulation of Process Address Space
 - 6.3 Process Creation and Termination
 - 6.4 Process Scheduling
 - 6.5 System calls for Process Management
 - 6.6 Interprocess communication

7. Memory Management
 - 7.1 Swapping
 - 7.2 Demand Paging
 - 7.3 System Calls for Memory Management
 - 7.4 Solution with Semaphore

8. The I/O subsystems
 - 8.1 Driver Interfaces
 - 8.2 Disk and Terminal Drivers
 - 8.3 Streams

Reference Books :-

1. M.J. Buch : The Design of the UNIX OS – Prentice Hall
2. Eric Foxley : UNIX for Super – Users – Addison – Wesley Publisher
3. Kernigh & Pike : The UNIX Programming Environment – PHI
4. Das : UNIX System V.4 Concepts & Application – Tata McGraw
5. N. Kutti : C and UNIX Programming – Tata McGraw Hill
6. Vijay Mukhi : Working with UNIX – BPB Publication
7. Vijay Mukhi : UNIX Shells – Bourne, Korn and C – BPB Publication
8. A.S. Godbole : Operating Systems – Tata McGraw Hill