**UNIT – I**

Linux Utilities – File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking commands, Filters, Text processing utilities and Backup utilities.

Sed – Scripts, Operation, Addresses, Commands, Applications, awk – Execution, Fields and Records, Scripts, Operation, Patterns, Actions, Associative Arrays, String and Mathematical functions, System commands in awk, Applications.

Shall programming with Bourne again shell (bash) – Introduction, shell respnsibilites, pipes and Redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shall variables, command substitutions, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples, interrupt processing, fictions, debugging shell scripts.

**UNIT – II**

Files and Directories – File Concept, File types, File system Structure, file metsdata – Inodes, kernel support for file, system calls for file I/O operations – open, create, read, write, close, Iseek, dup2, file status information – sata family, file and record locking – fcnti fuction, file permissions – chmod, fchmod, file ownership – chown, Ichown, fchown, links – soft links and hard links – symlink, link, unlink.

Directories – Creating, removing and changing Directories – mkdir, rmdir,chdir, obtaining current working directory – getcwd, Directory contents, Scanning Directories – opendir, readdir, closedir, rewinddir functions.

**UNIT – III**

Process – process concept, Layout of a C program image in main memory, Process environment – environment list, environment variables, getenv, setenv, Kemel support for process, process identification, process, control – process creation, replacing a process image, waiting for a process, process termination, zombie process, orphans prosess, system call interface for process management – fork, vfork, exit, wait, waitpid, exec family, process Groups, Sessions and Controlling Terminal, Differences between threads and processes.

Signals – Introduction to signals, Signal generation and handling, Kernel support for signals, Signal fuction, unreliable signals, reliable signals, Kill, raise, alarm, pause, abort, sleep fiction.

**UNIT – IV**

Inter process Communication – Introduction to IPC, IPC between processes on a single computer system, IPC between processes on different systems, pipes – creation, IPC between unrelated processes using FIFOs (Named pipes),differences between unnamed and named pipes, popen and pclose library fictions.

Message Queues – Kemel support for messages, APIs for message queues, client/server example.

Semaphores – Kernel support for semaphores, APIs for semaphores, file locking with semaphores.

**UNIT – V**

Shared Memory – Kemel support for shared memory, IPC over a network, Client – Server model, Socket adress structures (Unix domain and Internet domain), Socket system calls foe connection oriented protocol and connection less protocol, example – client/server programs – Single Server- Client connection, Multiple simultaneous clients, Socket options – sprocket and fcnti system calls, Comparison of IPC mechanisms.

**TEXT BOOKS**

* Unix System programming using C++, T.Chan, PHI.
* Unix Concepts and Applications, 4th Edition, Sumitabha Das, THM.
* Unix Network Programming, W.R.Stevens, PHI.
* Shell Scripting, S.Parker, Wiley India Pvt.Ltd.
* Advanced programming in the Unix Environment, 2nd edition, W.R Stevens and S.A Rago, Pearson Education.
* Unix and shell programming, B.A.Forouzan and R.F.Gilberg, Cengage Learning.
* Linux System Programming, Robert LOve,O’Reily, SPD.
* C Programming Language, Kernighan and Ritchie, PHI