

IT-303 F Systems Programming & System Administration

L	T	P	Class Work	:	50	Marks
3	1	-	Exam	:		100 Marks
			Total	:		150 Marks

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

Evolution of Components Systems Programming, Assemblers, Loaders, Linkers, Macros, Compilers, software tools, Text editors, Interpreters and program generators, Debug Monitors, Programming environment.

Compiler: Brief overview of compilation process, Incremental compiler, Assembler: Problem statement, single phase and two phase assembler, symbol table; Loader schemes, compile and go Loader, general loader schemes, absolute loader, Subroutine linkage, Reallocating loader, Direct linkage Loader, Binders, Linking loader, overlays.

Section-B

Macro language and macro-processor, macro instructions, features of macro facility, macro instruction arguments, conditional macro expansion, macro calls with macro instruction defining macros.

Theoretical Concept of Unix Operating System: Basic features of operating system; File structure: CPU scheduling; Memory management: swapping, demand paging; file system: block and fragments, inodes, directory structure; User to user communication.

Section-C

Getting Started with Unix: User names and groups, logging in; Format of Unix commands; Changing your password; Characters with special meaning; Unix documentation; Files and directories; Current directory, looking at the directory contents, absolute and relative pathnames, some Unix directories and files; Looking at the file contents; File permissions; basic operation on files; changing permission modes; Standard files, standard output; Standard input, standard error; filters and pipelines; Processes; finding out about processes; Stopping background process; Unix editor vi.

Text Manipulation: Inspecting files; File statistics; Searching for patterns; Comparing files; Operating on files; Printing files; Rearranging files; Sorting files; Splitting files; Translating characters; AWK utility.

Section-D

Shell Programming: Programming in the Bourne and C-Shell; Wild cards; Simple shell programs; Shell variables; Shell programming constructs; interactive shell scripts; Advanced features.

System Administration: Definition of system administration; Booting the system; Maintaining user accounts; File systems and special files; Backups and restoration; Role and functions of a system manager. Overview of the linux. operating system

Text Books:

- Systems Programming by Donovan, TMH.
- The unix programming environment by Brian Kernighen & Rob Pike, 1984, PHI & Rob Pike.
- Design of the Unix operating system by Maurich Bach, 1986, PHI.
- Introduction to UNIX and LINUX by John Muster, 2003, TMH.

Reference Book:

- Advanced Unix programmer's Guide by Stephen Prato, BPB
- Unix- Concept and applications by Sumitabha Das, 2002, T.M..H