Paper Code: BCA 306 | **L** | **T** | **C**
Paper ID: 20306 | **3** | **1** | **4**
Paper: Linux Environment
Pre-requisites: Operating Systems
Aim: To understand Linux Operating System and its security.

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

UNIT – I
UNIX & LINUX:- Overview of UNIX and LINUX Architectures, UNIX Principles,GNU Project/FSF,GPL,Getting help in Linux with –help,whatis,man command, info command, simple commands like date,whoami, who, w, cal, bc ,hostname,uname, concept of aliases etcLinux filesystem types ext2, ext3, ext4,Basic linux directory structure and the functions of different directories basic directory navigation commands like cd, mv, copy,rm,cat command , less command, runlevel (importance of /etc/inittab)[T1,T2,R1] **[No. of Hrs: 11]**

UNIT – II
Standard Input and Output, Redirecting input and Output, Using Pipes to connect processes, tee command, Linux File Security, permission types, examining permissions, changing permissions(symbolic method numeric method),default permissions and umask
Vi editor basics, three modes of vi editor,concept of inodes,inodes and directories,cp and inodes ,mv and inodes rm and inodes,symbolic links and hard links,mount and umount command, creating archives, tar,gzip,gunzip,bzip2,bunzip2(basic usage of these commands)[T1,T2,R1] **[No. of Hrs: 11]**

UNIT – III
Enivironment variables(HOME,LANG,SHELL,USER,DISPLAY,VISUAL),Local variables, concept of /etc/passwd, /etc/shadow, /etc/group,and su- command, special permissions(suid for an executable,sgid for an executable,sgid for a directory,sticky bit for a directory)
tail, wc, sort, uniq, cut, tr, diff, aspell, basic shell scripts grep, sed, awk(basic usage) [T1,T2,R1] **[No. of Hrs: 11]**

UNIT – IV
Process related commands(ps, top, pstree, nice, renice), Introduction to the linux Kernel, getting started with the kernel(obtaining the kernel source, installing the kernel source,using patches, the kernel source tree, building the kernel process management(process descriptor and the task structure, allocating the process descriptor, storing the process descriptor, process state, manipulating the current process state, process context, the process family tree, the Linux scheduling algorithm, overview of system calls,.Intoduction to kernel debuggers(in windows and linux)[T2] **[No. of Hrs: 11]**

TEXT BOOKS:
[T1] Sumitabha Das, "Unix Concepts and Application", TMH
[T2] Robert Love, "Linux Kernel Development", Pearson Education
[T3] Sumitabha Das, "Your Unix The Ultimate Guide", TMH