B2.3-R3: BASICS OF OS, UNIX AND SHELL PROGRAMMING

NOTE:

1.	There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
2.	**PART ONE** is to be answered in the **TEAR-OFF ANSWER SHEET** only, attached to the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book.
3.	Maximum time allotted for **PART ONE** is **ONE HOUR**. Answer book for **PART TWO** will be supplied at the table when the answer sheet for **PART ONE** is returned. However, candidates, who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the answer sheet for **PART ONE**.

TOTAL TIME: 3 HOURS   **TOTAL MARKS: 100**
(PART ONE – 40; PART TWO – 60)

PART ONE
(Answer all the questions)

1. **Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "tear-off" answer sheet attached to the question paper, following instructions therein.** (1 x 10)

1.1 "inode" does not contain
A) File size
B) File name
C) Date of last access
D) Date of creation

1.2 Which one of the following gives the line number of the current cursor position in "vi" editor?
A) <ctrl>h
B) <ctrl><shift>g
C) <ctrl><alt>h
D) <ctrl.>g

1.3 The command "comm" Requires as input:
A) possibly more than one files
B) exactly a single file
C) exactly two files
D) no files

1.4 "init" run-level for system administration is:
A) 3
B) 1
C) 2
D) 0

1.5 Which one of the following is a multipurpose tool?
A) sed
B) grep
C) awk

D)   all of the above

1.6   Multiple links of a file means:
A)   more than one name and multiple copies in disk
B)   one name and one copy in disk
C)   one name but more than one copy
D)   single copy but more than one name

1.7   "NR" in "awk" denotes
A)   Word count
B)   Character count
C)   Line no.
D)   None of the above

1.8   Which of the following keys when pressed will generate a shell signal
A)   <del>
B)   <shift><ctrl>a
C)   <ctrl>a
D)   <ctrl.> <del>

1.9   State of a process changes from "ready" to "run" when
A)   Time slice expires
B)   Waiting for disk read occurs
C)   Waiting for user response occurs
D)   Waiting for CPU in ready queue ends

1.10   A new process is created in Unix by the following command
A)   fork( )
B)   forks( )
C)   sfork( )
D)   frk( )

2. **Each statement below is either TRUE or FALSE. Choose the most appropriate one and ENTER in the "tear-off" sheet attached to the question paper, following instructions therein.** **(1 x 10)**

2.1 In "vi" A appends text at the end of line.
2.2 In "vi" cl changes a line.
2.3 "x" is used to replace a single character in "vi".
2.4 Formatted output is possible by "awk".
2.5 "awk" is not a programming language but only a command.
2.6 Both ":x" and ":wq" in "vi" perform the same task.
2.7 "nohup" has to be suffixed to a command.
2.8 There is "endif" terminator for "if" statements in "awk".
2.9 An 's' in the "type" field of the command "ls –l" means that the corresponding file is a socket.
2.10 The shell built-in command "trap" setup a sequence of commands to be executed when a signal occurs.

3. **Match words and phrases in column X with the closest related meaning/ word(s)/phrase(s) in column Y. Enter your selection in the "tear-off" answer sheet attached to the question paper, following instructions therein.** **(1 x 10)**

	X		Y
3.1	df	A.	touch
3.2	Default directory of a newly logged user	B.	Used in "vi" for appending text
3.3	Searching for files	C.	A variable that can be accessed via "vi"
3.4	Sorts file in ASCII collating sequence	D.	Execute and read right to all for *now*
3.5	/bin	E.	shows free disk space
3.6	/ver	F.	Contains executable files
3.7	:ab	G.	Execute right to all for *now*
3.8	chmod+x *now* implies	H.	Contains print jobs of users
3.9	PATH	I.	Contains library files of user
3.10	Command that can change access time of a file	J.	HOME
		K.	shows Disk usage
		L.	Used to abbreviate texts in "vi"
		M.	A variable in shell programming language
		N.	ls
		O.	find

4. **Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Enter your choice in the "tear-off" answer sheet attached to the question paper, following instructions therein.** (1 x 10)

A.	awk	B.	trap	C.	telnet
D.	Umask	E.	chgrp	F.	Xserver
G.	Inode	H.	mask	I.	comm
J.	cl	K.	In-core inode	L.	Wait
M.	Xterm	N.	diff	O.	insert
P.	Cmp	Q.	cc	R.	command

4.1 In "vi" _____ changes a line.

4.2 To enter text in a new file "vi" will operate in _____ mode.

4.3 _____ can only be used by the owner of the file/directory.

4.4 _____ can be single-line programs also.

4.5 _____ setting determines default permissions that will be used when creating a file of directory.

4.6 The shell built-in command _____ sets up a sequence of commands to be executed when a signal occurs.

4.7 Remote login to a machine can be done via _____ command.

4.8 The command _____ tells which lines in a file have to be changed to make two files identical.

4.9 _____ is an X-client.

4.10 Description of an open file can be obtained from _____.

PART TWO
(Answer any **FOUR** questions)

5.
a) What are the types of commands that a shell recognises?
b) i) Write a shell script to copy all files found in /mnt/cdrom to the /etc directory.
   ii) Write a single line shell command to remove executable files in a particular directory that has a corresponding C-file.

(6+[6+3]))

6. How will you perform the following tasks?
   i) Double-space a file.
   ii) Removal of duplicate lines from a file.
   iii) Print every line of a file twice.
   iv) Use commands to locate the line containing the last occurrence of a pattern.
   v) Searches for pattern "a" from files "b" and "c".

(3x5)

7.
a) Explain the steps involved when a user tries to read a file.
b) What task does init perform? In this context also mention in detail the roles performed by related processes.

(8+7)

8.
a) Mention the disadvantages of using pipes.
b) In Unix what is the reason for storing user names and their hashed passwords in separate files?
c) Consider the following table and print serial numbers for the managers with salary more than 15000$.

Employee ID	Name	Designation	Department	Date of Birth	Salary
2256	A.K. SEN	Manager	Sales	01/01/69	16000
2334	R. SINGHAL	Officer	Accounts	02/12/66	15400
2987	B. RAO	Director	Personnel	03/02/58	20000
2992	C.L. JHA	Manager	Personnel	25/04/71	15000
3012	S. KHAN	Officer	Accounts	21/01/73	13000
3214	T.M. VIKASH	Manager	R & D	04/06/70	15500

(4+4+7)

9.
a) How could you execute different types of jobs in Unix? What does the command "jobs" do?
b) What is a process? How are you able to get complete information about all currently scheduled processes?

(8+7)