Name:

Enrolment No:

UPES

End Semester Examination, May 2023

Course: Linux OS and Shell Programming
Semester: 2nd
Program: BCA **Time : 03 hrs.**
Course Code: CSBC1014 **Max. Marks: 100**

Instructions:

Q. No.	**Question**	**Marks**	**CO**
	SECTION A		
1	List and briefly explain five commonly used Linux commands for file and directory management.	**4**	**CO1**
2	Explain the concept of process management in Linux. Also illustrate the different states of a process.	**4**	**CO4**
3	Explain the following terms: i. Multiuser capability ii. Portability iii. End-to-end encryption iv. Command line interface	**4**	**CO1**
4	Discuss the various types of file permissions in Linux. How can you change file permissions using the chmod command.	**4**	**CO4**
5	Explain the loops in shell scripting and how do you use them.	**4**	**CO2**
	SECTION B		
6	Explain the concept of pipes and filters in Linux. Provide examples of how pipes can be used to connect commands in Linux.	**10**	**CO2**
7	Explain the utilities that help to communicate and access the remote unix/linux machine.	**10**	**CO3**
8	Write a shell script that takes two numbers as input from the user and calculates their sum, difference, product, and quotient.	**10**	**CO3**
9	Predict the output of the following scripts when it is executed. A. #!/bin/bash num1=5 num2=3 result=$((num1 + num2 * 2)) echo "Result: $result"	**10**	**CO3**

	B. #!/bin/bash a=5 b=3 c=$((a++ + b++)) echo $c **OR** Discuss the Linux shell scripting and programming concepts, including shell variables, operators, control flow, functions, and command substitution, and provide examples of complex shell scripts for automating system tasks.		
SECTION-C			
10	Design a shell script program to create a calculator menu card that allows users to perform basic arithmetic operations such as addition, subtraction, multiplication, and division. The program should use decision-making statements to display a menu of options for the user to select from, take user inputs for operands and operator, perform the selected operation, and display the result. If the user enters an invalid operator or operands, the program should display an error message and prompt the user to try again. The program should continue to display the menu and process user selections until the user chooses to exit. Provide a step-by-step explanation of how you would design and implement this calculator menu card program using decision-making statements in a shell script. **OR** Write a shell script program that simulates a simple file management system. The program should allow the user to create, delete, rename, and search for files within a specified directory. It should also have a feature to display the size and permissions of each file in the directory. The program should include error handling mechanisms, such as checking for file existence before performing operations, handling invalid inputs, and displaying appropriate error messages. Additionally, the program should provide a menu-based interface with options for each operation and allow the user to navigate through subdirectories. Provide a step-by-step explanation of how you would design and implement this file management system program using shell scripting, including decision-making statements, loops, and file manipulation commands.	**20**	**CO3**
11	Perform the following tasks using Linux commands: i. mkdir and rmdir ii. Create a directory named "documents" in your home directory.	**2*10 = 20**	**CO4**

	iii. Create a file named "file1.txt" inside the "documents" directory. iv. Append the text "Hello, World!" to the end of "file1.txt". v. Display the contents of "file1.txt" on the terminal. vi. Create a copy of "file1.txt" named "file2.txt" inside the "documents" directory. vii. Rename "file2.txt" to "file3.txt". viii. Move "file3.txt" to a new directory named "backup" inside the "documents" directory. ix. Change the permissions of "file1.txt" to read-only for the owner and group. x. Display the details (permissions, owner, group, size, and modification time) of all the files in the "documents" directory.		