Name: **Enrolment No:**	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2022

Course: Linux OS and Shell Programming **Semester: 2**
Program: BCA **Time : 03 hrs.**
Course Code: CSBC 1014 **Max. Marks: 100**

Instructions: Attempt all the questions.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	What is open source software? List three characteristics of open source software.	**4**	**CO4**
Q 2	Why is Linux filesystem referred to as hierarchical?	**4**	**CO4**
Q 3	Describe briefly the three system calls to create the process.	**4**	**CO2**
Q 4	Differentiate between line editor and screen editor.	**4**	**CO3**
Q 5	Why are the PIDs useful when you run the process in the background?	**4**	**CO2**

SECTION B
(4Qx10M= 40 Marks)

Q 1	While working in vim, with the cursor positioned on the first letter of a word, you give command **x** followed by **p**. Explain what happens. Moreover, explain how you can undo the changes.	**10**	**CO3**
Q 2	What is remote access? Describe at lease three communication utilities.	**10**	**CO1**
Q 3	Assume there is a file, named sample.txt, with six columns- Name, Age, Course, Address, Company, and Salary. Each column contains appropriate values. Let the file contains 1000 records.	**10**	**CO1**

	Write the **awk** commands to: (A) To print the entire file over the standard output device. (B) To create a copy of the existing file into a new file, sample_copy.txt using redirection operator. (C) To print the Name and Salary columns for the entries whose names start with 'A', 'S', 'V', or 'T'. (D) To store the records with Age > 65 into a separate file, 'VRS.txt'.		
Q 4	(A) Describe the use of ***gzip*** and ***gunzip*** along with the options- ***v*** and ***k*** through suitable examples. (B) Suppose we have a file with the name **Test.sh**. Describe the output of the following commands: (i) $ tar -cvf Test.sh New.tar (ii) $ tar -l New.tar **OR** Write short notes on the following: (i) Relative Pathnames vs. Absolute Pathnames (ii) chmod with symbolic arguments vs. chmod with numeric arguments	**10**	**CO2**
SECTION-C (2Qx20M=40 Marks)			
Q 1	Write a shell script that simulates the working of a calculator. It prompts the user all the basic arithmetic functionality such as addition, subtraction, multiplication, division, exponentiation, and module operation along with logical operations- AND, OR, NOT via the **case construct**. The required calculator program must be able to operate over decimal values too. Moreover, through the use of a **loop construct**, your program must ask the user whether he wants to continue or not before it	**20**	**CO1**

	terminates.		
Q 2	(A) Discuss the Linux filesystem structure in detail. (B) What would be the effect of the following commands: (a) grep '^[A - Z]' file1 (b) egrep 'LINUX|Linux|linux' file1 (c) grep 'Linux$' file1 (d) grep '^Linux$' file1 (e) grep ^…$ file1 **OR** Write short notes on the following: (A) Memory Management in Linux (B) Linux Command and its components (C) File Permissions (D) Process and Threads in Linux	**20**	**CO2**