1. Which command is used to list the contents of a directory? Justify with proper example. (CO1)
Ans. The command used to list the contents of a directory is **ls.**

```
priyanshu@priyanshu:~$ ls
 data.txt    Downloads  'Linux Website'   Pictures   Templates
 Desktop     error.log   Music            Public     Videos
 Documents   Linux       name             snap       Website
priyanshu@priyanshu:~$
```

2. Write the command to create a new directory named 123test_dir. (CO1)
Ans. The command to create a new directory named 123test_dir is **mkdir 123test_dir**

```
priyanshu@priyanshu:~$ mkdir 123test_dir
priyanshu@priyanshu:~$ ls
 123test_dir   Documents   Linux           name       snap        Website
 data.txt      Downloads  'Linux Website'  Pictures   Templates
 Desktop       error.log   Music           Public     Videos
priyanshu@priyanshu:~$
```

3. What is the purpose of the sed command? Justify with proper example. (CO1)
Ans. The sed command is used to manipulate text in files or input streams. It is used for substitution, deletion, insertion, and text extraction without opening the file.

```
priyanshu@priyanshu:~$ sed 's/Hi/Hello/' data.txt
Hello
priyanshu@priyanshu:~$
```

4. Which distinct command is used to display one-line descriptions of any commands? (CO1)
Ans. The command used to display one-line descriptions of any command is **whatis**

```
priyanshu@priyanshu:~$ whatis ls
ls (1)               - list directory contents
priyanshu@priyanshu:~$
```

5. Write the command to create an empty file named “notes.txt”. (CO1)
Ans. To create an empty file named “notes.txt” we can use the **touch** command.

```
priyanshu@priyanshu:~$ touch notes.txt
priyanshu@priyanshu:~$
```

6. Differentiate between grep and awk commands with an example. (CO2)
Ans.

grep	awk
It search for specific patterns or word in a file	It is used for pattern scanning and text processing
It works line by line to find matching text	It works field by field to analyze and process the data
It prints line that matches a pattern	It can print specific columns and perform computations
It is simple and faster for basic searching	It is more powerful for data manipulation

For grep-

```
priyanshu@priyanshu:~$ grep "Hi" data.txt
Hi
priyanshu@priyanshu:~$
```

For awk-

```
priyanshu@priyanshu:~$ awk '{print $1}' data.txt
Hi
priyanshu@priyanshu:~$
```

7. Write the command to give read, write, and execute permission to the owner of a file script.sh. (CO1)
Ans. The command to give read, write and execute permission to the owner of the file script.sh is **chmod u+rwx script.sh**

```
priyanshu@priyanshu:~$ chmod u+rwx script.sh
priyanshu@priyanshu:~$
```

8. How is chown different from chgrp? Give one example for each. (CO1)
Ans. By using the chown command we can change the owner of a file or directory but by using the chgrp command we can change the group ownership of the file or directory.
For chown

```
priyanshu@priyanshu:~$ sudo chown priyanshu file.txt
priyanshu@priyanshu:~$
```

For chgrp

```
priyanshu@priyanshu:~$ sudo chgrp team1 file.txt
priyanshu@priyanshu:~$
```

9. A user complains that they cannot execute a file even though it exists in their directory. How would you troubleshoot this using ls -l, chmod, and whoami? (CO3)

Ans. To troubleshoot using the ls -l, chmod and whoami command so that the user can execute the file, we can follow the below steps

1. We will check the permissions using the ls -l command

```
priyanshu@priyanshu:~$ ls -l data.txt
-rw-rw-r-- 1 priyanshu staff 3 Oct 12 16:21 data.txt
priyanshu@priyanshu:~$
```

2. Now we will give the execution permission using chmod command

```
priyanshu@priyanshu:~$ chmod u+x data.txt
priyanshu@priyanshu:~$
```

3. Now to check the current user, we can use the whoami command

```
priyanshu@priyanshu:~$ whoami
priyanshu
priyanshu@priyanshu:~$
```

10. Design a command pipeline to: find all .log files modified in the last 2 days in /var/log, display them on screen, and save the results into a file recent_logs.txt using tee command. (CO4)

Ans. The command pipeline to find all .log files mentioned in the last 2 days in /var/log, and to display them on screen and save the results into a file recent_logs.txt, we can use the following command

```
priyanshu@priyanshu:~$ sudo find /var/log -name "*.log" -mtime -2 | tee recent_logs.txt
[sudo] password for priyanshu:
/var/log/apport.log
/var/log/boot.log
/var/log/auth.log
/var/log/kern.log
/var/log/gpu-manager.log
priyanshu@priyanshu:~$
```