Student ID: _____ Student Name: _____

Instructions: Usage of unfair means (UFM), including Mobile and Internet, is not allowed in the exam.

No cheating. Any kind of cheating will get you a straight Fail grade in the course.

Answer the questions in the space provided. Q1-10 1 Marks each, Q11-45 2 Marks each.

1. Which one of the following is not a shell?

    (A) /bin/bash   (B) /bin/dash

    (C) /bin/rbash   (D) /bin/rdash   [   ]

2. On /bin/bash, what the command **!!** will do?

    (A) List history of commands   (B) Repeat the last command

    (C) Print the shell process ID   (D) Clear the history of commands   [   ]

3. The following command locates the binary, source, and manual page files for a command?

    (A) plocate   (B) whereis

    (C) which   (D) whatis   [   ]

4. What is the numeric value of permissions for this file?

    ```
    crw-rw-rw- 1 root root 1, 3 Feb 20 17:24 /dev/null
    ```

    (A) 666   (B) 766

    (C) 777   (D) 444   [   ]

5. A log file keeps on updating and growing. How can we view its content while it is still getting updated?

    (A) head file   (B) tail -f file

    (C) tail -z file   (D) cat -t file   [   ]

6. Which of the following is incorrect about cd?

    (A) cd takes to /home directory   (B) cd ~ takes to home directory

    (C) cd .. takes to parent directory   (D) cd - takes to previous directory   [   ]

7. How to get a list of all signals on the linux, name and number?

    (A) kill -l   (B) kill -a

    (C) kill -9 -a   (D) kill %1   [   ]

8. Which one of the below is an LTS release of Ubuntu?

    (A) 22.10   (B) 23.04

    (C) 23.10   (D) 24.04   [   ]

9. In the ls -lrt output `-rwsr-xr-x` what is **s** meant for?

    (A) symbolic link   (B) sticky bit

    (C) shared object   (D) shell script   [   ]

10. Execute last command in ubuntu terminal that began with com

    (A) runlast com   (B) !com

    (C) ^com   (D) :&com   [   ]

11. On Ubuntu, rps cannot recall if he set the root password. How do you confirm if no root password is set?

_____

_____

12. rps has a dual-booted system with Windows and Linux (Ubuntu). His system does not show the correct time as per the timezone set. He has booted into Ubuntu. What command should he use to synchronize the clock?

_____

13. cat command can be used to merge two files file1 and file2. Write the command.

_____

14. rps has a compressed file ~/Downloads/json.zip and he wants to its compressed size, uncompressed size, compression ratio, and name of uncomreppsed file. Help him with correct command.

_____

15. rps wants to view line number 1260 to 1265 in the file filename.txt Help him with correct command. Hint: He recalls something from head and tail.

_____

16. rps wants to share some files on the same network using an HTTP server. He has Python installed. Help him with correct command to start the server.

_____

17. Using read command, how can we show a prompt to Enter Name and read name in a variable sname?

        $ **READ_COMMAND_HERE**

        Enter Name: Roger Southwood

        $ echo $sname

        Roger Southwood

_____

18. Complete if statement in this bash script to match the output from echo.

        file1=$1

        file2=$2

        IF_STATEMENT_HERE

            echo "$file1" is newer than "$file2"

        fi

_____

19. How can standard output and standard error can be directed to file log.txt ?

_____

20. How to output command output of lsb_release -a to the terminal and a file called release.txt also?

_____

21. On /bin/bash terminal what is output of **$ yes**

_____

22. What is the the difference between these two ways of execution of bash script?

    $ bash -v script.sh $ bash -x script.sh

_____

_____

23. How will you count number of processors on the linux system using cpuinfo?

_____

24. How can we see the process memory layout of process ID 54321 using proc interface?

_____

25. What does the output of the command show? `ldd /bin/ls`

_____

26. How can we list out all the processes that belong to the logged in user?

_____

27. For local/current session in terminal how can we modify PATH variable to search home directory first for any executable?

_____

28. How can we find out Audio Device details on the Linux system? Hint: command starts with ls

_____

29. How will you grant read permission to the group users and other users?

_____

30. How can we find out multiple users that belong to a group called: adm

_____

31. Write down permissions in numeric representation from the partial output shown.

```
lrwxrwxr-x  _____    drwxr-xr-x  _____
-r--------  _____    -rw-r--r--  _____
```

32. Everything is file in linux. The output of ls -lrt, column 1 lists file type. Fill in the blanks:

Regular file: _____   Directory: _____

Symbolic links: _____   Character device: _____

33. A website url https://www.mysite.com/uploads/ shows all files uploaded by users and anyone can delete them using HTTP DELETE mysite.com/uploads/file URIs. What is the issue here with uploads directory and how to fix it?

_____

_____

34. How can we query all executables that have sticky bit set? Hint: find

_____

35. User has actually forgot the command. He recalls it starts with ip. Show him all commands that start with ip

_____

36. How can you ssh to a remote virtual machine using pem file without username and password?

_____

37. How will you schedule a bash script to sync attendance /home/rps/sync_attendance.sh every night at 11 pm, except Sunday?

_____

_____

38. Why system administrators prefer "su -" over a simple "su" command to substitute user?

_____

_____

39. Why and how a non-root user is able to execute a command owned by root?

_____

_____

40. Using nmap how first 2000 ports can be scanned for url iitjammu.ac.in? Write the same using nmap for verbose output and using 4 threads.

_____

_____

41. How can we trace path from root name servers to local or nearmost authoritative DNS server?

_____

_____

_____

42. How can we enumerate all subdomains belonging to a domain myexample.net ?

_____

_____

43. Suppose we register a new domain nuvo.ac.in to domain registrar (ERNET). What two resource records are added by domain registrar in top-level-domain nameserver ns1.registry.in? Support authoritative dns server is dns1.nuvo.ac.in having public IP 103.27.32.1.

_____

_____

_____

44. Write a bash script to sum natural numbers from 1 to 10.

45. Write a bash script to print the day of the week given a number. Sunday is 0, Monday to Friday are 1 to 6.

***