**Member ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Rank: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**



**Linux Operating System Fundamentals**

(350)

**REGIONAL 2024**

**CONCEPT KNOWLEDGE:**

Multiple Choice (50 @ 2 points each) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (100 points)

**Test Time: 60 minutes**

**GENERAL GUIDELINES:**

*Failure to adhere to any of the following rules will result in disqualification:*

1. Contestant must hand in this test booklet and all printouts if any. Failure to do so will result in disqualification.

2. No equipment, supplies, or materials other than those specified for this event are allowed in the testing area.  No previous BPA tests and/or sample tests (handwritten, photocopied, or keyed) are allowed in the testing area.

3. Electronic devices will be monitored according to ACT standards.

**Multiple Choice Questions**

*Directions:* Identify the letter of the choice that best completes the statement or answers the question.

1. Which command would you use to find the process ID (PID) of a running program in Linux?
2. ps -f
3. top
4. kill -9
5. pgrep
6. What does the acronym 'NAT' stand for in the context of networking?
7. Network Address Translation
8. Network Attached Technology
9. National Access Terminal
10. Network Application Tracker

3. In Linux, which file contains the system's hostname?

1. /etc/hostname
2. /etc/hosts
3. /etc/network
4. /etc/resolve.conf

4. Which command is used to list the contents of a directory in Linux, including hidden files?

* 1. ls -l
  2. dir
  3. ls -a
  4. ls -h

5. Which Linux command is used to display the last few lines of a text file?

* 1. tail
  2. head
  3. less
  4. more

6. In Linux, what is the purpose of the 'df' command?

* 1. Display free disk space
  2. Display file permissions
  3. Display system load average
  4. Display directory contents

7. What does the acronym 'FTP' stand for in the context of networking?

* 1. File Transfer Protocol
  2. Fast Transfer Protocol
  3. Folder Transmission Protocol
  4. File Transporter Program

8. Which command is used to add a user to a group in Linux?

1. useradd
2. usermod
3. groupadd
4. adduser

9. In Linux, what is the purpose of the 'tar' command?

1. Create a compressed archive
2. Display system hardware information
3. Extract files from an archive
4. List installed packages

10. Which command is used to display the size of a directory and its contents in Linux?

1. ls
2. size
3. du
4. df

11. In Linux, what is the purpose of the 'find' command?

1. Create new files
2. Display system uptime
3. Search for files and directories
4. List all installed packages

12. Which command is used to delete a user account in Linux?

1. userdel
2. deluser
3. rmuser
4. deleteuser

13. In Linux, what does the 'rm -r' command do?

1. Rename a file
2. Remove a directory and its contents recursively
3. Restore a deleted file
4. Remove a file

14. What is the primary purpose of the 'cron' system in Linux?

1. Manage user accounts
2. Schedule and automate tasks
3. Monitor system logs
4. Control network interfaces

15. In Linux, what is the primary function of the 'lsof' command?

1. List open files and processes
2. Display system load average
3. List system log files
4. Display file permissions

16. Which utility is used to check the integrity of file systems in Linux?

1. fsck
2. checkfs
3. diskchk
4. scanfs

17. What is the primary function of the 'fdisk' command in Linux?

1. List disk partitions
2. Display file permissions
3. Create and manage disk partitions
4. List system hardware information

18. In Linux, what is the purpose of the 'ip' command?

1. Display system logs
2. List installed packages
3. Manage network interfaces and routing
4. View file contents

19. Which command provides the information to check the available disk space on your Linux system?

1. df
2. du
3. ls
4. free

20. Which command is suitable to view the contents of a log file in real-time as new entries are added?

* 1. cat
  2. tail -f
  3. head -n 10
  4. less +F

21. In Linux, what is the purpose of the 'scp' command?

1. Securely copy files between hosts
2. Create a new directory
3. Display system logs
4. Change file ownership

22. In Linux, what does the 'scp' command do?

1. Create symbolic links
2. Securely copy files between hosts
3. Display system logs
4. Change file ownership

23. In Linux, what is the purpose of the 'rsync' command?

1. View remote file contents
2. Synchronize files and directories between systems
3. Display system logs
4. Create compressed archives

24. In Linux, what is the purpose of the 'route' command?

1. Display system logs
2. Add or delete static routes in the routing table
3. List installed packages
4. Change file permissions

25. In Linux, which file contains the system's DNS search domains?

1. /etc/resolve.conf
2. /etc/nsswitch.conf
3. /etc/hosts
4. /etc/network

26. In Linux, which command is used to display information about system memory usage and swap space?

1. meminfo
2. top
3. free
4. ps

27. What does the acronym 'LVM' stand for in the context of storage management in Linux?

1. Logical Volume Manager
2. Large Volume Memory
3. Linux Virtual Machine
4. Logical Filesystem Viewer

28. Which Linux command is used to create a compressed archive of a directory and its contents?

1. zip
2. tar
3. compress
4. gzip

29. Which directory is used to store system log files in Linux?

1. /var/log
2. /etc
3. /log
4. /var/syslog

30. Which Linux directory contains system-specific startup scripts and initialization files?

1. /sbin
2. /boot
3. /lib
4. /etc

31. Which command should you use to add a new user to a Linux system with administrative privileges?

1. sudo adduser newuser
2. useradd -g admin newuser
3. usermod -aG sudo newuser
4. passwd -a admin newuser

32. Which command should you use to find all files with the ".txt" extension in the current directory and its subdirectories?

1. find . -name "\*.txt"
2. grep -r "\*.txt"
3. locate "\*.txt"
4. ls -R | grep "\*.txt"

33. Which command should you use to see the current list of environment variables in your shell session?

1. env
2. echo $ENV
3. printenv
4. set

34. Which command should you use to view a log file and display the newest entries first?

* 1. tail -n 10 logfile.log
  2. more logfile.log
  3. cat logfile.log
  4. less -r logfile.log

35. Which command should you use to display the current user's home directory in the terminal?

1. echo $HOME
2. pwd
3. whoami
4. ls -l

36. Which command should you use to view the content of a log file and continuously monitor it for changes?

1. more logfile.log
2. cat logfile.log
3. tail -f logfile.log
4. grep "pattern" logfile.log

37. You suspect that a file has been modified recently. Which command can you use to view the last modification time of the file?

1. ls -l
2. stat filename
3. file filename
4. timedatectl

38. You need to change the ownership of a file in Linux to another user. Which command would you use?

1. chown
2. chmod
3. chgrp
4. ownfile

39. You need to list all files in a directory, including hidden files, using the terminal. Which command would you use?

1. ls -l
2. ls -a
3. ls -R
4. ls -h

40. You want to temporarily suspend a running process in the foreground. Which keyboard shortcut can you use to accomplish this?

1. Ctrl+C
2. Ctrl+Z
3. Ctrl+X
4. Ctrl+P

41. You suspect that a file may contain sensitive information. To view the contents of the file without displaying special characters (e.g., control characters), which command should you use?

1. cat
2. less
3. head
4. more

42. You want to list all active network connections on your Linux system, including the local and remote addresses. Which command should you use?

1. ifconfig
2. netstat -tuln
3. ip addr
4. route -n

43. You need to change the time zone of your Linux system. Which command can help you configure the system's time zone?

1. date
2. timedatectl
3. tzconfig
4. timez

44. You need to find out the current date and time in a specific timezone, such as "America/New\_York." Which command can provide this information?

1. date
2. timedatectl
3. tzdata
4. timezone America/New\_York

45. You need to list all running processes on a Linux system, including their parent process IDs (PPID). Which command should you use?

1. ps -ef
2. ps aux
3. ps -A
4. pstree

46. You want to make a compressed backup of a directory, preserving its permissions and ownership. Which tar command should you use?

1. tar -czvf backup.tar.gz directory
2. tar -cvjf backup.tar.bz2 directory
3. tar -cf backup.tar directory
4. tar -czvf backup.tar.gz -p directory

47. You are tasked with changing the hostname of a Linux server. Which file should you edit to make this change persist after a reboot?

1. /etc/hostname
2. /etc/hosts
3. /etc/network/interfaces
4. /etc/sysconfig/network

48. You want to check the integrity of a downloaded file using its associated checksum file. Which command should you use for this purpose?

* 1. md5sum -c file.md5
  2. sha256sum -c file.sha256
  3. verify file file.md5
  4. checksum file -s

49. You want to compress a directory and its contents into a tarball file. Which command will accomplish this?

1. gzip -r directory
2. zip -r directory.zip directory
3. tar -czvf archive.tar.gz directory
4. cp -r directory archive.tar.gz

50. You want to compress a file and create a self-extracting archive. Which command should you use?

1. zip -e archive.zip file.txt
2. tar -czvf archive.tar.gz file.txt
3. gzip -s archive.gz file.txt
4. 7z a -sfx archive.7z file.txt