



NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE

QUALIFICATION: BACHELOR OF COMPUTER SCIENCE	
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COURSE: LINUX SYSTEMS ADMINISTRATION	COURSE CODE: LSA721S
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DURATION: 3 HOURS	MARKS: 75

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	MR. SHOOPALA NAMBAHU
MODERATOR:	MS. JOVITA MATEUS

THIS QUESTION PAPER CONSISTS OF 3 PAGES

(Excluding this front page)

INSTRUCTIONS

1. Answer ALL the questions on the answer scripts.
2. Write clearly and neatly.
3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Calculator.

Section A: (Multiple choice)

[10 Marks]

Read each question carefully, and then select THE ANSWER that best fits the question

1. Which of the following statements is true about Linux?
 - a) It is a proprietary operating system
 - b) It is only used on servers
 - c) It is an open-source operating system
 - d) It does not support multitasking
2. Which command creates an empty file if file does not exist?
 - a) cat
 - b) touch
 - c) ed
 - d) read
3. The /etc/passwd file doesn't contain?
 - a) userid
 - b) home directory for a user
 - c) login shell name
 - d) none of the mentioned
4. Which option of rm command is used to remove a directory with all its subdirectories?
 - a) -b
 - b) -o
 - c) -p
 - d) -r
5. What is the significance of the Linux kernel?
 - a) It manages system resources and hardware communication
 - b) It provides a graphical user interface
 - c) It stores user data
 - d) It compiles software programs
6. Which command is used to update the package index in Debian-based systems?
 - a) apt-get update
 - b) yum update
 - c) pkg update
 - d) updatepkg
7. In Linux, what is the purpose of the 'root' user?
 - a) A standard user with limited permissions
 - b) The system administrator with full privileges
 - c) A guest user
 - d) A service account
8. Which command is used to change the ownership of a file in Linux?
 - a) chown
 - b) chmod
 - c) chgrp
 - d) mv
9. Which command can be used to display the last lines of a file?
 - a) tail
 - b) head
 - c) end
 - d) last
10. Which command can be used to monitor real-time system performance?
 - a) monitor
 - b) top
 - c) perf
 - d) stat

Section B: True or False**[10 Marks]**

Read each statement below carefully and state whether it is false or true.

1. The kernel is the program acting as chief of operations.
2. User mode is the privileged mode in which the operating system's kernel operates.
3. Only one unprivileged user may be logged into a Linux system at any given time.
4. Running the `fg` command will bring a background job to the foreground.
5. You can install one or more applications by appending their name behind `apt-get install`.
6. Nano is an environment in which we can run our commands.
7. You can view file and directory permissions by typing `ls -la`
8. `o=r`: Sets others' permissions to read-only.
9. The `-B` option tells the command to descend recursively through the directory tree.
10. There are three modes in which vi works.

Section C**[55 Marks]**

Answer all the questions in this section.

Section C1 – Command Application**(20 Marks)**

1. Write down the commands to perform the following:

- I. Securely copy a file named `report.txt` from your local machine to a remote host at `192.168.1.20` under the `/home/admin/` directory. [2]
- II. Extract the first and fourth columns from the `/etc/passwd` file using the `cut` command. [2]
- III. Remove `Project` directory and its subdirectories. [2]
- IV. Change the permission so that only the user (owner) has full access, while group and others have only read permissions to a file called `foo.txt`. [2]

2. Explain the following commands:

- I. `sudo ufw allow 22/tcp` [2]
- II. `cp chgrp developers file2` [2]
- III. `chmod go-w file.txt` [2]
- IV. `cp -R dir3 /opt/python/` [2]

3. What is the difference between `>` and `>>` ? [2]

Section C2 – Conceptual and Theoretical Understanding

(20 Marks)

4. Explain how Linux stores user passwords securely and name the files involved in this process. [4]
5. Name four responsibilities of the kernel. [4]
6. What is the difference between :q and :q! in vi text editor? [2]
7. Name three modes in which vi works. [3]
8. What is the difference between /etc/passwd and /etc/shadow? [2]
9. Explain what you understand by the Linux file system. [2]
10. What is the difference between Absolute and Relative Paths? [2]
11. Name any three basic features of Linux. [3]

Section C3 – System Configuration and File Management

(15 Marks)

12. You have an external drive /dev/sdb1 that should automatically mount to /mnt/data every time the system boots. Which file will you configure to achieve this? [2]
13. With the default umask of 023, what would be the default permissions for newly created files and directories? [4]
14. What is the meaning of the following cron entry? 30 2 * * 1 /home/user/backup.sh [2]
15. What is the difference between Superblock and Data block? [2]
16. What is the difference between userdel katrina and userdel -r katrina? [2]
17. What is the difference between chmod 777 dir2 and chmod -r 777 dir2? [2]
18. What types of files are stored in the /dev directory? [1]

Good Luck!!