



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

Faculty of Computing & Informatics

DEPARTMENT OF COMPUTER SCIENCES

QUALIFICATION : BACHELOR OF COMPUTER SCIENCE	
QUALIFICATION CODE: 07BCMS & 07BCCY	LEVEL: 7
COURSE: SYSTEMS ADMINISTRATION	COURSE CODE: SAD622S
DATE: DECEMBER 2025	PAPER: THEORY
DURATION: 2 HOURS	MARKS: 80

SECOND OPPORTUNITY / SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER(S)	MR. PETER GALLERT
MODERATOR:	MR. ISAAC NHAMU

THIS QUESTION PAPER CONSISTS OF 9 PAGES

(Excluding this front page)

Instructions for the candidate

1. Answer **ALL** questions.
2. When writing take the following into account: The style should inform than impress, it should be formal, in third person, paragraphs set out according to ideas or issues and the paragraphs flowing in a logical order.
3. Information should be brief and accurate.
4. Please ensure that your writing is **legible, neat and presentable**.



1. Briefly explain the subject terms below:
 - (a) File (2)
 - (b) Process (2)
 - (c) Kernel (2)
 - (d) Inode (2)
 - (e) Driver (2)

2. Give an **example** of the following concepts [1 mark each] and explain how the example *that you have given*, works. [2 marks each]
 - (a) Inter-process communication (3)
 - (b) Delegation of authority (3)
 - (c) File system (3)

3. A user who has operated a scanner on an MS Windows computer decides to change to the Linux operating system. Here, the scanner is not working, and an online help forum advises to download a Linux **driver** for the scanner. (3)

Briefly explain why the Windows driver cannot be re-used, even though it is the same scanner that is being used.

4. A **RAID 4** array of three disks is given (block striping, 2 data disks, 1 parity disk). Block 1 on data disk 1 starts with: (3)

00111010

Block 1 on the parity disk starts with

01010101

Data disk 2 has crashed and was replaced by an empty disk. How will the data on disk 2 be restored, and what are the first 8 bits in block 1 of disk 2? Explain briefly [1 mark] and show your calculations [2 marks].

5. Compare and contrast the POSIX "write" permission and the MS Windows "read-only" file attribute.

Assume that file A.txt on a Linux operating system has no "write" permissions set for anyone, and that file B.txt on an MS Windows operating system has the "read-only" attribute set.
 - (a) List one similarity that applies both to file A.txt and file B.txt. (1)
 - (b) What can be done to allow user Charlie to delete file A.txt? Be specific and mention all steps. One possibility is sufficient. (2)
 - (c) What can be done to allow user Charlie to delete file B.txt? Be specific and mention all steps. One possibility is sufficient. (2)



6. The Basic Input / Output System (BIOS):
- (a) Is it part of the computer's hardware, or part of the computer's software, or is it something else? (1)
 - (b) List two important tasks of the BIOS. (2)
7. The wifi login password at FNB is `fnbwifi123`.
- (a) Explain the **major weakness** of this password *in some detail*, analysing the password's three components. (4)
 - (b) Estimate how many *shannon* (that is, bits required to store) this password has. Show your calculations. (5)
8. List three components of the memory bus between CPU and RAM [1 mark each]. **For each** of the components you listed, give an example of data that would be carried there [1 mark each]. (6)
9. Below there are three different ways listed to end a hypervisor (VirtualBox / VMWare) Windows Server guest session:
- i. Give the shutdown command within MS Windows Server
 - ii. Close the Windows Server guest window, select "Power off"
 - iii. Close the Windows Server guest window, select "Save state"
- (a) Briefly describe an advantage that method i has over method ii. [2 marks] Also motivate why it is an advantage. [1 mark] (3)
 - (b) Briefly describe an advantage that method iii has over method i. [2 marks] Also motivate why it is an advantage. [1 mark] (3)
10. For each of the Linux commands (first line) and their respective output (subsequent lines) below, briefly explain why its execution results in an error [1 mark each]. Also state what the correct command would be [1 mark each].
- (a)

```
peter@lenovo:~$ ping www.nust.nam
ping: www.nust.nam: Name or service not known
```

 (2)
 - (b)

```
peter@lenovo:~$ chmod 555 /etc/passwd
chmod: changing permissions of '/etc/passwd': Operation not permitted
```

 (2)



11. Consider the following interaction between user and Linux command line:

```
peter@lenovo:~$ grep donald /etc/passwd
peter@lenovo:~$
```

Note that, while the command does not give any output, a new command prompt appears.

- (a) Is this an error? How can you tell? (2)
- (b) Why is there no output? (3)

12. Consider the following interaction between user and Linux command line:

```
peter@lenovo:~$ nslookup
>
```

Note that the command line prompt changes in the second line.

- (a) Is this an error? How can you tell? (2)
- (b) Why is there no output? (2)
- (c) How will the user get their normal command prompt back? (1)

13. On a Linux system a user issues the command `ls -l /home/alice/test/` and gets the following output:

```
alice@lenovo:~$ ls -l /home/alice/test/
-rwxr-xr-- 25 alice common 0 Sep 20 12:56 test2
alice@lenovo:~$
```

Explain this output:

- (a) What do the leftmost 10 characters (bolded) mean?—Explain all 10 characters (6)
-rwxr-xr-- 25 alice common 0 Sep 20 12:56 test2
- (b) What does "alice" (bolded) mean? (1)
alice common 0 Sep 20 12:56 test2
- (c) What does "test2" (bolded) mean? (1)
test2
- (d) What does the listed date and time (bolded) mean? (1)
0 Sep 20 12:56 test2
- (e) What happens if a user of group "common" executes this file? Motivate your answer briefly, and note the "0" in the `ls -l` output (bolded). (2)
0 Sep 20 12:56 test2
- (f) How many files are in the directory `/home/alice/test/`? (1)

End of question paper