NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

## FACULTY OF COMPUTING AND INFORMATICS

DEPARTMENT OF SOFTWARE ENGINEERING

| | |
|---|---|
| **QUALIFICATION**: BACHELOR OF COMPUTER SCIENCE HONOURS (SOFTWARE DEVELOPMENT) | |
| **QUALIFICATION CODE**: 08BCHS | **LEVEL**: 8 |
| **COURSE**: PROGRAMMING FOR SECURITY PERSONNEL | **COURSE CODE**: PRS821S |
| **DATE**: JANUARY 2024 | **PAPER**: THEORY |
| **DURATION**: 2 HOURS | **MARKS**: 100 |

| **SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER** | |
|---|---|
| **EXAMINER** | **DR AMBROSE AZETA** |
| **MODERATOR:** | **MR OMOBAYO AYOKUNLE ESAN** |

| **INSTRUCTIONS** |
|---|
| 1. Answer ALL the questions.<br>2. Read all the questions carefully before answering.<br>3. Number the answers clearly. |

**THIS QUESTION PAPER CONSISTS OF 4 PAGES**
(Including this front page)

## SECTION A: TRUE OR FALSE

This section consist of 20 questions. Answer all the questions
Each correct answer is allocated 2 Marks
**Write True or False for Questions 1 to 20.**

1. Attachments should always be treated with caution, even if you know the sender. **[2 Marks]**
2. Using two-factor authentication is not an effective tool for securing your account. **[2 Marks]**
3. I have anti-virus protection, so when it comes to network security, I'm all set. **[2 Marks]**
4. Cybersecurity is IT's responsibility. The everyday end-users in the office don't need to worry about this topic. **[2 Marks]**
5. Software and application updates are not important and can just be ignored. **[2 Marks]**
6. Hackers usually used the computer virus to send good will messages to users. **[2 Marks]**
7. Security incidents are NOT a potential threat to the integrity of personally identifiable information. **[2Marks]**
8. A software program or a hardware device that filters all data packets coming through the internet, a network, etc, is known as Cookies. **[2 Marks]**
9. Security is an individual's right to control the use or disclosure of personal information. **[2 Marks]**
10. Users are advised to use their first name as password. **[2 Marks]**
11. A ransomware attacks may be similar to kidnapers kidnap data for money. **[2 Marks]**
12. Insider attacks involve someone outside the organization carrying out an attack. **[2 Marks]**
13. Security refers to the mechanisms in place to protect the confidentiality and privacy of personal information. **[2 Marks]**
14. Passive attacks and Active attacks are types of attacks. **[2 Marks]**
15. Security is the protection of information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction in order to provide confidentiality, integrity, and availability. **[2 Marks]**
16. Additional functionalities to cater for the short comings of IPV4, includes, security, authentication and integrity. **[2 Marks]**
17. The class of IP Address: 78.125.15.100 is A **[2 Marks]**
18. Adding malicious codes to a database query to gain unauthorized access to a web application's database is known as SQL injection. **[2 Marks]**
19. Command injection is a database injection technique that exploits a security flaw. **[2 Marks]**
20. Security incidents are NOT a potential threat to the integrity of personally identifiable information. **[2 Marks]**

## SECTION B: NETWORK PACKETS AND IP ADDRESS

Describe the following send commands:

21. send(IP(dst='127.0.0.1'), return_packets=True) **[2 Marks]**
22. send(IP(src='128.99.4.123', dst='127.110.120.100')) **[2 Marks]**
23. send(IP(ttl=64, src='128.99.4.123', dst='127.110.120.100')) **[2 Marks]**

Briefly explain the following with example(s):

24. IPv6 Compressed **[2 Marks]**
25. IPv6 Uncompressed **[2 Marks]**
25. IPv6 Fully Uncompressed **[2 Marks]**

## SECTION C: CODE SNIPPET

This section consists of 3 questions. Answer **ALL** the questions
Each correct answer is allocated 8 Marks

**Question One** **[8 Marks]**

Find the Class, netids and hostids for the following IP addresses:

130. 90. 80. 108
200.10.117.106
80.125.15.100

**Question Two** **[8 Marks]**

If a user continues to enter a wrong password in the Python code segment below, how many times will the print statement print.

```
attempts = 1
while attempts < 7:
  username = input('Enter your username: ')
  password = input('Enter your password: ')
  if username == 'admin' and password == 'admin123':
    print('You have successfully logged in.')
    break
  else:
    print('Incorrect credentials. Check if you have Caps lock on and try again.')
    attempts += 1
    continue
```

**Question Three** **[8 Marks]**

**(A)** Write a Python program segment to display the username of the current user that is log into the system, it must check who you are **(4 Marks)**

**(B)** Explain Phishing with examples, and highlight how to avoid fishing attacks.**(4 Marks)**

## SECTION D: CODES/THEORY

Answer **all** questions
Each correct answer is allocated 8 Marks

**Question One** **[8 Marks]**

Write short note on the following:
-Password attack and how to avoid it.
-Command Injection attack

**Question Two** **[8 Marks]**

Write a Python program that will be take a password as a combination of alphanumeric characters along with special characters, and check whether the password is valid or not with the help of a few conditions.

The primary conditions for password validation are as follows:

a. Minimum 8 characters.
b. The alphabet must be between [a-z]
c. At least one alphabet should be of Upper Case [A-Z]
d. At least 1 number or digit between [0-9].
e. At least 1 character from [ _ or @ or $ ].

**Sample output1**
Input : R@m@_f0rtu9e$
Output : Valid Password

**Sample output2**
Input : Rama_fortune$
Output : Invalid Password
Explanation: Number is missing

**Sample output3**
Input : Rama#fortu9e
Output : Invalid Password
Explanation: Must consist from _ or @ or $

**Question Three** **[8 Marks]**

Briefly discuss the following types of network topology – Ring, Mesh and Hybrid.

**THE END**