ΠΑΜΙΒΙΑ UΠIVERSITY
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	
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INSTRUCTIONS
1. Answer ALL the questions.
2. Read all the questions carefully before answering.
3. Number the answers clearly.

THIS QUESTION PAPER CONSISTS OF 5 PAGES
(Including this front page)

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SECTION A: TRUE OR FALSE

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

1. TCP/IP stands for Transmission Control Protocol/ internet prototype.   **[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 abou
   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. **[2 Marks]**
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: 099.125.15.100   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(ttl=64, src='128.99.4.123', dst='127.110.120.100'))   **[2 Marks]**

Briefly explain the following with example(s):

22.   IPv6 Compressed   **[2 Marks]**
23.   IPv6 Uncompressed   **[2 Marks]**
24.   IPv6 Fully Uncompressed   **[2 Marks]**
25.   send(IP(dst='127.0.0.1'), return_packets=True)   **[2 Marks**
26.   send(IP(src='128.99.4.123', dst='127.110.120.100'))   **[2 Marks]**

SECTION C: CODE SNIPPET AND EXPLANATIONS

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

Question One   **[8 Marks]**

(A) If a user continues to enter a wrong password in the Python code segment below,
how many times will the print statement print.   **(4 Marks)**

```
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
```

(B)   Find the Class, netids and hostids for the following IP addresses: **(4 Marks)**
            130. 90. 80. 108
            200.10.117.106
            80.125.15.100

Question Two [8 Marks]

The Python program below get input data from the keyboard and compare with username and password within the program. Modify the program to compare username and password from a dataset named: Password-Id.csv

```python
attempts=0
remains=5
print('PASSWORD ENTERING MENU FOR ABC BANK, MAXIMUM ATTEMPT IS 5')
while attempts < 5:
    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 username and/or password, you may retry again')
        remains -= 1
        print('Number of Attempts left:', remains)
        attempts += 1
        if attempts == 5:
            print('Account locked')
            break
        continue
```

Question Three [8 Marks]

(A) (i) 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 **(2 Marks)**

(ii) What are Cyberattacks? Name the most common ones? **(2 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 checking 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.

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