



PAMIBIA 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
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DURATION: 2 HOURS	MARKS: 100

SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER	PROF AMBROSE AZETA
MODERATOR:	DR OMOBAYO ESAN

INSTRUCTIONS
<ol style="list-style-type: none">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)

SECTION A: TRUE OR FALSE, AND MULTIPLE-CHOICE QUESTIONS

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 12, and select a, b, c or d for Questions 13 to 20

1. Insider attacks involve someone outside the organization carrying out an attack. [2 Marks]
2. Security refers to the mechanisms in place to protect the confidentiality and privacy of personal information. [2 Marks]
3. 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]
4. Additional functionalities to cater for the shortcomings of IPv4, includes, security, authentication and integrity. [2 Marks]
5. Adding malicious codes to a database query to gain unauthorized access to a web application's database is known as MySQL injection. [2 Marks]
6. Command injection is a database injection technique that exploits a security flaw. [2 Marks]
7. Security incidents are not a potential threat to the integrity of personally identifiable information. [2 Marks]
8. Using two-factor authentication is not an effective tool for securing your account. [2 Marks]
9. Cybersecurity is IT's responsibility. The everyday end-users in the office don't need to worry about this topic. [2 Marks]
10. Software and application updates are not important and can just be ignored. [2 Marks]
11. 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]
12. Security is an individual's right to control the use or disclosure of personal information. [2 Marks]
13. Which of the following is defined as an attempt to harm, damage or cause threat to a system or network? [2 Marks]
 - a. Digital crime
 - b. Threats
 - c. System hijacking
 - d. Cyber Attack
14. Ransomware attacks may be described as, [2 Marks]
 - a. Attackers kidnaping people for money
 - b. Attackers kidnaping data for money
 - c. Attackers kidnaping animals for money
 - d. Attackers kidnaping cell phones for money
15. Which one of the following is a type of antivirus program? [2 Marks]
 - a. Facebook
 - b. Notepad
 - c. RoofofAfrica
 - d. McAfee
16. To protect the computer system against hackers and different kind of viruses, one must always keep _____ on in the computer system: a. Sapol b. Music Player c. Firewall d. Java IDE [2 Marks]
17. A software program or hardware device that filters all data packets coming through the internet, a network, etc, is known as: a. Virus b. Firewall c. Cookies d. Malware [2 Marks]
18. Which of the following do cyber attackers commonly target for fetching IP address of a target or victim user? a) ip tracker b) emails c) websites d) web pages [2 Marks]
19. Hackers usually use the computer virus for the following purpose, except one [2 Marks]
 - a. To log, monitor each and every user's actions
 - b. To gain access to sensitive information like user's Id and Passwords
 - c. To corrupt the user's data stored in the computer system
 - d. To send birthday messages to users

20. Insider attacks involve one of the following [2 Marks]
- a. Someone within the organization carrying out an attack
 - b. Someone outside the organization carrying out an attack
 - c. Intentional malicious outsiders eavesdrop, steal data or erase it
 - d. Unauthorized access to digital assets without seeking permission by external person

SECTION B: 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

```
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 Phishing attacks. (4 Marks)

SECTION C: NETWORK PACKETS AND IP ADDRESS

Describe the following send commands:

C1. send(IP(ttl=64, src='128.99.4.123', dst='127.110.120.100')) (2 Marks)

Briefly explain the following with example(s):

- C2. IPv6 Compressed (2 Marks)
- C3. IPv6 Uncompressed (2 Marks)
- C4. IPv6 Fully Uncompressed (2 Marks)
- C5. send(IP(dst='127.0.0.1'), return_packets=True) (2 Marks)
- C6. send(IP(src='128.99.4.123', dst='127.110.120.100')) (2 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. (4 Marks)
- Command Injection attack (4 Marks)

Question Two

[8 Marks]

Assume there is a Python program named **pwchecker.py** that accepts a password from the keyboard as a combination of alphanumeric characters along with special characters, and checking whether the password is valid or not, a password validation is to be carried out as follows. Write the Python program **pwchecker.py**

- a. At least one alphabet should be of Lower Case [a-z]
- b. At least one alphabet should be of Upper Case [A-Z]
- c. Minimum 6 characters.
- d. At least 1 number or digit between [0-9].
- e. At least 1 character from [_ or @ or \$].

Sample output1

Input : Cput_fortune\$

Output : Invalid Password

Explanation: Number is missing

Sample output2

Input : C@m@_f0rtu9e\$

Output : Valid Password

Sample output3

Input : Cput#fortu9e

Output : Invalid Password

Explanation: Must consist from _ or @ or \$

Question Three

[8 Marks]

Briefly discuss the following types of network attacks – Phishing, Man-in-the-Middle Attack, DoS (Denial of Service), and Social Engineering.

————— THE END —————