

**M.Sc. IV Semester Examination, 2021**

## INFORMATION TECHNOLOGY

**Paper I**

(Cyber Security)

Time : 3 Hours ]

[Maximum Marks : 100

**Note :** All questions are compulsory. Question Paper comprises of 3 sections. **Section A** is objective type/multiple choice questions with no internal choice. **Section B** is short answer type with internal choice. **Section C** is long answer type with internal choice.

**SECTION 'A'****(Objective Type Questions)**

Choose the correct answer :

**1 × 10 = 10**

1. According to the CIA Triad, which of the below mentioned element is not considered in the triad ?

- (a) Confidentiality      (b) Integrity  
(c) Authenticity      (d) Availability

2. When integrity is lacking in a security system,..... occurs.

- (a) Data tampering      (b) Data deletion  
(c) Database backing      (d) Data leakage

3. Which of the following is not physical layer vulnerability ?

- (a) Physical theft of data and hardware  
(b) Physical damage or destruction of data and hardware  
(c) Keystroke and Other Input Logging  
(d) Unauthorized network access

4. When plain text is converted to unreadable format, it is termed as .....

- (a) cipher-text      (b) raw text  
(c) rotten text      (d) ciphen text

5. Cryptographic algorithms are based on mathematical algorithms where these algorithms use.....for a secure transformation of data.

- (a) secret key      (b) external programs  
(c) add-ons      (d) secondary key

6. Data Encryption Standard is an example of a ..... cryptosystem.

- (a) Public key      (b) Conventional  
(c) hash key      (d) asymmetric key

[ 3 ]

7. Firewall examines each .....that are entering or leaving the internal network.

- (a) emails users            (b) updates  
(c) connections            (d) data packets

8. In the .....layer of OSI model, packet filtering firewalls are implemented.

- (a) Application layer    (b) Session layer  
(c) Presentation layer    (d) Network layer

9. ....Cryptography deals with traditional character, *i.e.*, letters and digits directly.

- (a) Modern                      (b) Classic  
(c) Asymmertric            (d) Latest

10. Sniffing is also known as .....

- (a) network tapping    (b) wire-lapping  
(c) net-tapping            (d) wireless tapping

**SECTION 'B'**

**6 × 5 = 30**

**(Short Answer Type Questions)**

**Note :** Answer the following questions in 250 words.

**Unit I**

1. Why need cyber security ? Explain it by taking real time example.

**G-4/425/21**

**P.T.O.**

[ 4 ]

Or

Discuss the model for network security with suitable diagram.

**Unit II**

2. Briefly discuss about security of Hash function.

Or

Elaborate applications of Public Key Cryptosystem.

**Unit III**

3. Explain in detail about document and finger printing in cyber security.

Or

Discuss the term HMAC and CMAC in context of cyber security.

**Unit IV**

4. What is a honeypot ? How it protects against cyber attacks ?

Or

Write short note on nature of viruses.

**Unit V**

5. Discuss the various types of security policies.

**G-4/425/21**

[ 5 ]

Or

Write short note on Firewall Basing.

**SECTION 'C'**

**12 × 4 = 48**

**(Long Answer Type Questions)**

**Note :** Answer the following questions in 500 words.

**Unit I**

1. What are random and Pseudo-random numbers ? How they are being used ? Explain with example.

Or

Explain Symmetric block mode of operation ECB, CBC and CTR.

**Unit II**

2. What do you mean by authentication ? Explain with real life example of token based authentication in detail.

Or

What are Denial-of-Service attacks ? Discuss distributed Denial-of-Service attacks. How can one do defenses against Denial-of-Service attacks and how to respond to Denial of Service attack ?

[ 6 ]

**Unit III**

3. What is digital signature ? Write the properties of digital signature and also list out the attacks related to digital signature.

Or

Briefly discuss about birthday problems and summary of solutions in message integrity.

**Unit IV**

4. How can be Intrusion Detection system is the backbone of information system ? Justify along with its categories.

Or

Briefly discuss about worms and its propagation model.

**Unit V**

5. Explain in detail about Firewall processing modes and its architecture.

Or

What tools are available on Kali Linux ? Discuss its Penetration Testing Tools in detail.

★ ★ ★ ★ ★ C ★ ★ ★ ★ ★