



BCA/NIS : 602

2024

(6th Semester)

BACHELOR OF COMPUTER APPLICATION

Paper No. : NIS-602

(Network and Information Security)

Full Marks : 70

Pass Marks : 45%

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 45)

*The figures in the margin indicate full marks
for the questions*

- 1. Discuss about malicious softwares and its types.**

9

Or

Describe single-sign on and Kerberos authentication mechanism.

9

- 2. Enumerate the operation environment of a substitution cipher and a transposition cipher.**

9

Or

Explain the roles of digital signatures, digital certificates in ensuring the security of digital communication.

9

3. Write detailed notes on :

3+3+3=9

(a) Switches

(b) Routers

(c) Firewalls

Or

Discuss the various types of network attacks and its impact on network security.

9

4. Explain how the PGP and S/MIME provide end-to-end encryption and authentication for e-mail messages.

9

Or

Describe the measures to mitigate E-mail risks.

9

5. Explain different types of firewall.

9

Or

Compare the configuration of screened host firewall systems and screened subnet firewall systems.

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(6th Semester)

BACHELOR OF COMPUTER APPLICATION

Paper No. : NIS-602

(Network and Information Security)

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

- I. Choose the most appropriate answer from the given options by putting a Tick (✓) mark in the brackets provided : 1×10=10

1. _____ authentication method uses unique physical characteristics for user identification.

- (a) Single-sign on ()
- (b) Kerberos ()
- (c) Biometric ()
- (d) Token-based authentication ()

2. Malicious software which replicates itself and spreads to other computer without any user intervention is
- (a) Virus ()
 - (b) Trojan horse ()
 - (c) Worm ()
 - (d) Spyware ()
3. Cryptanalysis refers to
- (a) the process of encrypting data ()
 - (b) the process of decrypting data ()
 - (c) the process of breaking encryption codes ()
 - (d) the process of generating encrypting keys ()
4. _____ is the purpose of a digital signature in cryptography.
- (a) To encrypt data ()
 - (b) To decrypt data ()
 - (c) To authenticate the sender of a message ()
 - (d) To generate symmetric keys ()

5. The network device which is used to filter and control the flow of traffic between different network segments based on predetermined security rules is
- (a) switch ()
 - (b) router ()
 - (c) firewall ()
 - (d) VPN concentrator ()
6. _____ is network attack which involves overwhelming a system by sending more data than it can handle causing it to crash or unresponsive.
- (a) Buffer overflow ()
 - (b) Top session hijacking ()
 - (c) Sequence guessing ()
 - (d) Network scanning ()
7. The main purpose of cookies in web browsing is
- (a) to store user passwords ()
 - (b) to track user browsing activity ()
 - (c) to block advertisements ()
 - (d) to encrypt web traffic ()

8. _____ technology is used to secure email messages by providing encryption and authentication.
- (a) HTTP ()
 - (b) SSL ()
 - (c) Java ()
 - (d) Cookies ()
9. The main principles behind firewall design are
- (a) flexibility and scalability ()
 - (b) security and access control ()
 - (c) redundancy and fault tolerance ()
 - (d) speed and performance ()
10. _____ is the purpose of a bastion host in firewall architecture.
- (a) To act as a proxy server for internal clients ()
 - (b) To provide an additional layer of defense against attacks ()
 - (c) To store and manage firewall configuration settings ()
 - (d) To serve as a dedicated server for specific network services ()

II. State whether the following statements are *True (T)* or *False (F)* by putting a Tick (✓) mark against the appropriate answer in the brackets provided : $1 \times 5 = 5$

1. Kerberos is a biometric authentication method.

True () *False* ()

2. RSA is an example of asymmetric encryption algorithm.

True () *False* ()

3. Network scanning is a defensive technique used to detect and prevent network attacks in real-time.

True () *False* ()

4. Active X is a deprecated technology developed by Microsoft for creating interactive content on web pages.

True () *False* ()

5. Circuit-level gateways inspect both header and payload information of network packets to ensure security.

True () *False* ()

III. Answer any *five* of the following :

2×5=10

1. Differentiate threats and vulnerability in the context of information security.

2. What is confidentiality? Provide an example.

3. Define Hash function.

4. Give the purpose of subnetting in network design.

5. What is the primary function of a load balancer in a network architecture?

6. What is the role of SMTP in e-mail communication?

7. Write down the functions of an application level gateway or proxy firewall.

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