

Roll No.

Total Pages : 3

325205

May-2026

B.Sc. (Life Science) - II SEMESTER

Information Security (LSU-112-V)

Time: 3 Hours]

[Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) Define Information Security and explain its importance in modern computing environments. (1.5)
- (b) Differentiate between block cipher and stream cipher. (1.5)
- (c) What are network security threats? Give one example. (1.5)
- (d) Define a firewall and state its primary purpose. (1.5)

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(e) What is Kerberos and what role does it play in security? (1.5)

(f) Define substitution cipher with an example. (1.5)

(g) What are the primary security goals (CIA triad) in information security? (1.5)

(h) Differentiate between threat, vulnerability, and attack. (1.5)

(i) Why is the one-time pad considered theoretically unbreakable? (1.5)

(j) What is an Intrusion Detection System (IDS)? (1.5)

PART-B

2. (a) Explain the security services and mechanisms used to protect information systems. (10)

(b) Describe different types of security attacks with suitable examples. (5)

3. (a) Discuss the design and types of firewalls used in network security. (5)

(b) Explain the concept of Infosphere and its relevance in digital information management. (10)

4. (a) Discuss the importance of key management in cryptographic systems. (5)

(b) Explain the concept and properties of a secure hash function. (10)

5. (a) Explain the DES (Data Encryption Standard) algorithm with its working principle. (5)

(b) Explain the role of digital signatures in authentication. (10)

6. (a) Discuss the working of PGP (Pretty Good Privacy) for email security. (10)

(b) Explain how S/MIME provides secure email communication. (5)

7. Write short note on :

(a) RSA.

(b) Personal Firewall.

(c) Vulnerability Assessment. (15)