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| Hours / Week | : | 4 | |  | Sessional Marks | : | 40 |
| Credits | : | 4 | |  | End Examination Marks | : | 60 |

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| **UNIT - I** |
| **Introduction**: Attacks, Services and Mechanisms, Security attacks, Security services, A Model for Internetwork Security. Classical Techniques.  **Conventional Encryption**: Conventional Encryption model, steganography, Classical Encryption Techniques, Placement of Encryption function.  **Modern Techniques**: Simplified DES, Block Cipher Principles, Data Encryption Standard, Strength of DES, triple DES, Block Cipher Design Principles and Modes of operations. |
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| **UNIT – II** |
| **Public Key Cryptography**: Key distribution, Random Number Generation. Traffic confidentiality, RSA Algorithm, Principles, Key Management, Diffie-Hellman Key exchange, Elliptic Curve Cryptography. |
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| **UNIT – III** |
| **Number theory**: Prime and Relatively prime numbers, Modular arithmetic, Fermat’s and Euler’s theorems, Testing for primality, Euclid’s Algorithm, the Chinese remainder theorem, Discrete logarithms.  **Message authentication and Hash functions**: Authentication requirements and functions, Message Authentication, Hash functions, Security of Hash functions and MACs. |
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| **UNIT – IV** |
| **Hash and Mac Algorithms**: MD File, Message Digest Algorithm, Secure Hash Algorithm, H MAC.  **Digital signatures and Authentication protocols**: Digital signatures, Authentication Protocols, Digital signature standards. Authentication Applications: Kerberos, X.509 directory Authentication service. |
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| **UNIT - V** |
| **IP Security**: Overview, Architecture, Authentication, Encapsulating Security Payload, Combining security Associations, Key Management.  **Web Security**: Web Security requirements, Secure sockets layer and Transport layer security, Secure Electronic Transaction. Intruders, Viruses and Related threats. Fire wall Design Principles, Trusted systems. |
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| TEXT BOOKS |
| 1. Cryptography and Network Security: Principles and Practice-William Stallings, Pearson Education. 2. Network Security Essentials (Applications and Standards) by William Stallings, Pearson Education. |
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| REFERENCE BOOKS |
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1. Fundamentals of Network Security, by Ericmaiwald
2. Principles of Information Security by Whitman, Thomson.
3. Network Security - The Complete Reference by Robert Bragg.