

	Applications • Online banking • Secure email • Digital signatures		
Q.2	Solve Any one of the following.		
A)	Explain Kerberos authentication system with diagram Marks: 12 Marking Scheme Definition: 2 Components: 3 Working: 5 Diagram: 2 Definition: Kerberos is a secure authentication protocol. Components • Client • Authentication Server (AS) • Ticket Granting Server (TGS) • Service Server Working 1. User login request 2. AS verifies 3. TGS issues ticket 4. Client sends ticket 5. Access granted Diagram Client → AS → TGS → Service Server → Access Granted Advantages • Mutual authentication • Prevents replay attacks	K3/CO2	12
B)	Explain key management and distribution methods in detail Marks: 12 Marking Scheme Definition: 2 Need: 2 Methods: 6 Applications: 2 Definition: Key management is the process of handling cryptographic keys securely. Methods 1. Manual Distribution 2. Trusted Third Party 3. Public Key Distribution 4. Certificate-based Distribution Importance • Secure communication • Prevents key compromise	K3/CO2	12
Q. 3	Solve Any one of the following.		
A)	Describe IEEE 802.1X port-based access control Marks: 12 Marking Scheme Definition: 2 Components: 4 Working: 4 Advantages: 2 Definition: IEEE 802.1X controls network access. Components • Supplicant • Authenticator • Authentication Server Working 1. User requests access 2. Authentication initiated	K2/CO3	12

	3. Credentials verified 4. Access granted Advantages - Prevents unauthorized access - Improves network security		
B)	Explain IPSec with its architecture Marks: 12 Marking Scheme Definition: 2 Components: 4 Architecture: 4 Applications: 2 Definition: IPSec secures IP communication. Components - AH - ESP - Security Association - Key Management Architecture Diagram Application Data → IPSec Layer → [AH / ESP] → IP Packet Modes - Transport Mode - Tunnel Mode Applications - VPN - Secure communication	K3/CO3	12
Q.4	Solve Any one of the following.		
A)	Describe the working of PGP Marks: 12 Marking Scheme Definition: 2 Steps: 6 Advantages: 2 Applications: 2 Definition: Pretty Good Privacy secures email communication. Working - Message creation - Hash generation - Digital signature - Compression - Encryption - Transmission Advantages - Confidentiality - Authentication Applications - Secure email - File protection	K3/CO4	12
B)	Explain Domain Keys Identified Mail (DKIM) Marks: 12 Marking Scheme Definition: 2 Working: 5 Advantages: 3 Applications: 2 Definition: DKIM verifies sender authenticity. Working - Sender signs email - Signature attached - Receiver checks DNS - Verification performed Advantages	K2/CO4	12

	- Prevents spoofing - Reduces phishing Applications - Email validation - Spam filtering		
Q. 5	Solve Any one of the following.		
A)	What is password management? Explain techniques Marks: 12 Marking Scheme Definition: 2 Importance: 2 Techniques: 6 Advantages: 2 Definition: Password management is secure handling of passwords. Techniques - Strong passwords - Password hashing - Multi-factor authentication - Password manager - Regular updates - Avoid reuse Importance Improves overall security.	K3/CO5	12
B)	Explain firewall characteristics and types Marks: 12 Marking Scheme Definition: 2 Characteristics: 4 Types: 4 Applications: 2 Definition: A firewall monitors and controls network traffic. Characteristics - Access control - Logging - Monitoring - Filtering Types - Packet Filtering Firewall - Stateful Firewall - Proxy Firewall - Next Generation Firewall Applications - Enterprise security - Internet protection	K3/CO5	12
	*** End ***		