

SPECIAL EDITION FOR CSEDU STUDENTS

TOUCH-N-PASS EXAM CRAM GUIDE SERIES

CRYPTOGRAPHY

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CHAPTER 1

INTRODUCTION

1.1	What is replay attack? Give some examples of replay attack? [2008. Marks: 1 + 1]
1.2	List and describe categories of Security Services. [2007. Marks: 5]
1.3	Distinguish between active and passive security attacks and name possible active and passive security attacks. [In-course 06-07. Marks: 3] ALSO, List the categories of active security attack and passive security attack and explain any one active and any one passive security attack. [In-course 08-09. Marks: 2 + 3]
1.4	Illustrate and briefly explain any one of the following: [In-course 06-07. Marks: 2] i. Model for network security ii. Network access security model
1.5	Illustrate and explain the functions of each component of network security mode. [In-course 08-09. Marks: 2 + 3]

CHAPTER 2

CLASSICAL ENCRYPTION TECHNIQUES

2.1	Explain Symmetric-Key cryptography model with its ingredients/elements. [2007. Marks: 4]
2.2	Briefly explain cryptanalysis and brute-force attack. [2007. Marks: 4]
2.3	What are substitution cipher and transposition cipher? Give example. [2007. Marks: 2] ALSO, List as many substitution ciphers and as many transposition ciphers as you can and briefly explain any one from each type. [In-course 08-09. Marks: 1 + 4]
2.4	Distinguish between stream cipher and block cipher and explain n-bit-n-bit block cipher. [In-course 08-09. Marks: 2 + 3]
2.5	List and briefly define the types of cryptanalytic attacks based on what is known to the attacker. [In-course 08-09. Marks: 5]

CHAPTER 19

MALICIOUS SOFTWARE

19.1	Explain the principle of operation of a compression virus, and illustrate its operation by the execution of a virus affected program. [2006. Marks: 2 + 3]
19.2	How does a worm propagate? [2007. Marks: 2]
19.3	What is Logic Bomb? [In-course 06-07. Marks: 1]
19.4	What are the typical phases of operations of a virus? [In-course 06-07. Marks: 2]
19.5	How does Behavior Blocking Software work? [In-course 06-07. Marks: 1]
19.6	What is DDoS? Differentiate between Direct DDoS attack and Reflector DDoS attack. [2007. Marks: 1 + 2]
19.7	What is Digital Immune System? Clearly describe the typical steps of Digital Immune System operation. [2007. Marks: 1 + 4]
19.8	What is the difference between rule-based intrusion detection and statistical anomaly detection? [2008. Marks: 2]

CHAPTER 30 (FOROUZAN), CHAPTERS 3, 5 (STALLINGS)

CRYPTOGRAPHY, AES, DES

30.1	Explain the steps for generating keys for RSA algorithm, and generate any key-pair using the primes 3 and 11. [2006. Marks: 2 + 2]
30.2	What is the basic purpose of Diffie-Hellman algorithm? Using this algorithm, how can Eve fool two communicating partners Alice and Bob by creating two keys: one between Alice and herself, and another between herself and Bob? [2006. Marks: 1 + 5]
30.3	Compare / Distinguish between DES and AES. [2006. Marks: 2]
30.4	Explain generation technique of round keys for AES. [In-course 08-09. Marks: 3]
30.5	<p>Illustrate the general structure of the 10-round AES and draw a flowchart showing the operations of each round. [In-course 06-07. Marks: 2]</p> <p>ALSO, Clearly state the operations of any round. [In-course 05-06. Marks: 3]</p> <p>ALSO, Name different stages in a common round of AES and clearly explain the operation of any one round. [In-course 08-09. Marks: 1 + 4]</p> <p>ALSO, Explain the encryption process of AES for any one key-size and list the operations of its common round. [2006. Marks: 4]</p>
30.6	<p>Distinguish between Cipher Feedback Mode and Output Feedback Mode. [In-course 06-07. Marks: 3]</p> <p>ALSO, Clearly explain any one of them. [In-course 05-06. Marks: 3]</p>
30.7	<p>Illustrate one round of DES encryption and (using a flowchart) explain DES function. [In-course 06-07, 05-06. Marks: 2 + 3]</p> <p>ALSO, Illustrate the internal blocks of operations of one round of DES and explain the internal operations of DES function. [In-course 08-09. Marks: 2 + 3]</p>
30.8	What is the major advantage of public key cryptography over symmetric key cryptography? [2008. Marks: 1]

CHAPTER 31 (FOROUZAN)

NETWORK SECURITY

31.1	What do you understand by message non-repudiation? Explain the role of a trusted center for message non-repudiation. [2006. Marks: 1 + 3]
31.2	Illustrate the process of creation and verification of message authentication code. [2006. Marks: 2]
31.3	What is digital signature? Explain the uses of hash functions for generating and verifying digital signature. [2006. Marks: 1 + 4]
31.4	Discuss the relationship between digital signature, digital certificate authority and public key infrastructure. [2006. Marks: 5]
31.5	Can you use a secret (symmetric) key to both sign and verify a digital signature? Justify your answer. [2007. Marks: 3]
31.6	In Kerberos Protocol, what are the steps that Alice (user requesting service) should follow to communicate/receive services from three different servers: Bob, Eve and Trudy? [2007. Marks: 5]
31.7	What purpose does the authenticator in a Kerberos message serve? Detail one flaw Merritt and Bellovin identified in its design. [2008. Marks: 1 + 2]
31.8	How does digital signature provide message non-repudiation? [2008, 2007. Marks: 3]
31.9	What is digital signature? State the requirements for digital signature. [2008, 2007. Marks: 5]
31.10	What are the threats with direct digital signature scheme? [2008. Marks: 1]
31.11	Clearly describe the steps for generating any one RSA key-pair using the prime numbers 5 and 11. [In-course 06-07. Marks: 3]
31.12	Suppose Bob chooses two prime numbers 7 and 11. How can he determine the RSA keys? Show the procedure and determine a key pair. [In-course 05-06. Marks: 3 + 2]
31.13	Distinguish between message authentication code and message digest. [In-course 06-07. Marks: 2]
31.14	Explain how a digital signature provides message integrity and message authentication services. [In-course 08-09, 06-07. Marks: 3]
31.15	How can a session key be created between Alice and Bob using any method? [In-course 06-07. Marks: 2]
31.16	Explain the uses of different Kerberos servers. [In-course 06-07. Marks: 3] ALSO, Using an illustration, explain the purpose of authentication server and ticket granting server of Kerberos version 4. [In-course 08-09. Marks: 3]
31.17	Distinguish between message authentication and entity authentication. Explain entity authentication using symmetric key cipher or asymmetric key cipher. [In-course 05-06. Marks: 2 + 3]
31.18	What do you understand by a trusted center? [In-course 05-06. Marks: 1]
31.19	Distinguish between modification detection code and message authentication code. [In-course 08-09. Marks: 2]
31.20	Using an illustration explain the principle of operation of SHA-1 or any other hash algorithm. [In-course 08-09. Marks: 3]

	ALSO, How does SHA-1 create message digest? [2007. Marks: 3]
31.21	What do you understand by challenge-response method of entity authentication? Using an illustration, explain any one such method for entity authentication. [In-course 08-09. Marks: 1 + 2]
31.22	What is the purpose of a digital certificate? List at least five fields of a digital certificate using X.509 standard. [In-course 08-09. Marks: 2]
31.23	List possible attacks on fixed passwords and explain salting a password. [2006. Marks: 1 + 3] ALSO, Explain dictionary attack on fixed passwords. [In-course 08-09. Marks: 2] ALSO, How can a system prevent a guessing attack on a fixed password? [2007. Marks: 1] ALSO, How does salted password make dictionary attack more difficult? [2007, In-course 08-09. Marks: 2]
31.24	What is Hash function? Mention the requirements for hash function. [2008. Marks: 5]
31.25	Briefly explain MD5 hash algorithm. [2008. Marks: 5]
31.26	In what order should the signature function and the confidentiality function be applied to a message and why? [2008. Marks: 2]

CHAPTER 32 (FOROUZAN)

SECURITY IN THE INTERNET

32.1	How does ESP of IPSec provide source authentication, data integrity and privacy services for communication between two users? [2006. Marks: 6]
32.2	How does IPSec provide source authentication and data integrity for communication between two users? [2007. Marks: 5]
32.3	What is a virtual private network? How can IPSec in the tunnel mode provide authentication, integrity and privacy services for a virtual private network? [2006. Marks: 1 + 3]
32.4	What are the techniques to achieve secure email transactions along with sender's identity? [2006. Marks: 5]
32.5	Differentiate between Transport mode and Tunnel mode of IPSec Protocol. [2007. Marks: 2]
32.6	Differentiate between Authentication Header Protocol and Encapsulating Security Payload Protocol in IPSec. [In-course 06-07. Marks: 3] ALSO, Differentiate between authentication data of AH and ESP of IPSec. [In-course 08-09. Marks: 2]
32.7	What is the purpose of firewall? Differentiate between packet filter and proxy firewall. [2007. Marks: 1 + 3]
32.8	What is R64 conversion? Why is R64 conversion useful for an email application? [2008. Marks: 1 + 1]
32.9	How does PGP use the concept of trust? [2008. Marks: 2]
32.10	What services are provided by SSL record protocol? [2008. Marks: 2]
32.11	State any four services of SSL. [In-course 06-07. Marks: 2]
32.12	What is dual signature and what is its purpose? [2008. Marks: 1 + 1]
32.13	What is the purpose of Proxy Firewall? [In-course 06-07. Marks: 1]
32.14	What is VPN? Why is it needed? [In-course 06-07. Marks: 1 + 1]
32.15	What is the purpose of Handshake protocol in SSL? [In-course 06-07. Marks: 1]
32.16	How does SSL create Cryptographic Secret? [In-course 06-07. Marks: 2]
32.17	Explain the operation of any one of the following: [In-course 08-09. Marks: 3] i. Authentication Header Protocol of IPSec in transport mode. ii. Encapsulating Security Protocol of IPSec in transport mode.
32.18	Point out the security services required when a customer shops online using WWW. [In-course 08-09. Marks: 2]
32.19	Explain any one of the following: [In-course 08-09. Marks: 3] i. Security association of IPSec ii. Security parameters of SSL
32.20	Using an appropriate illustration, explain how authentication and confidentiality services are provided by PGP for secure email. [In-course 08-09. Marks: 5]
32.21	What is Hybrid Network? Why is it needed? [2007. Marks: 1 + 1]
32.22	Why should you include a message authentication code (MAC) with a message? What is the difference between a MAC and an HMAC? [2008. Marks: 1 + 1]
32.23	Explain Hand-Shake protocol for web security approaches. [2008. Marks: 4]