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Seventh Semester B.E. Degree Examination, Aug./Sept. 2020 Information and Network Security

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define the following terms :
 i) Cryptography ii) Plaintext iii) Ciphertext iv) Encryption v) Decryption. (05 Marks)
 b. Find the plaintext and the key from the ciphertext given that the cipher is a simple substitution of the shift – by – n variety.
 IRXUVFRUHDAGVHYHABHDUVDIR (05 Marks)
 c. Encrypt the message attack at dawn using a double transposition cipher with 3 rows and 4 columns, using the row permutation (1, 2, 3) → (3, 2, 1) and the column permutation (1, 2, 3, 4) → (4, 2, 1, 3). (06 Marks)

OR

- 2 a. Using the following letter encodings

e	h	i	k	l	r	s	t
000	001	010	011	100	101	110	111

Encrypt the given plaintext “heilhitter” using the key “trsrterse” with one time pad cipher.

Discuss drawbacks of the time pad? (08 Marks)

- b. What is HASH function? Discuss the uses of hash functions. (08 Marks)

Module-2

- 3 a. Explain the detail the Tiger hash cryptographic function. (08 Marks)
 b. What is randomness briefly; discuss the approaches to generating randomness. (08 Marks)

OR

- 4 a. With a neat diagram, explain how passwords are protected in Unix operating systems. (08 Marks)
 b. What is freshness mechanism? Briefly discuss Nonce based freshness mechanism. (08 Marks)

Module-3

- 5 a. Discuss the need for cryptographic protocols in detail. (08 Marks)
 b. Discuss in detail the different stages in designing a cryptographic protocol. (08 Marks)

OR

- 6 a. What is dynamic password scheme? Illustrate with diagram how a user is authenticated in dynamic password scheme. (08 Marks)
 b. Describe the man – in – the – middle attack on the Diffie – Hellman protocol in detail. (08 Marks)

Module-4

- 7 a. With diagram, explain the different phases of key lifecycle. (08 Marks)
b. Discuss the reasons why cryptographic keys have finite lifetimes. (08 Marks)

OR

- 8 a. Discuss the different public key certificate management models. (08 Marks)
b. Briefly discuss the SSL security requirement and security issues. (08 Marks)

Module-5

- 9 a. Discuss the handshake and Record cryptographic protocol employed in SSL. (08 Marks)
b. Briefly discuss the different attacks on WEP. (08 Marks)

OR

- 10 a. Briefly discuss the key management issues relating to cryptography in payment cards. (08 Marks)
b. With diagram, discuss the eID card issuing process. (08 Marks)
