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III/IV B.Tech (Supplementary) DEGREE EXAMINATION

November, 2019

Information Technology

Sixth Semester

Cyber Security

Time: Three Hours

Maximum : 60 Marks

Answer Question No.1 compulsorily.

(1X12 = 12 Marks)

Answer ONE question from each unit.

(4X12=48 Marks)

(1X12=12 Marks)

1 Answer all questions

- Define Authentication.
- Categorize cryptographic systems based on various parameters.
- List the design features of Feistel cipher.
- Mention the four possible approaches for attacking the RSA algorithm.
- Why discrete logarithms are preferred for private keys?
- What are the ingredients of public key cryptosystems?
- Describe the requirements of cryptographic hash function H.
- Suggest any three situations in which MAC is used.
- Why brute force attack on a MAC is more difficult?
- What is a replay attack? Mention the counter measures.
- Define Kerberos Realm.
- Write the limitations of packet filter firewall.

UNIT I

- List and explain various X.800 security attacks and services. 8M
 - Encrypt the message "Attack is postponed until tomorrow" with Playfair Cipher using the key "Cryptography". 4M

(OR)

- With a neat sketch explain the operations in a single round of DES algorithm. What is the role of avalanche effect on DES strength? 6M
 - Explain the Triple DES algorithm and the Known-Plaintext attack on it. 6M

UNIT II

- Differentiate conventional and public key encryption techniques. 4M
 - Perform encryption and decryption using the RSA algorithm on the following data 8M
 - $p=11, q=13, e=11, M=7$
 - $p=17, q=31, e=7, M=2$.

(OR)

- With a suitable example explain Diffie-Hellman key exchange algorithm. 6M
 - Illustrate the man-in-the-attack against Diffie-Hellman key exchange algorithm. 6M

UNIT III

- Describe the step-wise procedure for generating message digest using SHA-512. 8M
 - Explain the hash functions based on cipher block chaining. 4M

(OR)

- Discuss the HMAC design objectives and algorithm. 8M
 - What are the requirements of digital signature? 4M

UNIT IV

- Explain the techniques used for distribution of public keys. Write the pros and cons for each technique. 6M
 - Draw the X.509 version1 and version2 certificate formats. 6M

(OR)

- Describe public key infrastructure. 8M
 - How mutual trust is established using a chain of public key certificates. 4M

