(T) Roll No. .....

PAPER ID—11450

B.Tech. Computer Science and Engineering (Internet of things and Cyber Technology including block chain Technology) EXAMINATION, 2025

(Sixth Semester)

NETWORK SECURITY AND CRYPTOGRAPHY

Proessional Elective Course-III

Time : 3 Hours *Maximum Marks : 70*

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

1. (a) What is the role of a key in encryption ? What is the difference between substitution and transposition techniques ? 2

(b) Differentiate between symmetric and asymmetric key cryptography. 2

(c) What is a RSA algorithm ? 2

(d) What is the main function of the Time Stamping Protocol (TSP) ? What is SHTTP used for ? 2

(e) What is a Kerberos and its role in network security ? 2

(f) Explain the key size used in DES and AES algorithm ? 2

(g) What is a substitution technique ? 2

Unit I

2. Explain all the substitution and transposition techniques with examples. 14

3. Compare and contrast symmetric and asymmetric key cryptography. Explain their advantages and disadvantages. 14

Unit II

4. Explain the Data Encryption Standard (DES) algorithm in detail. 14

5. What is RSA algorithm ? Explain the working of RSA encryption and decryption with an example. 14

Unit III

6. Explain Secure Socket Layer (SSL) and Transport Layer Security (TLS) protocols. How do they ensure secure communication over the internet ? **14**

7. Describe the various e-mail security techniques and protocols. Describe the working of Secure Hypertext Transfer Protocol (SHTTP) and compare it with HTTPS. **14**

Unit IV

8. (a) What is user authentication ? Explain different types of authentication mechanisms with suitable examples. 7

(b) What are the basic requirements of a secure authentication system ? 7

9. (a) Explain Kerberos authentication protocol in detail. 7

(b) What is the role of Key Distribution Center (KDC) in Kerberos ? 7

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