*R22 Regulation* *Subject code: 4P7GB*

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

## B.Tech VII Semester Supplementary Examinations, May 2026

## INFORMATION SECURITY

*(CSE(AI&ML))*

*Maximum Marks: 60* Date:13.05.2026 Duration: 3 hours

**Note:** **1.This question paper contains two parts A and B.**
**2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.**
**3. Part B consists of 5 Units. Answer any one full question from each unit.**
**4. Each question carries 10 marks and may have a, b, c, d as sub questions.**

Part-A

| All the following questions carry equal marks (10X1M=10 Marks) | | Marks | CO | Bloom Tx |
|---|---|---|---|---|
| 1.a) | List various security services. | 1M | 1 | L-I |
| b) | Define information security | 1M | 1 | L-I |
| c) | What are the two keys used in asymmetric encryption? | 1M | 2 | L-I |
| d) | What is the main drawback of symmetric key encryption? | 1M | 2 | L-I |
| e) | What is a cryptographic hash function? | 1M | 3 | L-I |
| f) | Define authentication. | 1M | 3 | L-I |
| g) | What are the major threats to e-mail security? | 1M | 4 | L-I |
| h) | What cryptographic algorithms are used in PGP? | 1M | 4 | L-I |
| i) | What are the components of the IP Security architecture? | 1M | 5 | L-I |
| j) | What kind of protection does the Authentication Header provide? | 1M | 5 | L-I |

Part-B

| Answer All the following questions. (5X10M=50Marks) | | Marks | CO | Bloom Tx |
|---|---|---|---|---|
| 2 | A) Explain various substitution techniques with suitable examples. | 5M | 1 | L-II |
| | B) Compare symmetric and asymmetric key cryptography | 5M | 1 | L-II |
| | OR | | | |
| 3 | A) What is Steganography? Explain its features. | 5M | 1 | L-I |
| | B) Explain the OSI security architecture. | 5M | 1 | L-II |
| 4 | A) Explain RSA algorithm with suitable examples. | 5M | 2 | L-II |
| | B) Explain Block Cipher design principles. | 5M | 2 | L-II |
| | OR | | | |
| 5 | A) Explain Difffie-Hellman Key Exchange algorithm. | 5M | 2 | L-II |
| | B) Discuss the characteristics and operation of RC4 Encryption algorithm. | 5M | 2 | L-VI |
| 6 | A) Discuss about Secure Hash algorithm. | 5M | 3 | L-VI |
| | B) Explain X.509 authentication service. | 5M | 3 | L-II |
| | OR | | | |

| | | | | |
|---|---|---|---|---|
| 7 | A) Discuss HMAC and CMAC. | 5M | 3 | L-VI |
| | B) Develop a neat sketch to explain the concept of Secured Hash Algorithm. | 5M | 3 | L-VI |
| 8 | A) What are different cryptographic algorithms used in S/MIME? Explain how S/MIME is better than MIME. | 5M | 4 | L-I |
| | B) Discuss Secure Socket Layer | 5M | 4 | L-VI |
| | OR | | | |
| 9 | A) How the messages are generated and transmitted in PGP protocol? Explain with clear diagrams. | 5M | 4 | L-I |
| | B) Explain Transport Layer Security. | 5M | 4 | L-II |
| 10 | A) Illustrate and explain the IP security authentication header | 5M | 5 | L-II |
| | B) Discuss the different types of intruders and the mechanisms used for intrusion detection. | 5M | 5 | L-VI |
| | OR | | | |
| 11 | A) Elaborate the process of combining Security Associations | 5M | 5 | L-VI |
| | B) Explain the key management | 5M | 5 | L-II |