GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Vocation - SEMESTER - IV EXAMINATION - SUMMER 2025

Subject Code: 1140502   **Date: 13-05-2025**

Subject Name: Computer Network and Security

Time:10:30 AM TO 12:30 PM   **Total Marks: 50**

Instructions
1. Attempt all questions.
2. Make Suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of simple calculators and non-programmable scientific calculators are permitted.

			Marks
Q.1	**(a)**	How is information warfare carried out, and what are the typical paths and steps followed during an attack?	**05**
	(b)	Describe the basic elements of cybersecurity, including confidentiality, integrity, and availability.	**05**
Q.2	**(a)**	How do attacks like denial of service, backdoors, MITM, and replay compromise network security?	**05**
	(b)	Explain the concepts of DDOS attacks, SQL code injection, and common malware threats like viruses and logic-based malware.	**05**
		OR	
	(b)	How do poor password choices and physical techniques like shoulder surfing or dumpster diving compromise security?	**05**
Q.3	**(a)**	Explain how physical access control and biometric authentication (e.g., fingerprint and palm scanning) enhance security.	**05**
	(b)	How do you manage passwords effectively while addressing their weaknesses and ensuring they are protected?	**05**
		OR	
	(a)	Describe the main ideas behind symmetric and asymmetric data encryption.	**05**
	(b)	How can Caesar's cipher be used as an example of an encryption algorithm for securing messages?	**05**
Q.4	**(a)**	What is the function of the Vernam cipher, and how is encryption carried out using a small Hill cipher matrix?	**05**
	(b)	How does asymmetric encryption support digital signatures and what is the purpose of key escrow?	**05**
		OR	
	(a)	How does private key protection vary between centralized and decentralized security models?	**05**

(b) What are the types of intrusion detection systems and their essential logical elements? 05

Q.5 (a) Outline the architecture of a Network IDS and analyze its positive and negative aspects. 05

(b) Discuss the strengths and weaknesses of HIDS in network security. 05

OR

(a) Explain the vulnerabilities faced by websites and approaches used to ensure safe web communication. 05

(b) What is the difference between SSL and TLS, and why are they important for secure communications? 05

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