

IMSc IT (ANS) Sem.-2 Examination

DSC-M-ANS-123T

IT Security

May-2025

Time : 2-00 Hours]

[Max. Marks : 50

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

			Marks
Q.1	(a)	Define and differentiate between virus, worm, and Trojan horse with examples.	6
	(b)	What is Endpoint Security? How does it help prevent cyber threats?	4
		OR	
	(a)	Define malware. Explain key objectives and provide real-world examples.	6
	(b)	What is User Behavior Analysis (UBA)? How does it help in detecting insider threats?	4
Q.2	(a)	Compare EDR and XDR in terms of functionality and benefits.	6
	(b)	What is the role of digital certificates and signatures in secure transactions?	4
		OR	
	(a)	Explain the concept of Cryptography. Why is it vital in secure communication?	6
	(b)	Differentiate between Symmetric and Asymmetric encryption with examples.	4
Q.3	(a)	Describe the OSI Model and list one device/protocol for each layer.	6
	(b)	What is a VPN? Explain how it enhances network security with use cases.	4
		OR	
	(a)	Define and differentiate between LAN, MAN, and WAN with examples.	6
	(b)	Explain subnetting and provide an example?	4
Q.4	(a)	With the keyword " NETWORK ", encrypt the phrase " SECURE DATA " using the Playfair Cipher. Show the matrix construction.	6

	(b)	Encrypt the message “HELLO” using Caesar Cipher with a shift of +4 . Show the step-by-step process.	4
		OR	
	(a)	With the keyword “CYBER” , encrypt the phrase “CONFIDENTIAL” using the Playfair Cipher. Show the matrix construction	6
	(b)	Encrypt the message “UNITED STATES” using Caesar Cipher with a shift of +3 . Show the step-by-step process.	4
Q.5	(a)	Answer the following MCQs	10
	1	What is the primary function of a firewall in network security? a) Encrypt data b) Filter network traffic c) Compress files d) Manage DNS	1
	2	Which cipher uses a 5x5 matrix for encryption? a) Caesar Cipher b) Vigenère Cipher c) Playfair Cipher d) RSA	1
	3	Which of the following is an example of symmetric encryption? a) RSA b) AES c) ECC d) DSA	1
	4	What does UBA stand for in cybersecurity? a) User-Based Authentication b) User Behavior Analysis c) Unified Backend Access d) Unidentified Breach Alert	1
	5	Which OSI layer is responsible for reliable transmission of data? a) Network b) Transport c) Data Link d) Session	1
	6	Which of the following is NOT a type of malware? a) Worm b) Trojan c) IDS d) Ransomware	1

7	<p>What is the main purpose of a digital certificate?</p> <ul style="list-style-type: none"> a) Speed up browsing b) Validate user passwords c) Authenticate a public key d) Encrypt databases 	1
8	<p>Which network type is typically used across cities?</p> <ul style="list-style-type: none"> a) LAN b) MAN c) WAN d) PAN 	1
9	<p>In Caesar Cipher, if the shift is 4, what does 'C' become?</p> <ul style="list-style-type: none"> a) F b) G c) E d) A 	1
10	<p>Which key is used to decrypt messages in asymmetric encryption?</p> <ul style="list-style-type: none"> a) Public Key b) Private Key c) Session Key d) Master Key 	1