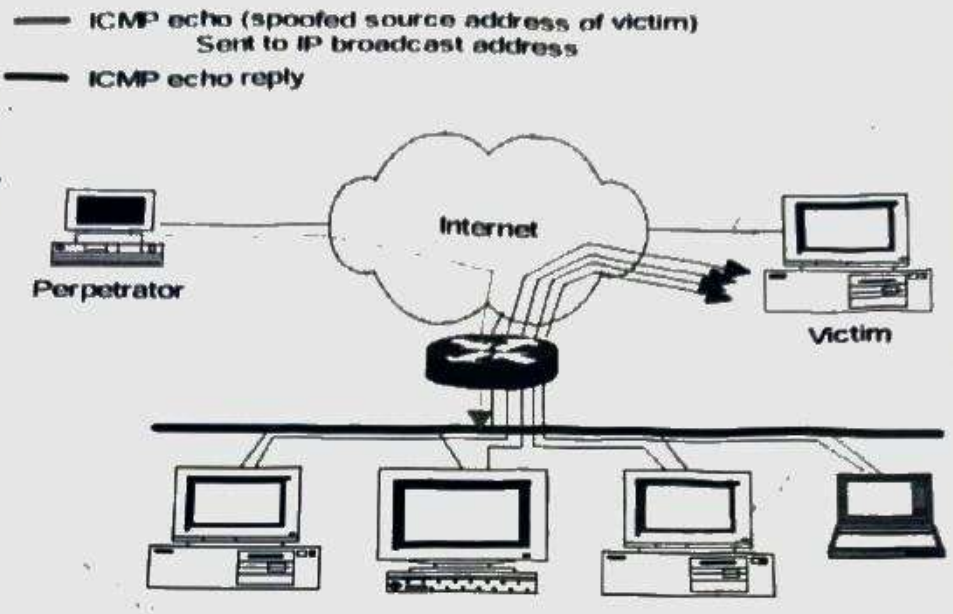
National Forensics Sciences University, Goa Campus
Mid- semester Examination
M.Sc. DFIS - Semester -III/ MTech AI&DS I

Branch – DFIS/AI&DS **Sem –** III **Date-** 07/10/2024
Subject Name- Network Security & Forensic **Subject Code-** CTMSDFIS SIII P1
Time- 1.5 Hours **Max. Marks-** 50
Instructions - 1) Answer all questions. 2) Assume suitable data.

Q.1	Attempt all.	**20 Marks**
	a. Explain the concepts of Threat, Vulnerability, and Attack Vector with relevant examples.	5 Marks
	b. Use *Vigenere Cipher* with key ***SAFE*** to encrypt the message ***"Life is full of joy".***	5 Marks
	c. Encrypt the following message using *Playfair* cipher. Message: ***microprojectors*** Keyword: ***quasijudicial***	5 marks
	d. Explain why the order of operations is crucial when performing digital signatures and encryption together. Discuss the implications of different sequences in which these processes can be executed.	5 Marks
Q.2	Attempt all questions **(Q 2(a)- 2 (c)):**	**15 Marks**
	a. Explain X.800 services with an example.	5 Marks
	b. What is the significance of flow control? Why is it important for the security point of view?	5 Marks
	c. During an analysis of an IPS (Intrusion Prevention System) log, you find that it detected 50 instances of ARP poisoning attacks over a week. If these attacks are consistent, calculate the average number of ARP poisoning attacks detected per day.	5 Marks
Q. 3	Attempt any **two:**	**8 Marks**
	a. Calculate the multiplicative inverse of 7 under mod 19.	4 Marks
	b. Calculate: (i) $99^{1000000} \bmod 1000000$ (ii) $123456^{99999} \bmod 123455$	4 Marks
	c. Explain cryptanalysis with an example.	4 Marks

Q.4	Attempt **any one**	**Marks**
	a. Consider the following network scenario:  1. Identify and explain the attack on the above scenario. 2. Also mention the countermeasures to protect this kind of attacks.	7 Marks
	OR	
	a. A firewall is configured with the following rules: • Allow HTTP (port 80) • Allow HTTPS (port 443) • Deny all other traffic. If an internal user attempts to access an FTP server on port 21, explain how the firewall will handle this request and the implications of this configuration for the organization.	7 Marks