

**National Forensics Sciences University, Goa Campus**

## Block Semester Examination

**M.Sc. DFIS - Semester -III/ MTech AI&DS I**

Branch – DFIS/AI&amp;DS

**Sem – III**

**Date- 23/10/2024**

**Subject Name- Network Security & Forensics**

**Subject Code- CTMSDFIS SIH P1/ CTMTAIDS SI 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 eavesdropping, masquerading and sniffing attack with relevant examples.	5 Marks
	b. Use <b>AutoKey Cipher</b> with key <b>NFSU Goa</b> to encrypt the message "At the end of the day, the goals are simple: safety and security."	5 Marks
	c. Encrypt the following messages using <b>Polybius Cipher</b> : Message1: <b>NFSU Gandhinagar</b> Message2: <b>World of Cryptography</b>	5 marks
	d. Explain the role and importance of SOC (Security Operations Center) and SIEM (Security Information and Event Management) in network security.	5 Marks
Q.2	Attempt all questions (Q 2(a)- 2 (c)):	15 Marks
	a. Consider a Phishing attack and a DoS attack. Explain how each attack is carried out and suggest two preventive measures for each.	5 Marks
	b. What are the differences between DNS and DHCP servers? How do they contribute to network management and security?	5 Marks
	c. Describe the principles and working of the <b>rotor machine</b> and its historical importance in encryption.	5 Marks
Q.3	Attempt any two:	8 Marks
	a. Calculate the multiplicative inverse of <b>5 under mod 23</b> .	4 Marks
	b. Calculate: <b>(i) <math>7^{1000} \text{ mod } 19</math> (ii) <math>3^{200} \text{ mod } 17</math></b>	4 Marks
	c. Describe the principles and working of the rotor machine and its historical importance in encryption.	4 Marks
Q.4	Attempt any one	Marks
	Discuss ARP poisoning and MAC flooding attacks and propose possible countermeasures.	7 Marks
	OR	
	b. A user sends a message "HELLO" using <b>RSA encryption</b> , where the public key is <b>(e = 3, n = 33)</b> . Find the public key, private key ciphertext, and plaintext.	7 Marks

$(a \times b) \bmod n = 123 \overline{) 55}$   
 $23 \overline{) 55}$   
 $23 \overline{) 10}$   
 $23 \overline{) 35}$   
 $23 \overline{) 15}$   
 $23 \overline{) 25}$   
 $23 \overline{) 2}$