

**National Forensic Sciences University**  
**School of Cyber Security and Digital Forensics**

Course Name: M.Tech. Cyber Security (Batch: 2024-26)

Semester - I Exam: TA - I (Sep – 2024)

Subject Code: CTMTAIDS SI P2

Time: 2:30-3:15pm

Subject Name: (Network Security and Forensics)

Date: 09/09/2024

**Q1. Multiple Choice Question. (Attempt All)**

**[05 Marks]**

**1. Which networking device operates primarily at the Data Link layer but also has some functionalities at the Network layer in order to optimize packet delivery?**

- A) Hub
- B) Switch
- C) Bridge
- D) Router

**2. Which of the following accurately describes the difference between a vulnerability and an exploit?**

- A) A vulnerability is an active attack, while an exploit is a weakness in a system.
- ☒ B) A vulnerability is a weakness in a system, while an exploit is the method used to take advantage of that weakness.
- C) A vulnerability is the unauthorized use of a system, while an exploit is the recovery of data.
- D) A vulnerability is a type of exploit that affects physical security, while an exploit only affects software.

**3 What is a key difference between IDS (Intrusion Detection System) and IPS (Intrusion Prevention System)?**

- A) IDS blocks malicious traffic, while IPS only monitors it.
- B) IDS is installed on hosts, while IPS is a network-based device.
- ☒ C) IDS detects and alerts on potential threats, while IPS takes proactive measures to block them.
- D) IDS operates at the application layer, while IPS operates at the network layer.

**4. In TCP/IP, which protocol is used to resolve IP addresses to MAC addresses?**

- A) DNS
- ☒ B) ARP
- C) DHCP
- D) ICMP

**5. What is the primary function of a router in a network?**

- A) Amplify signals across the network
- B) Connect different networks and route packets between them
- C) Filter traffic based on IP addresses
- D) Maintain a list of MAC addresses

**Q2. Describe the function of a DNS server in a network.**

**[3 Marks]**

**Q3. Describe the functioning of a DHCP server and explain how an attacker might exploit DHCP vulnerabilities to launch a network attack**

**[5 Marks]**

**Q4. Define different firewalls.**

**[5 Marks]**

**Q 5. Discuss OSI Security architecture**

**[7 Marks]**

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Course Name: M.Tech. AI & DS (Batch: 2024-26)

Semester -I

Subject Code: CTMTAIDS SIP2

Time: 11:00PM to 12:30 PM

Subject Name: (Network Security and Forensics) Total Marks: 50 Exam: Mid

Semester Examination (March - 2024)

Date: 08-10-2024

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**Q1. Answer the following questions in short. (Attempt any 4)** **[20 Marks]**

- 1) Discuss the ways of discovering the services which are open or closed
- 2) What is the advantage of checking Operation System and its types of a victim machine. How do you check it
- 3) What is asymmetric key encryption.
- 4) Explain the functionality of firewalls
- 5) Define the concept of Digital Signature
- 6) Differentiate between Independent hashing, Repeated hashing, Combined hashing, Sequential hashing, Hierarchical hashing

**Q2. Answer the following questions in detail. (Attempt any 3)** **[30 Marks]**

- 1) Apply the monoalphabetic symmetric key encryption on the data = powerofeducation with Key=5 and discuss the statistical attack on the encrypted text.
- 2) Explain Penetration Testing Life Cycle.
- 3) Explain OSI Security architecture in detail.
- 4) Explain Combination Transposition Cipher in detail with example.