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**MANIPAL INSTITUTE OF TECHNOLOGY**  
MANIPAL  
A Constituent Institution of Manipal University

**FIRST SEMESTER M.TECH (COMPUTER SCIENCE AND INFORMATION  
SECURITY) DEGREE EXAMINATIONS, DECEMBER-2023**  
**SUBJECT : SYSTEMS AND NETWORK SECURITY(CSE 5117)**  
**REVISED CREDIT SYSTEM**  
**DATE: 02-12-2023**

TIME:03 HOURS

MAX.MARKS : 50

Instructions to Candidates:

- Answer ALL FIVE FULL questions.
- Missing data, if any, may be suitably assumed.

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| 1A. Describe how Risk can be quantified in the Risk analysis process. Explain the related attributes in the process.                             | 3M |
| 1B. Differentiate between overwriting viruses and appending viruses in file infection techniques.  | 3M |
| 1C. Explain ARP poisoning attack and DNS spoofing attack strategies. Discuss techniques of detection and prevention of it.                       | 4M |
| 2A. Compare and contrast different detection strategies used by Host Based Intrusion Detection Systems.  | 3M |
| 2B. Explain strategies used in anomaly detection model of IDS. What are the advantages and disadvantages of Anomaly Detection techniques in IDS? | 3M |
| 2C. Construct one IPS deployment Plan as a Network Security Manager for a corporate network.   | 4M |
| 3A. Describe known security problems in TCP/IP Protocol Suite, Version 4 in the perspective of securing host operating systems.                  | 3M |
| 3B. Differentiate the functionalities between Discretionary and Mandatory Access Control lists of an Operating System.                           | 3M |
| 3C. Why Port Address Translation(PAT)? Design a PAT system using firewalls and explain its working with simple SOHO network diagram.             | 4M |
| 4A. Compare and contrast two main protocols of IPsec. Explain both with relevant diagrams.   | 4M |
| 4B. Compare and contrast transport mode and tunnel mode of IPsec protocol.   | 3M |
| 4C. Describe the setting of the IPsec Security Associations that happens in Phase 2 IKE (Quick Mode)   | 3M |

- 5A. What is Pretty Good Privacy (PGP)? Describe how does PGP ensure the confidentiality of communication? 3M
- 5B. Appraise the limitations or vulnerabilities associated with Kerberos version 4 that led to the development of Kerberos version 5. 3M
- 5C. Examine the role of the Key Distribution Center (KDC) in Kerberos version 5, detailing the functions of the Authentication Server (AS), Ticket Granting Server (TGS), and how they collaboratively contribute to the authentication process. Analyze the advantages of this architecture compared to Kerberos version 4. 4M