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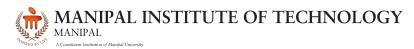### MANIPAL
A Constituent Institution of Manipal University

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.

1A.	Identify different zones of trust in a typical medium scale business network. What are the importance of trust models?	3M
1B.	Compare and contrast various Master Boot Record infection techniques.	3M
1C.	Illustrate how static ARP tables and port rate limiting can be used to protect computer networks?	4M
2A.	Illustrate the different detection strategies used by Network-Based Intrusion Detection Systems.	3M
2B.	Illustrate different strategies used in signature detection model of IDS. How signature detection rules are created in it.	3M
2C.	Discuss the working of Host Based Intrusion Prevention System and list its benefits and limitations?	4M
3A.	Differentiate between static NAT, Dynamic NAT. Design a SOHO network diagram to show how a firewall can be used to implement NAT.	4M
3B.	Illustrate the best practices in firewall design, placement and configurations.	3M
3C.	Compare and contrast Bell-LaPadula, Biba and Clark-wilson security model of operating system.	3M
4A.	Illustrate the different parameters of security associations in IPsec protocol.	4M
4B.	Compare and contrast with relevant diagrams, aggressive mode and main mode of Phase 1 IKE.	3M
4C.	Compare and contrast relative advantages of the various key types (pre-shared secret keys, public signature keys, public encryption keys) as a basis for an authentication exchange.	3M

5A. Illustrate the role of public and private keys in PGP. How does PGP provide data integrity and authentication? 3M

5B. Explore the challenges and solutions associated with cross-realm authentication in Kerberos version 4, particularly in heterogeneous network environments. 3M

5C. Explore the concept of forwardable and renewable tickets in Kerberos version 5, examining the security implications and benefits of allowing tickets to be used beyond their initial intended scope. Discuss potential scenarios where these features enhance or challenge the security model of Kerberos. 4M