Con. 3247-11.   **(OLD COURSE)**   **RK-3768**

(3 Hours)   [Total Marks : 100

N.B. : (1) Question No. 1 is **compulsory**.

   (2) Attempt any **four** out of **six** questions.

1. (a) Distinguish among vulnerability, threat and control.   5
   (b) List three controls that could be applied to detect or prevent salami attacks .   5
   (c) Why segmentation recommended for network design ?   5
   (d) Explain the tagged Architecture in memory protection. Give example.   5

2. (a) What is denial of service (DOS) attack ? What are the way in which an attacker can   10
       mount a DOS/DDOS (Distributed Denial of Service) attack on the system.
   (b) What is firewall ? Describe the types of firewalls with their limitations.   10

3. (a) Explain the list of requirements for database security.   10
   (b) List and Explain the various malicious codes and non-malicious codes.   10

4. (a) What is the difference between a digital signature and digital certificate ? How one   10
       can decide whether to trust that or not, upon reception of digital certificate ?
   (b) Compare between DES, AES & RSA encryption algorithms.   10

5. (a) Explain file protection mechanisms. List and explain basic forms of protection.   10
   (b) Define the term ethics. What is the difference between laws and ethics ? Explain   10
       IEEE code for ethics.

6. (a) What is the term Risk Analysis ? Explain in detail the steps in Risk Analysis.   10
   (b) Explain Stream Encryption Algorithm and Block Encryption Algorithm. Give one   10
       example for each.

7. Write short notes on :—   20
   (a) Session Hijacking and Man-in-the-Middle attack.
   (b) Comparison of Link Encryption and End-to-End Encryption.
   (c) Inference problem in database Security.
   (d) Security for E-mail and Threats to E-mail.

(3 Hours)   [Total Marks : 100

N.B. : (1) Question No. 1 is **compulsory**.
       (2) Attempt in **four** questions out of remaining **six** questions.
       (3) **Assumptions** made should be **clearly** stated.

1. (a) Compare and contrast Network Operating System (NOS) with Distributed 10
         Operating System (DOS).
    (b) Explain Clock Synchronization mechanism in distributed operating system.   10

2. (a) Explain RPC mechanism. What are RPC Semantics in presence of failure ?   10
    (b) Explain process and threads in detail. Also explain user-level and kernel-level 10
         threads execution.

3. (a) Explain any mutual exclusion algorithm designed for distributed environment.   10
    (b) (i) Discuss fully election algorithm.   5
         (ii) What happens if two processes detect failure of co-ordinator simultaneously   5
               and both decide to hold an election ? Explain.

4. (a) Explain the problem of distributed commit. Explain Two Phase Commit (2PC) in detail. 10
    (b) Explain various forms of message oriented communication with example 10
         applications of each.

5. (a) Explain Client-centric consistency models.   10
    (b) Explain Mobile entities in detail.   10

6. (a) What is name resolution ? Explain various ways of name resolution.   10
    (b) (i) Justify " Weighted reference counting is more efficient to simple reference   5
               counting ".
         (ii) Differentiate between stateless and stateful servers.   5

7. Write short notes on any **four** :—   20
       (a) SSP chains for mobile entities
       (b) Consistent Global state
       (c) Transparency
       (d) Mobile agents for code migration
       (e) Fault Tolerance.