Time: 2½ Hours   Total Marks: 75

N. B.: (1) **All** questions are **compulsory**.
      (2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
      (3) Answers to the **same question** must be **written together**.
      (4) Numbers to the **right** indicate **marks**.
      (5) Draw **neat labeled diagrams** wherever **necessary**.
      (6) Use of **Non-programmable** calculators is **allowed**.

1.   **Attempt any three of the following:**   15

a.   Describe any five counter measures to minimize the successful attack.

b.   Explain the analogy of Onion Model and Lollipop Model.

c.   What is the Concept of Man in the Middle Attack? Explain with suitable examples.

d.   Discuss the significance of 3D`s of Security.

e.   Explain the following: e-mail worms, Trojans.

f.   How to Build a Security Program? Brief the components of it.

2.   **Attempt any three of the following:**   15

a.   Identify the key steps in the authentication process of Smart Card implementation and outline their role in secure access.

b.   Summarize the concept of biometric authentication and discuss its applications in modern security systems.

c.   Compare Symmetric key cryptography and asymmetric key cryptography.

d.   What are the possible Availability risks in security? Explain.

e.   What is the concept of zoning in the storage network? Explain.

f.   Describe the concept of one-time password.

3.   **Attempt any three of the following:**   15

a.   Write a short note on Centralizing Account Management (AAA).

b.   Explain the types of ICMP messages.

c.   What are the features of Firewall? Explain.

d.   Explain the following internal security practices:

1) Intranets

2) Extranets

e.   Define network hardening and outline the key steps required to strengthen network security.

f.   Explain the concept of Bluetooth IPS.

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4. Attempt **any three** of the following: **15**

a. Write a short note on ACL.

b. Explain the following: First Generation IDS, Second Generation IDS

c. Describe the components of VoIP.

d. What are the vulnerabilities or problems of Operating system support protocol? Explain.

e. Explain the concept of Network Intrusion Detection Systems (NIDS) and describe how they function in threat detection.

f. Identify different types of network protocol attacks and explain it.

5. Attempt **any three** of the following: **15**

a. Describe the concept of the Secure Development Life Cycle (SDLC) and summarize its importance in secure software development.

b. List different types of cloud services and explain their functions in cloud computing.

c. Define the terms "Fraud" and "Hijacking" and explain their significance in the context of information security.

d. Which are the areas of any physical vulnerability assessment? Explain

e. Explain the general types of attacks in web applications.

f. Explain the classification of corporate physical assets.

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