

(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. Explain 3D's (Defense, Detection, and Deterrence) aspects of security can be applied to any situation.
 - b. Explain various Application-layer attacks which include any exploit directed at the applications running on top of the OSI protocol stack.
 - c. Write a short note on CIA Triad Model with reference to Security in Computing.
 - d. With the help of diagram, explain how Onion Defence Model is better than other Model for security.
 - e. What is meant by Zone of Trust? Explain the importance of Zone of Trust for communication through with diagram.
 - f. What are the various countermeasures that, anyone can implement to minimize the risk of a successful attack?
2. **Attempt any three of the following:** 15
- a. Explain different types of Authentication in detail.
 - b. How Kerberos Authentication Process takes place? Explain each step with diagram.
 - c. Write a short note on Certificate-Based Authentication.
 - d. What is meant by Extensible Authentication Protocol (EAP)? Explain its different types.
 - e. Explain role of PKI (Public Key Infrastructure) in Security in Computing and Structure and Function of PKI.
 - f. "Each layer of security is designed for a specific purpose and can be used to provide authorization rules". Explain this statement with reference to Database Security Layers and its types.
3. **Attempt any three of the following:** 15
- a. Explain different layers of two-tier network fundamentals.
 - b. With reference to OSI model in which layer does Router operate? Explain the working of Routing Protocols.
 - c. Write a short note on different generation of Firewalls.
 - d. Explain role of ICMP, SNMP and ECHO in network hardening.
 - e. With the help of diagram, explain working of Bluetooth Protocol Stack.
 - f. What is meant by Wireless Intrusion Detection and Prevention? Explain working of it.

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4. Attempt *any three* of the following: 15
- a. Write a short note on two types of IDS Generation in brief.
 - b. What is Private Branch Exchange (PBX)? Explain how it can be secured
 - c. How Mandatory Access Control Lists (MACL) differ from Discretionary access control lists (DACLS)? Explain.
 - d. Explain working of Biba and Clark Wilson Classic Security Models.
 - e. What is meant by Security Reference Monitor? Explain Windows Security Reference Monitor in detail.
 - f. Explain main problems of TCP/IP's lack of security.

5. Attempt *any three* of the following: 15
- a. What is meant by Hypervisor machine? Explain Why it is necessary to protect this machine.
 - b. Write a short note on Security Benefits of Cloud Computing.
 - c. With the help of diagram explain the concept of Secure development lifecycle in Agile.
 - d. Explain phishing mechanism and 3D's aspects of security with reference to it.
 - e. Give a reason in brief, why it is mandatory to update application patches? Explain various mechanisms for easily updating applications.
 - f. Explain various concerns for web application security to be considered with reference to Security in Computing.