(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.	

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