

Question 1 Answer the following questions:

- i. Explain the private networks that are used in the dark web. Explain mesh topology with a suitable diagram. 7Marks
- ii. Explain the OSI model. 7Marks

OR

- i. Explain NAT (Network Address Translation) with a suitable diagram. 7Marks
- ii. Define switch, router, hub, and their functions. 7Marks

Question 2 Answer the following questions:

- i. Why is network security important? Explain different types of network layer attacks. 7Marks
- ii. Explain the benefits of packet filtering. 7Marks

OR

- i. Explain DMZ (Demilitarized Zone). 7Marks
- ii. Explain risk assessment and risk management. 7Marks

Question 3 Answer the following questions:

- i. Compare and contrast the functionality of SSL/TLS and SSH in securing network communication. 7Marks
- ii. Discuss the different types of Extensible Authentication Protocol (EAP) and their protocols. 7Marks

OR

- i. Explain the concept of tunnelling protocols and how they are provided. 7Marks
- ii. Describe the role of Remote Authentication Dial-In User Service (RADIUS) in network access control. 7Marks

Questions 4 Answer the following questions:

- i. What's the key difference between an IDS and an IPS, and how do they work together to secure a network? 7Marks
- ii. How does a VPN encrypt data and create a secure tunnel for communication? What are the benefits of using a VPN for everyday users and businesses? 7Marks

OR

- i. Why are dictionary attacks a common method for cracking passwords, and what techniques can be used to create strong passwords that resist dictionary attacks? 7Marks
- ii. Fake authentication attacks vs. DNS poisoning: What vulnerabilities do they exploit, and how can they be prevented? 7Marks

Questions 5: Attempt any Seven out of Twelve.

14 Marks

1. Define hybrid topology with a suitable diagram.
2. What is NAT (Network Address Translation), and why is it used?
3. Name any two network layer attacks.
4. What are two methods to prevent network layer attacks?
5. Define packet filtering and its benefit.
6. Why are dictionary attacks effective, and how can they be countered?
7. Mention one best practice for maintaining a secure network.
8. Highlight the main differences between the OSI and TCP/IP models.
9. What are the benefits of using a VPN for users?
- 10 Explain the function of RADIUS in network access control.
- 11 What is a common port scanning technique used by attackers?
- 12 Compare OAuth and TACACS+ in one sentence.

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