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**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA**  
(An Autonomous Institute Affiliated to AKTU, Lucknow)

**B.Tech**

**SEM: III - THEORY EXAMINATION (2025- 2026)**

**Subject: Cyber Security Essentials**

**Time: 2 Hours**

**Max. Marks: 50**

**General Instructions:**

**IMP:** Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

**SECTION-A**

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1. Attempt all parts:-

- 1-a. Define the principle ensuring only authorized access to data. (CO1, K1) 1
- (a) Confidentiality
  - (b) Integrity
  - (c) Availability
  - (d) Authentication
- 1-b. Choose the benefit of VPN for remote employees. (CO2, K1) 1
- (a) Secure access
  - (b) Higher bandwidth
  - (c) Lower storage
  - (d) Energy saving
- 1-c. Identify the main purpose of physical access controls. (CO3, K1) 1
- (a) Prevent unauthorized entry
  - (b) Enhance network speed
  - (c) Improve CPU usage
  - (d) Boost software updates
- 1-d. Identify the primary purpose of Kali Linux. (CO4, K1) 1
- (a) Gaming
  - (b) Web development
  - (c) Penetration testing
  - (d) Multimedia editing
- 1-e. Recall the command to upgrade packages in Kali. (CO4, K1) 1

- (a) rpm -U
- (b) emerge -u
- (c) brew upgrade
- (d) apt upgrade

2. Attempt all parts:-

- 2.a. State the three key principles of cybersecurity. (CO1, K1) 2
- 2.b. Define VPN tunneling. (CO2, K1) 2
- 2.c. State two uses of VLANs in networks. (CO3, K1) 2
- 2.d. List two benefits of using HTTPS. (CO3, K1) 2
- 2.e. List any four features of Kali Linux. (CO4, K1) 2

**SECTION-B**

15

3. Answer any three of the following:-

- 3-a. Evaluate the security challenges in IoT-based healthcare devices. (CO1, K4) 5
- 3-b. Analyze the advantages and limitations of IPsec VPNs. (CO2, K4) 5
- 3-c. Analyze OpenVPN security features and their real-world impact. (CO2, K4) 5
- 3-d. Analyze zero-day threats in web applications. (CO3, K4) 5
- 3.e. Discuss the advantages and disadvantages of dual-boot installation. (CO4, K2) 5

**SECTION-C**

20

4. Answer any five of the following:-

- 4-a. Explain the principles of confidentiality, integrity, and availability with examples. (CO1, K2) 4
- 4-b. Compare ransomware and spyware attacks on personal computers. (CO1, K4) 4
- 4-c. Compare TCP and UDP performance in OpenVPN communication. (CO2, K4) 4
- 4-d. Explain the limitations or disadvantages of VPNs. (CO2, K2) 4
- 4-e. Analyze the role of firewalls at the network layer. (CO3, K4) 4
- 4-f. Discuss the importance of SSL/TLS encryption in transport layer. (CO3, K2) 4
- 4-g. Analyze the role of Kali Linux in Ethical Hacking. (CO4, K4) 4
- 4-h. Discuss the advantages of virtualization for Kali usage. (CO4, K2) 4