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**INSTITUTE OF AERONAUTICAL ENGINEERING**

(Autonomous)

Dundigal-500043, Hyderabad

B.Tech VI SEMESTER END EXAMINATIONS (REGULAR/SUPPLEMENTARY) - JUNE 2025

Regulation: UG-20

NETWORK AND WEB SECURITY

Time: 3 Hours

(COMMON TO CSE | CSIT)

Max Marks: 70

Answer ALL questions in Module I and II**Answer ONE out of two questions in Modules III, IV and V****All Questions Carry Equal Marks****All parts of the question must be answered in one place only****MODULE – I**

1. (a) Describe the interaction between mail user agent (MUA), mail transfer agent (MTA), and mail delivery agent (MDA) in SMTP. [BL: Understand| CO: 1|Marks: 7]
- (b) Design a security enhancement to DNS to mitigate cache poisoning attacks and explain how it strengthens the resolution process. [BL: Apply| CO: 1|Marks: 7]

MODULE – II

2. (a) Explain the methods and challenges of detecting network intrusions in real time. What are the key components of a real-time intrusion detection system? [BL: Understand| CO: 2|Marks: 7]
- (b) Perform a detailed port scan using Nmap on a test virtual machine. Analyze the scan report and identify potential security risks. [BL: Apply| CO: 2|Marks: 7]

MODULE – III

3. (a) Elaborate about computer viruses. Explain the lifecycle of a computer virus. [BL: Understand| CO: 3|Marks: 7]
- (b) Apply any two defensive programming techniques to secure a sample program against known exploits. Justify how each technique contributes to security. [BL: Apply| CO: 3|Marks: 7]
4. (a) Elucidate how spyware and keyloggers compromise user privacy and system security? [BL: Understand| CO: 4|Marks: 7]
- (b) Consider a vulnerable C program with a buffer overflow. Describe how an attacker could exploit it to gain shell access. Suggest code-level defenses that can be applied. [BL: Understand| CO: 4|Marks: 7]

MODULE – IV

5. (a) Summarize HTTP header injection with an example. Elucidate how can such vulnerabilities be avoided? [BL: Understand| CO: 5|Marks: 7]
- (b) Outline the role of the DOM in modern web applications. Write a small HTML page that uses CSS and JavaScript to create a navigation menu with two frames. [BL: Understand| CO: 5|Marks: 7]

6. (a) Does HTTPS protect against client-side vulnerabilities like XSS or CSRF? Justify.
[BL: Understand| CO: 5|Marks: 7]
- (b) Simulate a scenario where violating SOP could allow a malicious page to access sensitive user data.
[BL: Apply| CO: 5|Marks: 7]

MODULE – V

7. (a) What is HTTP parameter pollution (HPP)? Describe how multiple parameters with the same name are handled.
[BL: Understand| CO: 6|Marks: 7]
- (b) A shopping cart application allows users to update item quantities. An attacker modifies a request to set a negative quantity for an item. Describe how this could be exploited as a logic flaw and propose a solution to prevent it.
[BL: Apply| CO: 6|Marks: 7]
8. (a) Elucidate how browser fingerprinting and device fingerprinting techniques are used to identify and track users across different websites, even without traditional cookies.
[BL: Understand| CO: 6|Marks: 7]
- (b) Inspect a website using browser dev tools and list third-party tracking scripts or pixels detected.
[BL: Apply| CO: 6|Marks: 7]

