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**Presidency University**

**Bengaluru**

**School Of Computer Science and Engineering & Information Science**

**Summer Term End-Term Examinations, August 2024**

**Date**: 06/08/2024

**Time**: 9.30am to 12.30pm

**Max Marks**: 100

**Weightage**: 50%

**Odd Semester**: 2023 - 24

**Course Code**: CSE 3094

**Course Name**: Cyber Security

**Department:** CSE

**Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Do not write any matter on the question paper other than roll number.*

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| **Q.No** | **Questions** | **Marks** | **CO** | **RBT** |
| 1 | 1. Differentiate between Information Security and Network Security. | 4 | CO1 | L1 |
| 1. You've been tasked with delivering a presentation to a group of non-technical employees at your company about cyber criminals and the major categories of computer crime. How would you explain who cyber criminals are and provide an overview of the primary types of computer crimes they engage in? | 6 | CO1 | L2 |
| 1. A medium-sized enterprise is planning to revamp its cybersecurity policies. As the lead security analyst, you are tasked with identifying and prioritizing the organization's security objectives. Considering the nature of the business and potential threats, outline three primary security objectives and justify their importance in safeguarding company assets and maintaining operational continuity. | 10 | CO1 | L3 |
| OR | | | | |
| 2 | 1. Differentiate between the Hacker and Intruder. | 4 | CO1 | L1 |
| 1. When someone wants to implement a Network Security model, they should focus on mainly two aspects? What are they? | 6 | CO1 | L2 |
| 1. Alice and bob are sharing information via messaging portal, Solomon overhears the message between the two. Alice and bob are sharing the info via the same messaging portal, Solomon modifies the message sent by Alice to bob. Identify the types of attacks that are performed by attacker (Solomon) and explain them. | 10 | CO1 | L3 |

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| 3 | 1. What is volume-based attack? Explain. | 4 | CO2 | L1 |
| 1. What is IP fragmentation/teardrop attack? Explain. | 6 | CO2 | L2 |
|  | 10 | CO2 | L3 |

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| 4 | 1. Explain what is “Rent a Bot” and “Opt in Botnets”. | 4 | CO2 | L1 |
| 1. What is packet sequencing attack? Explain with an example. | 6 | CO2 | L2 |
| 1. A financial institution is implementing a new online banking platform to provide its customers with convenient access to their accounts. However, the institution is concerned about guaranteeing the trustworthiness of transactions conducted through the platform. They want to ensure that no unauthorized modifications or alterations can be made to transaction data. Identify the type of security service required in this scenario and propose security mechanisms to overcome it in cybersecurity | 10 | CO2 | L3 |

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| 5 | 1. Bring out the difference between asymmetric and symmetric crypto system | 4 | CO3 | L1 |
| 1. You're a World War-1 spy tasked with sending a coded message to your fellow operative. You need to use a simple, yet effective, encryption method. Remembering your training on rail fence ciphers, you decide to use a depth of 2 for your message. How would you encode the message "meet me after the toga party"? | 6 | CO3 | L2 |
| 1. You are a cybersecurity specialist working for a government agency. Your agency needs to securely transmit top-secret documents to a foreign diplomat stationed overseas. You decide to use RSA encryption to ensure the confidentiality of the documents during transmission.   The IT department provides you with the following information:  \* Two large prime numbers: p = 7 and q = 17  \* Public key (e) = 5  \* Your Tasks: \*  1. Calculate the modulus (n) and totient function (Euler's function) (Φ(n)) required for RSA encryption.  2. Encrypt a sample message with a plain text value of 6. What is the cipher text value?  3. Decrypt the cipher text you obtained in step 2. Can you retrieve the original plain text message? | 10 | CO3 | L3 |

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| 6 | 1. Explain the steps involved in Rail fence Cipher technique. | 4 | CO3 | L1 |
| 1. Explain the basic principles of RSA encryption. Describe how the RSA algorithm achieves confidentiality and authentication in data communication. | 6 | CO3 | L2 |
| 1. Alice sends a message to Bob. Message or the plain text is - HELLO. How do you encrypt this message using One Time Pad cipher if the key given is XMCKL. Also show the decryption process. | 10 | CO3 | L3 |

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| 7 | 1. What are the characteristics of Trade Secrets. | 4 | CO4 | L1 |
| 1. What are the Requirements for Registering a Copyright? | 6 | CO4 | L2 |
| 1. Explain the following with respect to patents 2. 1. Requirement for novelty 3. 2. Procedure for Registering a Patent | 10 | CO4 | L3 |

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| 8 | 1. What are the key features of IT Act? Explain in detail | 4 | CO4 | L1 |
| 1. What are the uses of EDP Audit? Explain in detail. | 6 | CO4 | L2 |
| 1. Explain the following in details   1. Copyrights for Computer Software  2. Copyrights for Digital Objects | 10 | CO4 | L3 |

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| 9 | 1. Bring out the difference between interception and interception attack. | 4 | CO1 | L1 |
| 1. Due to a computer or cybercrime, losing account information, computer, or other personal information can be very harmful; because this information can be used by an unauthorized person for any illegal activity. What defense mechanisms can you use to overcome from this? Explain in detail | 6 | CO1 | L2 |
| 1. Alice is accessing her online banking account from a Coffee shop using public wi-fi. Meanwhile, Mallory, a malicious attacker, sets up a fake wi-fi hotspot nearby. Mallory intercepts the Communication between Alice and the legitimate banking server posing as the server to Alice & Vice Versa. Mallory can now intercept Sensitive information such as login credentials and transactions details without either party Knowing. Identify the type of the attack involved in this scenario and explain the steps involved also suggest preventive measures for the same. | 10 | CO1 | L3 |

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| 10 | 1. Explain Echo-chargen attack in detail | 4 | CO2 | L1 |
| 1. You are a service provider for a company. One day user start reporting issues accessing internal resources. You have to investigate the network logs & identify the sudden surge in ping requests, causes of the network outage? | 6 | CO2 | L2 |
| 1. A multinational corporation relies heavily on its internal network for communication and data exchange. Recently, the corporation experienced an unusual event where all employees were unexpectedly logged out of their web-based applications. Upon investigation, the IT security team found that login credentials for many users had been compromised. Identify the type of attack that the IT security team suspects led to the unauthorized access to sensitive data and the logging out of all employees from the web-based application. Explain its implications in cybersecurity. | 10 | CO2 | L3 |