

Unique Paper Code : 32345401
Name of the paper : Information Security and Cyber Laws
Name of the Course : Generic Elective: Computer Science
Semester : IV
Duration : 3 hours
Maximum Marks : 75
Year of Admission : 2015, 2016, 2017, 2018

Instructions for candidates

*Attempt any **four** questions.*

*All questions **carry** equal marks.*

*Complete answer to a question should be uploaded in the form of a single **PDF** file.*

Q1.

- “A malicious attack necessitates each of the following: method, motive, and opportunity” - Justify with the help of an information security attack scenario.
- Enumerate the three security goals and describe the relationship between them with the help of a diagram. Also, give an example of each goal of security.
- Identify each of the following passwords as weak or strong. Justify your answer in each case.
 - password
 - 12345678
 - abc123
 - A*B&D\$C#

Q2.

- Assume that the bank account number is stored in encrypted form on the magnetic stripe of the ATM card. For each of the following security mechanisms, indicate whether it will ensure the secrecy of the bank account number on the ATM card. Justify your answer in each case.
 - Store the cipher text of the bank account number encrypted with the bank’s public key using a public-key cryptosystem.
 - Store the cipher text of the bank account number encrypted with the bank’s private key using a public-key cryptosystem.
 - Store the cipher text of the bank account number encrypted with the bank’s private key using a symmetric key cryptosystem.

- What is a substitution cipher? Obtain the encrypted message for the plaintext **UNIVERSITY** using Caesar cipher with key 3. Also, decrypt the ciphertext **VHFXULWB** that has been encrypted using a rail fence cipher with key 3. What is the primary advantage of Caesar cipher? Also, give one disadvantage of Caesar cipher.

Q3.

- What is meant by digital signature? Under the IT Act 2008, how can someone obtain digital signatures for himself/herself?
- In each of the following cases, which section of the IT Act 2008 would be applicable to Bob? Justify your answer. Also, describe the punishments and penalties that Bob would attract.
 - Bob was found cyber stalking a female colleague at the workplace.
 - Bob posted objectionable messages on a popular social media website that lead to communal disharmony and disturbance.
 - Bob stole the bank login details of a colleague Alice and used it to transfer Rs 50000 from her account.
 - After creating her account and password on a website, Renu is trying to login to the website. But after trying multiple times, she is unable to login as the website suddenly stopped responding because Bob started sending massive amounts of bogus traffic to overwhelm the social media server.

Q4.

- ABC Ltd. recruited Manish and asked him to forcefully break into their computer systems to test how robust their security measures were. Manish's friend Soham by profession was a CA but he illegally accessed his company's systems to gain some confidential data. Although both of them used the same techniques to do the job, identify the black hat and white hat hacker amongst them.
- Enumerate any four types of malwares, giving an example of each.
- Differentiate authentication from authorization, giving an example of each.
- Which biometric details are recorded by UIDAI when you apply for the Aadhaar card?
- List three advantages of fingerprint biometric.

Q5.

- What is meant by the terms: risk impact, risk leverage, and risk analysis? Enumerate different components of risk identification with a suitable diagram.
- Describe public key infrastructure (PKI) with the help of a suitable diagram.

- During the transmission of a message from sender to receiver, identify four possible security failures in which an intruder can access the message. For any one of these failures, indicate a possible solution.

Q6.

- Enumerate any four limitations of firewalls.
- How does Intrusion Detection System (IDS) complement the security provided by a firewall?
- How is a proxy firewall used in conjunction with a screening router to provide better security? Illustrate your answer with the help of a diagram.
- What is an access control list (ACL) ? How does the firewall make use of ACL?

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