[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7965 **L**

Unique Paper Code : 2343010010

Name of the Paper : Data Privacy,

Name of the Course : **B.Sc. (Hons.) Computer Science, DSE NEP-UGCF**

Semester : VIII

Duration : 3 Hours Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. at an appropriate place on receipt of this question paper.
2. This question paper has two sections A and B.
3. Question 1 in Section A is compulsory.
4. Attempt any four questions from Section B.
5. Attempt all parts of a question together.

Section A

1. (a) Define PII using suitable examples. (2)

   (b) List any two methods of protecting data. (2)

   (c) Explain the following terms with respect to General Data Protection Regulation (GDPR): (2)

   i. Data subject

   ii. Natural person

   (d) Differentiate between symmetric and asymmetric encryption giving an example of each. (3)

   (e) Compare Explicit identifiers and Quasi identifiers using example. (3)

   (f) "There exists a trade-off between data privacy and data utility". Justify the statement. (3)

   (g) A company wants to share customer data with researchers but does not want to reveal the identity of customers. How can data anonymization help in protecting data privacy? Explain with an example. (3)

(h) Write difference between threat and attack with respect to data security. (3)

(i) What is data governance? State any two elements addressed within data governance. (3)

(j) Explain different types of sensitive data. (3)

(k) Define any three of the following terms: (3)

i. Threat

ii. Non-repudiation

iii. Authentication

iv. Masquerade attack

Section B

2. (a) Describe any three types of data used in enterprises. Also give challenges associated with each such data in privacy preservation. (6)

(b) State the principles defined by GDPR. (9)

3. (a) Explain CIA triad with respect to Information Security. How the additional concepts of authenticity and accountability complement these objectives? (6)

(b) Read the following situations and answer the questions:

A company's server stops working properly because an attacker floods it with a huge number of fake requests. In another case, an attacker logs into the system by pretending to be an authorized user using stolen credentials. The company also finds that an employee installed a malicious software program hidden inside a free application, which damaged important files.

Based on the above situations, answer the following: (3x3=9)

(i) Identify and define the attack in which the server becomes unavailable due to excessive requests. Is it an active or passive attack? Give reason.

(ii) Identify and define the attack in which the attacker pretends to be an authorized user. Is it an active or passive attack? Give reason.

(iii) Identify and define the malicious program hidden inside the free application. Is it classified as a threat, vulnerability, or risk? Give reason.

4. (a) Differentiate between passive and active attack. List and describe the examples under each type of attack. (5)

(b) A company notices different types of security incidents in its network. In one case, an attacker secretly monitors users' communication without changing any data. In another case, an attacker modifies files and disrupts system services. Based on the above situations, identify the type of attack in each case and justify your answers. (10)

5. (a) Define cryptographic hash function. State the significance of using cryptographic hash functions for digital signatures and message integrity. (7)

(b) Explain Public-Key Infrastructure (PKI). (8)

6. (a) Explain the following stakeholders involved in data privacy in an organization. (4x1.5=6)

(i) Data anonymizer

(ii) Data analyst

(iii) Adversary

(iv) Customer

(b) A smart city administration wants to develop a surveillance system to monitor public areas for safety and security. The system collects data, analyzes activities, detects suspicious behaviour, stores information, and generates alerts for authorities.

Based on the above situation, explain the Model Surveillance System as a five-step model with the help of a suitable diagram. (9)

P.T.O.

7. Write short note on the following: (5x3=15)

   (i) DPDP Act

   (ii) Cryptography technique

   (iii) Privacy and Surveillance