NATIONAL FORENSIC SCIENCES UNIVERSITY

Mid Semester Exam

M.Sc. Cyber Security - Semester - I

Subject Code: CTMTCS SI P11 **Date: 09/10/2025**

Subject Name: ECS CW

Time: 11:00 AM to 12:30 PM **Total Marks: 50**

Instructions:

1. **Write down each question on a separate page.**

		Marks
Q.1	**Attempt any Four.**	
(a)	Discuss the role of the network layer in data transmission with an example of IP addressing.	05
(b)	A laptop is stolen from a company. Explain how BitLocker would help in protecting sensitive data.	05
(c)	Compare Process Hacker with Windows Task Manager in terms of forensic usefulness.	05
(d)	An attacker spoofs IP addresses during transmission. Explain how this impacts the networking layer and propose countermeasures.	05
(e)	Explain access control and duty separation concept in detail.	05
Q.2	**Attempt any three.**	
(a)	Consider a DDoS attack on a university server. Describe how you would identify the attack and suggest effective countermeasures.	10
(b)	An organization wants to enforce password complexity and lockout policies. Explain step-by-step how this can be implemented in Windows.	10
(c)	Cyber attackers gain admin privileges in a Windows system. Explain the impact and suggest OS-level security measures.	10
(d)	Explain CAM Overflow attack.	10

*****

National Forensic Sciences University
School of Cyber Security and Digital Forensics
Mid Semester Examination (October - 2025)

M.Sc. Cyber Security (Batch: 2025-27)

25MSCCS0004 **Semester - I**

Subject Code: CTMSCS SI P2 **Time:** 11.00 to 12.30

Subject Name: Cyber Security Audit and Compliance

Date: 08-10-2025 **Total Marks:** 50

Instruction: **1. Read all the questions carefully.**
2. All the main questions are compulsory.

Q1. Answer the following questions in brief. (Attempt 4 out of 5) **[20 Marks]**

1) Dhanvantray running his firm where they are using ICT systems to accelerate their business. The firm also understand the requirement of cyber security, hence they are following NIST 800-53 security standards. One day, Dhanvantray got an offer from a firm based on UK to work on a project jointly, the UK based firm follows ISO 27001 security standard and they have suggested Dhanvantray's firm to follow the same in order to get the project and work in collaboration. Now, Dhanvantray wants to know the difference between NIST 800-53 and ISO 27001. How to find difference between them? Explain the process.
2) If any data breach has information about Personal Identification Number of users, then it is known as violation of what? Explain the answer of 'What?' with its definition and how to audit it?
3) Explain one of the seven domain which is the area between trusted zone to untrusted zone. LAN-TO-WAN
4) How to mitigate the risk? Explain the process with suitable example.
5) What is the compliance? Explain general steps to meet compliance.

Q2. Answer the following questions in detail. (Attempt 3 out of 4) **[30 Marks]**

1) Illustrate the requirement of security audit and compliance in an organization. Explain its importance and outcome.
2) XYZ organization allows their employee to work from home for 3 months in a year. What kind of security measures they should take and how they can maximize their C-I-A triad in the stated case? Explain in detail.
3) Write a real-world case study related to security audit or compliance in detail.
4) How to secure Application/System domain? Explain in detail.

!! ALL THE BEST !!

*****

National Forensic Sciences University
School of Cyber Security and Digital Forensics

Course Name: M.Sc. Cyber Security (Batch: 2025-27)

25MSCCS004 **Semester - I**

Subject Code: CTMSCS SI P4 **Time:** 11.00 am to 12.30 pm

Subject Name: Artificial Intelligence

Exam: Mid Semester Examination (OCT - 2025) **Date:** 10-10-2025

Q1. Answer the following questions in short. (Attempt any 5) **[25 Marks]**

1) Demonstrate how NumPy can be used for performing mathematical and statistical operations with suitable code examples.
2) Compute the mean, median, and mode for the dataset: [2, 4, 6, 6, 8, 10, 10].
3) Describe various types of Machine Learning with suitable examples.
4) Explain the working principle of Logistic Regression with equations. How is it different from Linear Regression?
5) Explain the concept of vectors and matrices used in Machine Learning.
6) Discuss any two challenges faced in developing ML-based systems.

Q2. Answer the following questions in detail. (Attempt any 2) **[16 Marks]**

1) Given the following data points:

$y = mx + b$

$X=[2,4,6,8]$, $Y=[3,7,9,13]$

Calculate the equation of the best-fit line using simple linear regression.

2) Explain the working of a Decision Tree classifier. How does it use entropy and information gain to split nodes? Illustrate with an example.

3) A logistic regression model uses the sigmoid function

$$p = \frac{1}{1 + e^{-(-3+1.2x)}}$$

Compute the probability when x=3. Interpret the result in terms of class prediction.

Q3. Select the Correct answer from the options **[09 Marks]**

1) The dot product of [1, 2, 3] and [4, 5, 6] is:

(a) 12 (b) 21 (c) 32 (d) 45

$4 + 10 + 18$

2) Which of the following Python libraries supports matrix multiplication directly?

(a) Pandas (b) NumPy (c) Seaborn (d) OS

3) The "def" keyword in Python is used to:

(a) Define a function (b) Create a list (c) Import a module (d) Loop through data

4) Logistic Regression uses which activation function?

(a) Linear (b) ReLU (c) Sigmoid (d) Tanh

5) The IQR of data [10, 15, 20, 25, 30, 35, 40, 45] is:

(a) 20 (b) 15 (c) 25 (d) 10

6) Which technique is commonly used to handle missing values during data pre-processing?

(a) Min–Max Scaling (b) One-Hot Encoding

(c) Mean or Median Imputation (d) PCA

7) In a Decision Tree, which metric is commonly used to measure node impurity?

(a) Variance (b) Entropy

(c) Correlation (d) Gradient

8) The goal of Linear Regression is to:

(a) Classify categorical data

(b) Minimize the sum of squared errors between actual and predicted values

(c) Split data into homogeneous groups

(d) Estimate probabilities

9) In Logistic Regression, the output of the sigmoid function always lies between:

(a) –1 and 1 (b) 0 and 1

(c) 0 and ∞ (d) –∞ and ∞