

National Forensic Sciences University
School of Cyber Security and Digital Forensics Science
SEE Practical EXAM
M.Sc. CS SEM -1

Date:13-DEC 2024

Subject: AI- MSCSC SI L4
Time: 10:00 AM to 1:00 PM

Question 1: Data Pre-processing and Model Training (100 marks)

Scenario: You are given a dataset containing features of different types of flowers (e.g., sepal length, sepal width, petal length, petal width) and their corresponding species (Iris-setosa, Iris-versicolor, Iris-virginica).

```
#from sklearn.datasets import load_iris  
  
#data = load_iris()
```

Tasks:

- Load the dataset using pandas.
- Perform exploratory data analysis (EDA) to understand the data, including visualizing the relationships between features.
- Handle missing values (if any) appropriately.
- Split the data into training and testing sets.
- Train at least 4 classifiers on the training data.
- Make predictions on the test data.
- Evaluate the model's performance using appropriate metrics (e.g., accuracy, precision, recall, F1-score, ROC/AUC).

Rubrics:

Data loading and handling	EDA and visualization	Data splitting	Model training and prediction	Model evaluation
(15 marks)	(20 marks)	(10 marks)	(30 marks)	(25 marks)

Paper 2: Regression Analysis and Model Selection (100 marks)

Scenario: You are provided with a dataset containing information about house prices and their associated features (e.g., area, number of bedrooms, location).

```
from sklearn.datasets import fetch_california_housing  
  
housing = fetch_california_housing()
```

Tasks:

- Load and pre-process the data.
- Train a linear regression model to predict house prices.
- Experiment with different feature scaling techniques (e.g., standardization, normalization) and observe their impact on model performance.
- Train and evaluate other regression models (e.g., decision tree regression, random forest regression).
- Select the best-performing model based on appropriate metrics (e.g., R-squared, Mean Squared Error, Mean Absolute Error).

National Forensic Sciences University
School of Cyber Security and Digital Forensics Science
SEE Practical EXAM
M.Sc. CS SEM -1

Date:13-DEC 2024

Subject: AI- MSCSC SI L4
Time: 10:00 AM to 1:00 PM

Rubrics:

Data loading and pre-processing	Linear regression model training and evaluation	Feature scaling and analysis	Model comparison and selection	Interpretation and insights
(15 marks)	(25 marks)	(20 marks)	(30 marks)	(10 marks)

Question 3: Clustering and Dimensionality Reduction (100 marks)

Scenario: You are given a dataset containing

Tasks:

- Load and pre-process the data.
- Apply dimensionality reduction techniques (e.g., Principal Component Analysis (PCA)) to reduce the number of features.
- Perform customer segmentation using K-Means clustering.
- Visualize the clusters using appropriate techniques (e.g., scatter plots, dendrograms).
- Analyze the characteristics of each cluster and provide insights into customer behaviour.

Rubrics:

Data loading and pre-processing	Dimensionality reduction	Clustering	Visualization and interpretation	Insights and business implications
(15 marks)	(20 marks)	(30 marks)	(25 marks)	(10 marks)

National Forensic Sciences University
School of Cyber Security and Digital Forensics

Course Name: M.Sc. Cyber Security

Semester - II Exam: TA - I

Subject Code: CTMSCS SI P1

Date: 09-09-2024

Subject Name: ECS and CW

Time: 10.30 am to 11.15 pm

Q1 Do as Direct. (Attempt All)

05 Marks

- A What are the three classes of an OS?
- B What is Process hacker?
- C What is ARP?
- D What is NTFS?
- ~~E~~ Where is Windows Password is located?

Q2 Answer the following questions (Attempt any 4)

20 Marks

- ~~A~~ What is firewall? What is inbound and outbound rules?
- B How DNS Work?
- ~~C~~ What is Group policy? How to change user password without knowing current password?
- ~~D~~ What are the common cyber-attack and its countermeasures?
- ~~E~~ Importance of Security Hardening?

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National Forensic Sciences University
School of Cyber Security and Digital Forensics

Course Name: M.Sc. Cyber Security (Batch: 2024-26)

Semester - I

Subject Code: CTMSCS SI P2

Time: 02:30 pm to 03:15 pm

Subject Name: Cyber Security Audit and Compliance

Exam: TA - I (SEP - 2024)

Date: 09-09-2024

Q1 Answer the following questions in word(s). (Attempt All) [05 Marks]

1. _____ type of company(s) has to follow the guidelines given by SEBI.
2. Audit/Assessment is _____ type of approach.
3. As per ISO 27002: 2022 standard, the information security policy should take consideration of the requirements derived from business and _____.
4. The level of details in information security policy is _____ and in topic specific policy is _____.
5. Enron collapsed in 2001 and filed bankruptcy shareholders saw a loss of \$11 billion the auditing and _____ consulting firm assisted Enron in deal structuring and other consultative practices.

Q2 Answer the following questions in short/brief. (Any four) [20 Marks]

- 1) Write the short note on 'management responsibilities' control as per ISO 27002:2022 standard.
- 2) Explain the methods of assessment with suitable example.
- 3) That day Mr. Chris was sleeping at his home and suddenly his mobile started getting email notifications and subsequently calls from their clients, he picked-up one of the calls and got the information that his clients are getting messages that their investments to Jecunity & Co. Ltd. (Chris' company) is no longer exist and it will be property of the company. Immediately the CERT team has responded to the incident and removed the infection.

The CERT report says that there were some employees who have attached malicious pen-drives and the malware had compromised the servers and stole the database of clients. CERT has advised Jecunity & Co. Ltd. to undergo through A risk-based approach to managing information security in the organization.

Please explain the process to meet the compliance as suggested by CERT team.

- 4) State the importance and requirement of cyber security compliance for any organization briefly.
- 5) Discuss any real-world case study related to compliance and audit with all important points.

**  **  **  **  **  **  **

National Forensic Sciences University
School of Cyber Security and Digital Forensics

Course Name: M.Sc. Cyber Security (Batch: 2024-26)

Semester - I Exam: TA - I (September - 2024)

Subject Code: CTMSCS SI P3

Time: 10:30 AM to 11:15 AM

Subject Name: Web Application Security

Date: 10/09/2024

Total Marks - 25

Attempt any five Questions. Each Question has five Marks.

Q1. Describe how TCP protocol achieves reliability and connection-oriented features.

Q2. Give the difference between GET and POST methods of HTTP Protocol.

Q3. What is the HTTP Session? Describe the different Session Management techniques.

Q4. Explain different ways to achieve the virtual hosts. Also, suggest appropriate tools to find the virtual hosts.

Q5. What is the Web Server Fingerprinting? Suggest appropriate tools to achieve fingerprinting on the web server.

Q6. What is the Subdomains enumeration? Suggest appropriate tools to achieve subdomain enumeration.

***** End of Paper *****

National Forensic Sciences University
School of Cyber Security and Digital Forensics

Course Name: M.Sc. Cyber Security (Batch: 2024-26)

Semester -I Exam: TA - I (SEP - 2024)

Subject Code: CTMSCS SI P4

Time: 10-Sep-2024

Subject Name: Artificial Intelligence

Date: 2:30 PM to 3:15 PM

Q1. Concise answer Questions. (Attempt All)

[05 Marks]

1 Write the name of the Visualization library in Python.

2 How does ML work?

3 Write output for the following Python code.

```
>>>s = "Rourkela" >>>print (s[::-1]).
```

4 Why did AI Winter happen?

5 Write output for the following Python code.

```
>>>A = [ [1,2,3], [4,5,6], [7,8,9]] >>>print (A[1][2])
```

Q2. Answer the following questions in short. (Attempt any 4)

[8 Marks]

✓ Explain the Difference between AI, ML, DL & Data Science.

✓ Write at least 4 application ML in the cyber security domain.

✓ Do as directed.

$$\begin{bmatrix} 1 & 4 \\ 6 & 3 \end{bmatrix} \times \begin{bmatrix} 2 & 3 \\ 3 & 5 \end{bmatrix}$$

✓ Difference Array vs. List.

5 Explain types of Sampling.

$$\begin{array}{r} 89.99910 \\ 80.000 \\ \hline 61.428 \\ 28.572 \end{array}$$

$$\begin{array}{r} 49910 \\ 85.000 \\ \hline 61.428 \\ 23.572 \end{array}$$

$$\begin{array}{r} 69910 \\ 70.000 \\ \hline 61.428 \\ 9.572 \end{array}$$

Q3. Answer the following questions in Detail. (Attempt any 2)

[12 Marks]

✓ 1. Write Python code to sum all even index values from the list.

2. Write the difference between a List and a Dictionary in Python with an appropriate example.

✓ 3. Find variance & SD for the following values.

40	45	85	90	56	71	63
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National Forensic Sciences University
School of Cyber Security and Digital Forensics

Course Name: M.Sc. Cyber Security (Batch: 2024-25)

Semester - I Exam: TA - I (SEP- 2024)

Subject Code: CTMSCS-SI P5 Time: 10:30 am-11:15pm

Subject Name: Introduction to Forensic Science and Cyber Law Date: 11.09.2024

Q1. Multiple Choice Question. (Attempt All) [05 Marks]

- 1) Who invented Comparison Microscope?
a) Albert S Osborn b) Francis Galton c) Calvin Goddard d) Hans Gross
- 2) ABO blood grouping was discovered by?
a) Leone lattes b) Calvin Goddard c) Edmond Locard d) Karl Landsteiner
- 3) World first fingerprint bureau was established in
a) Bombay b) Chennai c) Chandigarh d) Calcutta
- 4) Explosive residue from crime scene will be sent to which department?
a) Chemistry b) Physics c) Ballistics d) Toxicology
- 5) NFSU Delhi was previously known as?
a) LNIN-NICFS b) LLIN-NICFS c) JNLN-NICFS d) NJNL-NICFS

Q2. Answer the following questions in short. (Attempt any 4) [8 Marks]

- ✓ 1) Explain different branches under Biology division of forensic Sciences and its functions.
- ✓ 2) Explain the law of progressive change.
- 3) Define Forensic Science and write its significance.
- ✓ 4) Explain different branches under Chemistry division of Forensic Science and its functions.
- ✓ 5) Explain the Role of Forensic Scientist.

Q3. Answer the following questions in Detail. (Attempt any 2) [12 Marks]

- ✓ 1. Explain the Need of Forensic Science.
2. Explain Different branches of forensic sciences in detail.
- ✓ 3. Write about the 10 major contributions by famous scientists in the field of forensic Sciences.

National Forensic Sciences University
School of Cyber Security and Digital Forensics

Course Name: M.Sc. Cyber Security
Semester - I Exam: Mid Semester

Subject Code: CTMSCS SI P1

Date: 07-10-2024

Subject Name: ECS and CW

Time: 11.00 am to 12.30 pm

Q1 Do as Direct. (Attempt any three)

30 Marks

- A What is firewall and its type? How to create inbound and outbound rules in Iptables?
- ✓B What is Process Hacker? How to Troubleshooting Application Issues.
- ✓C Explain Linux and Windows Security Hardening parameters in detail.
- ✓D What are the Disk Scheduling algorithms?

Q2 Answer the following questions (Attempt any 4)

20 Marks

- ✓A What is Nmap? Explain Ping Scan with syntax.
- ✓B What is Windows Event log? How to access it and analyze it?
- ✓C Explain Different type of DNS Record.
- D What is a difference between threats and vulnerability?
- ✓E What is local security policy in windows?

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240103502014

National Forensic Sciences University
School of Cyber Security and Digital Forensics

Course Name: MSc Cyber Security (Batch: 2024-26)

Semester – I

Subject Code: CTMSCS SI P2

Subject Name: Cyber Security Audit and Compliance

Exam: Mid Semester Examination (October - 2024)

Time: 11.00 – 12.30 hrs.

Total Marks: 50

Date: 08-10-2024

Q1. Select the Correct answer from the options or answer in one word. (Attempt all) [09 Marks]

1) Which of the following is a baseline security standard?

- ☒ A. ISO 27002 B. NIST 800-82 C. HIPAA D. COBIT

2) In which year Enron Corporation was collapsed and filed a bankruptcy?

- A. 2000 ☒ B. 2001 C. 1980 D. 1999

3) Examining management control over IT and related policies and processes. What type of IT audit scope is this?

- A. Technical B. Application ☒ C. Organizational D. Financial

4) Arrange the following statements in correct order.

- i. Identify the gap or determine where the organization stands with the compliance mandate.
- ii. Interpret the regulation and how it applies to the organization.
- iii. Devise a plan to close the gap.
- iv. Execute the plan.

- A. i, ii, iii, iv ☒ B. ii, i, iii, iv C. iii, ii, i, iv D. iii, iv, i, ii

5) Identify the incorrect sentence(s) from following:

- i. Assessment is not a part of audit process.
- ii. Audits are typically more clear-cut in the sense of pass or fail.
- iii. Assessments provide a chance for improvement in a more comfortable and productive environment
- iv. Auditors should never be involved in the auditing of processes, systems, or applications that they themselves designed or implemented.

- A. i & iv B. only iii ☒ C. only i D. i, iii, iv

6) When any organization passes an audit, typically it receives certification.

7) Reviewing the system's procedure is Examination type of assessment.

8) Investigation is a type of audit where company's records and process are examined based on suspicious activity.

9) _____ is the full form of NIST.

Q2. Answer the following questions briefly. (Attempt any 5)

[25 Marks]

☒ Explain the guidance about information security policy control as per ISO 27002:2022.

☒ What are the possible risks if inventory of assets; control is not in place? Which type of details are required for an inventory of asset?

☒ Discuss the management responsibilities for information security as per ISO 27002:2022 standard.

☒ Explain the three layers of threat intelligence as per ISO 27002:2022 standard.

5) FGG Bank is struggling with frequent issues in their IT infrastructure and so that their infrastructure is prone to cyber attacks. Board of directors have decided to move their infra. to cloud. What type of security measures FGG bank should take before moving their infra. to cloud? Justify the answer.
6) Draft a small policy for acceptable use of laptop provided by the organization to their employees.

[16 Marks]

Q3. Answer the following questions in detail (Attempt any 2)

- 1) Discuss the case study of pager blast in Lebanon and how it could be saved in case of any significant control of ISO 27002:2022 were followed? Justify the answer.
- 2) Hacker has got an access to the database server and stolen classified information and posted it on dark-web forum for sell. The organization investigated the case and identified that after bypassing a firewall anyone can access the database server. What type of access management systems shall be set-up to prevent such issued in future? Justify the answer.
- 3) Write any real-world case study related to audit with its technical details.

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DO YOUR BEST !!

National Forensic Sciences University
School of Cyber Security and Digital Forensics

Course Name: M.Sc. Cyber Security (Batch: 2024-26)

Semester - I

Time: 11.00 am to 12.30 pm

Subject Code: CTMSCS SI P3

Subject Name: Web Application Security

Exam: Mid-Semester Examination (Oct - 2024)

Date: 09-10-2024

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

- ✓1) Describe the HTTP Protocol.
- 2) Describe the Security Misconfiguration.
- ✓3) Explain False Positive and False Negative scenarios in VAPT.
- ✓4) Describe Known and Unknown vulnerabilities in VAPT.
- ✓5) Explain CVE (Common Vulnerabilities and Exposures).
- ✓6) Explain Common Weakness Enumeration.

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

- ✓1) Explain Threat Modelling STRIDE and DREAD
- ✓2) Describe the HTTP Session and its implementation and Security Considerations in detail.
- 3) Describe Secure Coding Practice in detail.

Q3. Select the Correct answer from the options (Attempt any 1) [09 Marks]

- 1) You may analyze the website request, response, and content using a proxy server tool (ZAP/Burp). How it will, help in VAPT explain.
- ✓2) You may do a spider and brute-force the directories of the website using a proxy server tool (ZAP/Burp). How it will, help in VAPT explain.

240103002014

National Forensic Sciences University
School of Cyber Security and Digital Forensics

Course Name: M.Sc. CS (Batch: 2024-26)

Semester - I

Subject Code: CTMSCS SI P4

Time: 11.00 AM to 12.30 PM

Subject Name: Artificial Intelligence

Total Marks: 50

Exam: Mid Semester Examination (OCT - 2024)

Date: 10-10-2024

Instruction: 1.
2.

Q1. Answer the following questions in short. (Attempt any 4) [20 Marks]

- 1) Explain types of machine learning.
- 2) Explain joint probability and conditional probability with an example.
- 3) What is underfitting and overfitting explained with a proper example.
- 4) Explain tuples, lists and dictionaries in the context of python.
- 5) Calculate mean, median, mode, sd of values: 80, 83, 85, 85, 87, 90.
- 6) Write history of AI.

Q2. Answer the following questions in detail. (Attempt any 3) [24 Marks]

- 1) Explain information gain and gini index in context of the Decision Tree algorithm.
- 2) Explain a regression machine learning algorithm.
- 3) List types of feature selection methods. explain one of them in detail.
- 4) Explain the KNN algorithm.

Q3. Select the Correct answer from the options (Attempt all) [06 Marks]

1) Which library is commonly used for creating static visualizations in Python?

- A. Matplotlib B. Plotly C. Bokeh D. D3.js

2) What is the formula for conditional probability of event A given event B?

- A. $P(A|B) = P(A \cap B) / P(B)$ B. $P(A|B) = P(A) * P(B)$
C. $P(A|B) = P(A) / P(B)$ D. $P(A|B) = P(A \cap B) / P(A)$

3) What is the result of the following NumPy operation?

```
import numpy as np
arr = np.array([1, 2, 3])
result = arr * 2
print(result)
```

- A. [1, 2, 3] ☒ B. [2, 4, 6]
C. [3, 4, 5] D. An error occurs

4) Which function in NumPy is used to create an array of zeros?

- A. np.ones() ☒ B. np.zeros()
C. np.empty() D. np.arange()

5) How can you reshape a NumPy array arr to have a new shape (3, 4)?

- A. arr.reshape(3, 4) B. np.reshape(arr, (3, 4))
C. arr.resize((3, 4)) ☒ D. All of the above

6) Given a NumPy array arr = np.array([1, 2, 3, 4, 5]), what does arr[1:4] return?

- A. [1, 2, 3] ☒ B. [2, 3, 4]
C. [3, 4, 5] D. [1, 2, 3, 4]

3) Foot wear section of CID Bengal was established in which year.

a) 1920

b) 1917

☒ c) 1915

d) 1925

4) Chromatography is based on the principal of.

a) Absorption

b) Desorption

c) Adsorption

☒ d) None of the above

5) Electrophoresis is commonly used in which division.

☒ a) Biology

b) Physics

c) Document

d) Cyber

6) Bureau of Investigation (BOI) was established in which country?

a) Australia

b) India

c) Cannada

☒ d) USA

Seat No.: _____

Enrolment No. 240103002014

NATIONAL FORENSIC SCIENCES UNIVERSITY

Semester End Examination (December – 2024)
M.Sc. Cyber Security Semester – I

Subject Code: CTMSCS SI P1

Subject Name: Essentials of Cyber Security and Cyber Warfare

Time: 02:30 PM to 05:30 PM

Date: 04/12/2024

Total Marks: 100

Instructions:

1. Write down each question on a separate page.
2. Attempt all questions.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.

		Marks
Q.1	Attempt any three.	
(a)	What is Process Hacker, and how is it used in Windows security management?	08
(b)	How does automatic updates enhance Windows system security?	08
(c)	How does Windows Backup help organizations safeguard critical data?	08
(d)	How are registry key permissions managed in Windows?	08
Q.2	Attempt any three.	
(a)	What is a Password Policy, and how does it contribute to account security?	08
(b)	How can security templates be applied to enforce security settings in Windows?	08
(c)	What are Security Options in GPO settings, and how do they enhance security?	08
(d)	What AppLocker and how does it help in securing windows systems	08
Q.3	Attempt any three.	
(a)	How can port control and port restrictions improve Linux system security?	08
(b)	Explain IPCONFIG and IFCONFIG with example.	08
(c)	Explain log filtering and what types of tools is used for it.	08
(d)	What is kernel security and mention two methods to enhance it.	08
Q.4	Attempt any two.	
(a)	What is cyber warfare, and how does it differ from traditional warfare?	07
(b)	What is cyber arms control and why it is necessary.	07
(c)	How is cyber warfare defined, and what types of activities fall under its scope?	07
Q.5	Attempt any two.	
(a)	What are the core principles of information assurance?	07
(b)	Differentiate between information operations and information warfare.	07
(c)	Write a note on psychological warfare.	07

--- End of Paper---

Seat No.: _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
Semester End Examination (December – 2024)
M.Sc. Cyber Security Semester – I

Subject Code: CTMSCS S1 P2
Subject Name: Cyber Security Audit and Compliance
Time: 02:30 PM to 05:30 PM

Date: 05/12/2024

Total Marks: 100

Instructions:

1. Write down each question on a separate page.
2. Attempt all questions.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.

		Marks
Q.1	Attempt any three.	
(a)	Why are governance and compliance important.	08
(b)	Differentiate between Security Assessment and Security Audit.	08
(c)	Define IT security audit and explain its objectives.	08
(d)	Explain IT security Assessment, IT Security Audit and Security compliance.	08
Q.2	Attempt any three.	
(a)	What is meant by scope of an audit? Explain its importance in the auditing process.	08
(b)	How important is an IT Audit process.	08
(c)	What is Computer Assisted Audit Techniques (CAATs), and why are they important.	08
(d)	Write difference between Audit plan and Audit process.	08
Q.3	Attempt any three.	
(a)	How to identify the risk level and how to write IT infrastructure audit report.	08
(b)	What are the seven domains of a typical IT infrastructure? Briefly describe each.	08
(c)	What are the key components of an IT infrastructure audit report?	08
(d)	How to maximize CIA with the help of Audit and compliance.?	08
Q.4	Attempt any two.	
(a)	What is risk analysis, and why is it important for organizations?	07
(b)	What are the key phases of the BCP life cycle?	07
(c)	How does disaster recovery planning differ from business continuity planning?	07
Q.5	Attempt any two.	
(a)	Briefly describe the concept of Cyber Terrorism defined under the IT Act.	07
(b)	Explain the purpose of ISO/IEC 27002 and its role in supporting ISO/IEC 27001.	07
(c)	Discuss the significance of HIPAA in protecting healthcare information.	07

--- End of Paper---

Seat No.: _____

Enrolment No. 240103002014

NATIONAL FORENSIC SCIENCES UNIVERSITY

Semester End Examination (December – 2024)

M.Sc. Cyber Security Semester – I

Subject Code: CTMSCS S1 P3

Date: 06/12/2024

Subject Name: Web Application Security

Time: 2.30 pm to 5.30 pm

Total Marks: 100

Instructions:

1. Write down each question on a separate page.
2. Attempt all questions.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.

		Marks
Q.1	Attempt any three.	
(a)	What is CSRF attack? What are its prerequisites? How can you prevent CSRF attacks?	08
(b)	Explain the STRIDE threat modelling framework, outlining its six categories of security threats. For each category, suggest a corresponding mitigation strategy.	08
(c)	What is a vulnerability? Explain the major steps in lifecycle of vulnerability assessment.	08
(d)	What do you understand by access control? Explain any technique through which access control can be broken in a web application.	08
Q.2	Attempt any three.	
(a)	What is cross site scripting? Differentiate between reflected and stored XSS with a suitable example.	08
(b)	What is CVSS? Explain CVSS base metrics for a SQL injection vulnerability.	08
(c)	What are Dockers and how do they work? List the core components of Docker.	08
(d)	How do cookies work? Explain any 3 attributes in cookies.	08
Q.3	Attempt any three.	
(a)	What is Union based SQL injection? Give an example of Union based SQL Injection to obtain sensitive data.	08
(b)	What is file upload vulnerability? Explain how an attacker might bypass file type validation during a file upload process.	08
(c)	What is an Insecure Direct Object Reference (IDOR) vulnerability? Explain how it occurs and suggest ways to prevent it.	08
(d)	Explain the TCP protocol stack.	08
Q.4	Attempt any two.	

- (a) Describe how REST APIs enable communication between client and server using HTTP methods with examples. 07
- (b) Explain insecure deserialization with example. 07
- (c) What is webserver fingerprinting? What are the methods to fingerprint a webserver? 07

Q.5

Attempt any two.

- (a) What is same origin policy? Explain how it can ensure security with an example. 07
- (b) What is logging and monitoring? How is insufficient logging and monitoring a vulnerability? 07
- (c) Explain how google hacking can aid in enumeration. 07

--- End of Paper ---

Seat No.: _____

Disha Sharma
Enrolment No. 240103002014**NATIONAL FORENSIC SCIENCES UNIVERSITY**
M.SC. CYBER SECURITY**Subject Code: CTMSCS SI P4**
Subject Name: Artificial Intelligence
Time: 02:30 PM to 05:30 PM**Date: 9/12/2024****Total Marks: 100****Instructions:**

1. Write down each question on separate page.
2. Attempt all questions.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.

			Marks
Q.1		Attempt any three.	
	(a)	Create a Python function analyze_list that takes a list of integers and returns a dictionary with keys 'sum', 'average', 'max', and 'min'. Demonstrate this function with the list [10, 20, 30, 40, 50].	4+4
	(b)	i. Imagine you are in a grocery store. You want to buy 1 rose, 2 masalas, and 3 milk bottles. The unit prices are \$1, \$2, \$0.5. respectively. Generate Dot products of given vector. ii. You have a dataset representing the daily temperatures in degrees Celsius for a week: Temperatures = [20,22,21,25,24]. Calculate the variance of the temperatures for the week.	3+5
	(c)	Using NumPy, create a 1D array of numbers from 0 to 9, reshape it into a 2x5 array, create a DataFrame from the reshaped array using Pandas, and plot a bar chart of the DataFrame using Matplotlib.	1+2+2+3
	(d)	Write a short on .describe() function in python, with an example. Compare it with .info() and .shape() commands in python	4+2+2
Q.2		Attempt any three.	
	(a)	Explain the steps to set up a Python development environment using Anaconda and write a Python script that takes a user input number and checks if it is even or odd, printing "Even" or "Odd" accordingly.	08
	(b)	Explain KNN algorithm and find the Euclidian distance between new customers named 'Monica' has height 134cm and weight 64 kg and old customer name 'Rama' has height 123 cm and weight 57kg.	08
	(c)	Describe the process of splitting a dataset into training, testing, and validation sets. How does the use of validation set help in model evaluation and hyperparameter tuning? Provide an example to illustrate your answer.	2+6
	(d)	Explain working of K-means & Hierarchical clustering. Discuss about pros and cons of both unsupervised algorithms.	6+2

NATIONAL FORENSIC SCIENCES UNIVERSITY

Semester End Examination (December – 2024)

M.Sc. Cyber Security Semester – I

Date: 10/12/2024

Subject Code: CTMSCS-SI P5

Subject Name: Introduction to Forensic Science and Cyber Law

Total Marks: 100

Time: 2:30pm – 5:30pm

Instructions:

1. Write down each question on a separate page.
2. Attempt all questions.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.

		Marks
Q.1	Attempt any three.	
<input checked="" type="checkbox"/> (a)	Explain ethics in Forensic Sciences	08
<input checked="" type="checkbox"/> (b)	Write about the role of forensic scientist	08
<input checked="" type="checkbox"/> (c)	Write a detail note on Microscopy	08
<input checked="" type="checkbox"/> (d)	Explain the Organizational Setup of Forensic Science in India	08
Q.2	Attempt any three.	
<input checked="" type="checkbox"/> (a)	Explain Section 375(IPC) or Sec 63(BNS) in Detail	08
<input checked="" type="checkbox"/> (b)	Write a note on GEQD and BPR&D	08
<input checked="" type="checkbox"/> (c)	Write about the history of Forensic Science.	08
<input checked="" type="checkbox"/> (d)	Explain Section 45 and 46 of IEA	08
Q.3	Attempt any three.	
<input checked="" type="checkbox"/> (a)	Write detail note on major instrumentation used in Forensic laboratory	08
<input checked="" type="checkbox"/> (b)	Explain IT Act.	08
<input checked="" type="checkbox"/> (c)	Explain Section 299(IPC) or Sec 100 (BNS) in detail	08
<input checked="" type="checkbox"/> (d)	Explain the hierarchy of courts in India and their powers in detail	08
Q.4	Attempt any two.	
<input checked="" type="checkbox"/> (a)	Explain Different branches of forensic sciences in detail	07
<input checked="" type="checkbox"/> (b)	Explain the Need of Forensic Science.	07
<input checked="" type="checkbox"/> (c)	Define Computer, its components and different types of storage media.	07
Q.5	Attempt any two.	
<input checked="" type="checkbox"/> (a)	Explain 7 laws of Forensic Science.	07
<input checked="" type="checkbox"/> (b)	Explain the working of Video Spectral Comparator and ESDA	07
<input checked="" type="checkbox"/> (c)	Write a Brief note on NIA and CCNTS	07

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