

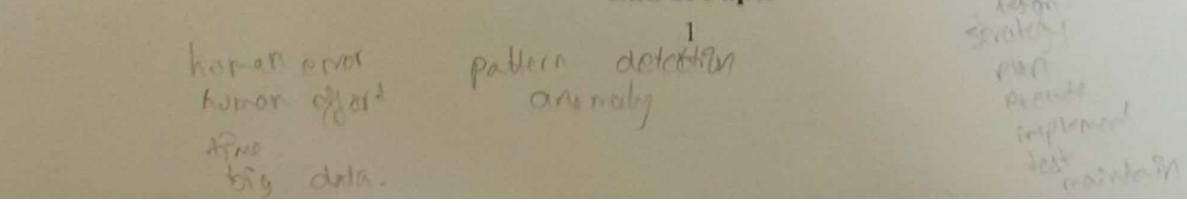
NATIONAL FORENSIC SCIENCES UNIVERSITY

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

Subject Code: CTMCS S1 P2**Date: 05/12/2024****Subject Name: Cyber Security Audit and Compliance****Time: 02:30 PM to 05:30 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)	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.: _____

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NATIONAL FORENSIC SCIENCES UNIVERSITY

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

Subject Code: CTMSCS SI P1**Date: 04/12/2024****Subject Name: Essentials of Cyber Security and Cyber Warfare****Time: 02:30 PM to 05:30 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 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---

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NATIONAL FORENSIC SCIENCES UNIVERSITY

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

Subject Code: CTMSCS-SI P5

Date: 10/12/2024

Subject Name: Introduction to Forensic Science and Cyber Law

Time: 2:30pm – 5:30pm

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)	08
(b)	08
(c)	08
(d)	08
Q.2	Attempt any three.
(a)	08
(b)	08
(c)	08
(d)	08
Q.3	Attempt any three.
(a)	08
(b)	08
(c)	08
(d)	08
Q.4	Attempt any two.
(a)	07
(b)	07
(c)	07
Q.5	Attempt any two.
(a)	07
(b)	07
(c)	07

--- End of Paper---

Seat No.: _____

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
M.SC. CYBER SECURITY

Subject Code: CTMSCS SI P4**Date: 9/12/2024****Subject Name: Artificial Intelligence****Time: 02:30 PM to 05:30 PM****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 <code>analyze_list</code> 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 <code>.describe()</code> function in python, with an example. Compare it with <code>.info()</code> and <code>.shape()</code> 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

Q.3		Attempt any three.					
	(a)	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				
	(b)	a) Discuss two major issues and challenges in Machine Learning. b) Explain the different types of Machine Learning and provide an example of each type.	4+4				
	(c)	Draw and describe ANN Architecture and CNN Architecture and write the difference between them.	3+5				
	(d)	i. Obtain and draw the confusion matrix for the following python lines <pre># Consider the True values y_true_S=np.array([H1,H1,H1,H1,H1,H1,H1,H1,H1,H1,H1,H1, H1,H1,H1,H1,H1,H1,H2,H2,H2,H2,H2,H2,H2,H2,H2,H2, ,H2,H2,H2,H2,H2,H2])</pre> # Consider the Predicted values <pre>y_pred_S=np.array([H1,H1,H1,H1,H1,H1,H1,H1,H1,H1,H1,H1 ,H1,H1,H1,H2,H2,H2,H1,H2,H2,H2,H2,H2,H2,H2,H2,H2,H2,H2])</pre> ii. From the given matrix, write the meaning of each of 4 values. <table border="1"> <tr> <td>51</td><td>16</td></tr> <tr> <td>21</td><td>27</td></tr> </table> x-axis (non-event and event) and y-axis (non-event and event) are actual and predicted values. iii. With the help of a neat diagram, justify: Increasing the precision of a ML model, decreases the recall, and vice-versa. State and explain the metric: F1-score.	51	16	21	27	2+2+4
51	16						
21	27						
Q.4		Attempt any two.					
	(a)	What are the different techniques/steps involved in Detecting and Recognizing Faces	07				
	(b)	What are the steps involved in Natural Language Pipeline. Explain any four with example.	07				
	(c)	Draw and Explain the LSTM Architecture.	07				
Q.5		Attempt any two.					
	(a)	How machine learning can be used to detect phishing attacks and identify fake content.	07				
	(b)	You are tasked with designing an ML-based cyber security system for a large enterprise. The system needs to address multiple aspects of security, including malware detection, anomaly detection, and intrusion detection. Describe the design of your system.	3+4				
	(c)	Discuss how ML can be applied in anomaly detection and penetration testing (Pen Testing) to improve the security of systems and networks.	07				

--- End of Paper---

KNN
 Bayes
 SVM
 hierarchical
 Lasso
 PCA
 tokenization
 stemming
 lemmatization
 complexity
 not available among them
 training
 learned
 input gate
 forget gate
 output gate
 On hot encoding
 corpus
 document
 vocabulary
 word

Seat No.: _____

Enrolment No. _____

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

Total Marks: 100

Time: 2.30 pm to 5.30 pm

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 Docker and how do they work? List the core components of Docker.	08
(d)	How do cookies work? Explain any <u>3</u> 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---

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
School of Cyber Security and Digital Forensics

End Sem Practical Examination, Semester - I - Dec -2024

Subject Code: CTMSCS S1 L3

Date: 13/12/2024

Subject Name: Artificial Intelligence Laboratory

Time: 3 hours

Total Marks: 100

Instructions:

- I. Attempt all questions

1. Implement a CNN model Mnist dataset to classify hand written digits.

OR

Implement an ANN model to train the IRIS dataset

1*20=20 marks

2. Implement any supervised machine learning algorithm on Iris dataset.

1*10=10 marks

3. Perform one hot encoding/categorical encoding to convert any text dataset into numeric dataset.

1*10=10 marks

4. Create a DataFrame with 10 random integers in two columns. Calculate and print the mean and standard deviation for each column.

1*10=10 marks

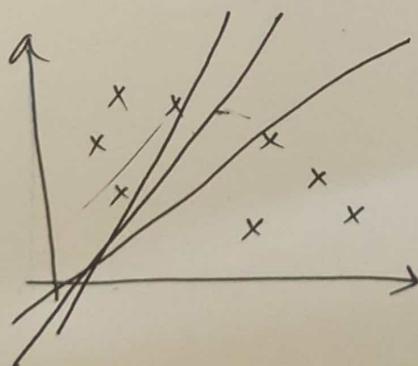
II. Record

20 marks

III. Viva

30 marks

PLA
SVM



Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
School of Cyber Security and Digital Forensics

End Sem Practical Examination, Semester - I - Dec -2024

Subject Code: CTMSCS S1 L2

Date: 12/12/2024

Subject Name: Web Application Security Laboratory

Time: 3 hours

Total Marks: 100

Instructions:

I. Attempt all questions

- 1. Explain cross site scripting. Perform stored and reflected XSS attack using burp suite and port swigger labs. $1*20 = 20$ marks
- 2. Perform a directory traversal attack to display the contents of /etc/passwd file. $1*10 = 10$ marks
- 3. Perform an XML External Entity to perform SSRF attack. $1*10 = 10$ marks
- 4. Perform and explain union based SQL injection to display username and password of users. $1*10 = 10$ marks

II. Record

20 marks

III. Viva

30 marks

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
School of Cyber Security and Digital Forensics

End Sem Practical Examination, Semester - I - Dec -2024

Subject Code: CTMSCS S1 L1

Date: 11/12/2024

Subject Name: Essentials of cyber security and cyber warfare

Time: 3 hours

Total Marks: 100

Instructions:

1. Attempt all questions

I. Perform one Major Practical

- ✓ 1. Demonstrate How to capture network packets through wireshark, write steps and what filter and commands we have to use. 20 marks
- ✓ 2. Demonstrate how to use event log for forensics purpose, and write its steps also. 10 marks
- ✓ 3. What are the ways to collect windows logs, explain one of them with demonstration. 10 marks
- ✓ 4. How to perform acquisition of any devices using FTK Imager. 10 marks

III. Record

20 marks

IV. Viva

30 marks

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
School of Cyber Security and Digital Forensics

End Sem Practical Examination, Semester - I - Dec -2024

Subject Code: CTMSCS S1 L1

Date: 11/12/2024

Subject Name: Essentials of cyber security and cyber warfare

Time: 3 hours

Total Marks: 100

Instructions:

1. Attempt all questions

I. Perform one Major Practical

- ✓ 1. Demonstrate How to capture network packets through wireshark, write steps and what filter and commands we have to use. 20 marks
- ✓ 2. Demonstrate how to use event log for forensics purpose, and write its steps also. 10 marks
- ✓ 3. What are the ways to collect windows logs, explain one of them with demonstration. 10 marks
- ✓ 4. How to perform acquisition of any devices using FTK Imager. 10 marks

III. Record

20 marks

IV. Viva

30 marks

Enrolment No. _____
NATIONAL FORENSIC SCIENCES UNIVERSITY, BHOPAL
M.Sc. Cyber Security
Term Assessment – I (September- 2024)

Subject Code: CTMSCS SI P1

Date: 09.09.2024

Subject Name: Essentials of Cyber Security and Cyber Warfare

Time: 10:45 AM

Total Marks: 25

Instructions:

All questions are compulsory

Short Answer Questions

1x10 = 10

- 1 Q.1 Define BitLocker?
- 1 Q.2 Why windows backup is important?
- 1 Q.3 What do you understand by process hacker?
- 1 Q.4 NTFS permissions are used to manage access to Folder and File - on a Windows system?
- Q.5 The Microsoft Baseline Security Analyzer (MBSA) is used to _____ and _____ security issues.
- Q.6 The three classes of Windows operating systems are Client, Workstation, and Embedded ? True/False
- 3 Q.7 Process Hacker is a tool for managing and analyzing processes and services in Windows. True/False
- Q.8 Automatic updates can be configured to download and install patches without user intervention? True/False
- 1 Q.9 How do privileges differ from permissions in Windows.
- 1 Q.10 What are the main functions of Windows Backup?

Long Answer Questions

Attempt any three questions:

5x3 = 15

Q.1 What are registry key permissions and their purpose.

Q.2 What are NTFS permissions used for in Windows.

Q.3 How do automatic updates benefit system security?

Q.4 Describe the three classes of operating systems in the Windows environment.

Enrolment No. _____
NATIONAL FORENSIC SCIENCES UNIVERSITY, BHOPAL
M.Sc. Cyber Security
Term Assessment – I (September- 2024)

Subject Code: CTMSCS SI P2

Date: 10.09.2024

Subject Name: Cyber Security Audit and Compliance

Time: 10:45 AM

Total Marks: 25

Instructions:

All questions are compulsory

Short Answer Questions

$1 \times 10 = 10$

- Q.1** What are Computer Assisted Audit Techniques (CAATs)?
- Q.2** Define are the different types of IT audits?
- Q.3** What is the scope of an IT compliance audit?
- Q.4** Why are governance and compliance critical for an organization?
- Q.5** An IT security assessment is used to evaluate the _____ of an organization's security measures
- Q.6** Why is compliance important in IT security?
- Q.7** Compliance refers to the organization's adherence to _____, standards, and regulatory requirements..
- Q.8** Which domain is responsible for managing network devices like switches and routers?
- Q.9** Define CIA.
- Q.10** Why is it important to balance confidentiality?

Long Answer Questions

Attempt any three questions:

$5 \times 3 = 15$

- Q.1** What devices and components are commonly found in the LAN domain?
- Q.2** Why is it important to balance confidentiality, integrity, and availability in an organization? _____
- Q.3** What are the seven domains of a typical IT infrastructure? Explain in Details.
- Q.4** Illustrate the difference between audit and assessment.

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY, BHOPAL

M.Sc. Cyber Security

Term Assessment – I September- 2024

Subject Code: CTMSCS S1 P3

Date: 11.09.2024

Subject Name: Web Application Security

Time: 10:45 AM

Total Marks: 25

Instructions: All questions are compulsory

Short Answer Questions

(1x10=10)

Q.1. Draw the web application architecture.

Q.2. Name two front end technologies for web development

Q.3. Client-side scripts are more secure than server-side code. State True or False.

Q.4. What is the purpose of JavaScript?

Q.5. What is HTTP?

Q.6. What are the different status codes in HTTP?

Q.7. What is fingerprinting of a database?

Q.8. What is a persistent cookie?

Q.9. SELECT username FROM users WHERE username = 'user1' AND password = 'password'.

Modify this query to create a SQL Injection.

Q.10. How can you prevent SQL Injection?

Long Answer Questions

Attempt any three questions:

(5x3 =15)

Q.1. Explain Same Origin Policy with an example.

Q.2. What is fingerprinting of web server? Explain various methods by which we can fingerprint a web server?

Q.3. What are the conditions for Union operator to work in SQL? Explain how these conditions can be met to execute a Union based SQL Injection Attack.

Q.4. Illustrate Error based SQL Injection with an example

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY, BHOPAL

M.Sc. Cyber Security

Term Assessment – I September- 2024)

Subject Code: CTMSCS S1 P4

Date: 12.09.2024

Subject Name: Artificial Intelligence

Time: 10:45 AM

Total Marks: 25

Instructions:

All questions are compulsory

Short Answer Questions

(1x10=10)

Q.1. Define Artificial Intelligence.

Q.2. What is AI winter?

Q.3. Write any 2 challenges of machine learning algorithms.

Q.4. Give 2 applications of Artificial Intelligence.

Q.5. What are the 2 data structures in Pandas library in Python?

Q.6. How can we access the second element of a list?

Q.7. Differentiate between median and mean.

Q.8. What is variance and standard deviation?

Q.9. Write any 2 differences between a list and a dictionary.

Q.10. How can you check whether a series is empty or not?

Long Answer Questions

Attempt any three questions:

(5x3 =15)

Q.1. What are the types of machine learning algorithms? Elaborate types of supervised machine learning algorithms.

Q.2. Write a python program to create a nested dictionary with student in the outer dictionary and subject and marks in the inner dictionary. Use the dictionary to create pandas Dataframe. Find the maximum marks for a particular subject.

Q.3. Write a python program to create a list. Use slicing to divide the list into 2 parts. Create 2 series from the sliced lists and add index in both the series.

Q.4. Create a numeric data frame. Write a python program to find the count, mean, median of both column and rows of the dataframe. Also find the sum of each row and column separately and also the sum of all columns.

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY, BHOPAL

M.Sc. Cyber Security

Term Assessment – I September- 2024

Subject Code: CTMSCS S1 P5

Date: 13.09.2024

Subject Name: Introduction to Forensic Science and Cyber Law

Time: 10:45 AM

Total Marks: 25

Instructions:

All questions are compulsory

Short Answer Questions

(1x10=10)

Q.1. Define Criminology.

Q.2. _____ the foundational principle in Forensic science was given by Edmond Locard.

Q.3. The term ‘Acquittal’ implies a courtroom verdict in which a criminal defendant has not been found guilty - True or False?

Q.4. Define Forensic Science.

Q.5. Analysis of evidences comes under which component of Forensic sciences?

Q.6. What is the meaning of the terms ‘Actus reus’ and ‘Mens Rea’?

Q.7. Name three founding principles given in the preamble of Indian Constitution.

Q.8. List out two most important conditions a custom should meet to be treated as a source of law.

Q.9. List out three important fundamental rights.

Q.10. List out two major differences between Fundamental Rights and DPSP.

Long Answer Questions

Attempt any three questions:

(5x3 =15)

Q.1. Define the Writ of Mandamus. Also name the Article of the constitution under which the provision of this writ is made available to the Indian citizens.

Q.2. Discuss the functions and need of forensic science.

Q.3. Write about the world history of Forensic Science.

Q.4. Write about the Indian history of Forensic Science.

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
School of Cyber Security & Digital Forensics

Mid Semester Examination, Semester - I - Oct -2024

Subject Code: CTMSCS SI P1

Date: 07/10/2024

Subject Name: Essentials of Cyber Security and Cyber Warfare

Time: 11:00 AM TO 12:30 PM

Total Marks: 50

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.

Q.1.	<p>Answer the following / Define the following</p> <ul style="list-style-type: none">(a) What is cyber warfare, and how does it differ from traditional warfare?(b) What are the key elements of a nation's cyber strategy?(c) In what scenarios would you choose to use Process Hacker over other system monitoring tools?(d) Discuss the key components that constitute cyber warfare.(e) What are the different methods to back up the Windows Registry?(f) Describe the steps involved in rolling back a device driver using Device Manager.(g) What are some historical examples of cyber warfare incidents?(h) How do shared folder permissions differ from NTFS permissions?(i) Why is it important to manage user privileges carefully in both local and network environments?(j) What is the Windows Security Infrastructure, and how does it support the security of the operating system?	10*2 (Marks)=20
Q.2.	<p>Answer the following question in short (any 4)</p> <ul style="list-style-type: none">(a) Discuss the ethical and legal implications of defining cyber warfare.(b) What are the major challenges in establishing international agreements on cyber arms control?(c) What is the Windows Registry, and what role does it play in the operating system?(d) Discuss the ethical and legal implications of defining cyber warfare.(e) How does Process Hacker display and organize running processes compared to Windows Task Manager?	5*4 (Marks)=20
Q.3.	<p>Answer the following in detail</p> <p>Explain the primary characteristics that differentiate cyber warfare from other forms of cyber-attacks, such as cyber espionage or cyber terrorism?</p> <p>OR</p> <p>How can smaller nations use cyber capabilities to level the playing field against larger military powers?</p>	1*10 (Marks)=10

2a-d- What are the primary goals of cyber warfare?

NATIONAL FORENSIC SCIENCES UNIVERSITY
School of Cyber Security & Digital Forensics

Mid Semester Examination, Semester - I - Oct -2024

Subject Code: CTMSCS SI P2

Date: 08/10/2024

Subject Name: Cyber Security Audit and Compliance

Time: 11:00 AM TO 12:30 PM

Total Marks: 50

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.

Q.1.	<p>Answer the following / Define the following</p> <ul style="list-style-type: none"> ✓ (a) Define the cyber law? Write its advantages and disadvantages? ✓ (b) Write about understanding of cyber space? ✓ (c) Explain types of cyber-crimes with punishments. ✓ (d) Describe an IT security assessment? ✓ (e) What do you understand by cybersecurity, and why is it important? ✓ (f) Why do companies need security audits? ✓ (g) What steps do you follow leading up to an audit? ✓ (h) What types of data validation and integrity checks can CAATs perform during an audit? ✓ (i) Describe IT Security Assessment? <i>IT security audit.</i> ✓ (j) What is the primary objective of an IT audit? 	<p>10*2 (Marks)=20</p>
Q.2.	<p>Answer the following question in short (any 4)</p> <ul style="list-style-type: none"> ✓ (a) List and describe the typical components and items found in the user domain. How do these components impact compliance requirements. ✓ (b) What are the Seven Domains of a typical IT infrastructure, and why is it important to address each one in an organization's security strategy ✓ (c) What is compliance, and why is it important for organizations to maintain compliance in their IT infrastructure? ✓ (d) How can organizations maximize confidentiality, integrity, and availability (C-I-A) within the workstation domain? ✓ (e) What is an IT Security Assessment, and how does it differ from a security audit or vulnerability assessment? ✓ (f) What is the fundamental difference between an IT audit and an IT security assessment? 	<p>5*4 (Marks)=20</p>
Q.3.	<p>Answer the following in detail</p> <p>Explain the concept of an IT security audit. How is it performed, and what are its primary objectives?</p> <p style="text-align: center;">OR</p> <p>Describe how CAATs are used for auditing application controls. How can they help improve the accuracy of an audit?</p>	<p>1*10 (Marks)=10</p>

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
School of Cyber Security and Digital Forensics
M.Sc. Cyber Security-Semester-I
Mid Semester Examination - October-2024

Subject Code: CTMSCS S1 P3

Date:09-10-2024

Subject Name: Web Application Security

Time: 1 hour 30 min

Total Marks: 50

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.

Q.I. Answer the following

10*2 =20 Marks

1. Do you believe that the Same Origin Policy effectively enhances web security? Why or why not?
2. Why is HTTP called a stateless protocol?
3. What do you mean by blind injection attack?
4. How does same site attribute of cookie enhance security?
5. Differentiate between client-side scripts and server-side scripts.
6. What is banner grabbing?
7. What is the importance of same origin policy for web security?
8. Describe how an attacker can exploit a SQL Injection vulnerability in a login form.
9. How can CSRF token prevent CSRF attacks?
10. Give a simple script to exploit to show working of source and sink.

Q. II. Answer the following questions in short (any 4)

5*4= 20 Marks

You've been approached by a group of educators and industry professionals who are passionate about empowering individuals to acquire new skills and advance their careers. They want to create an online learning platform that offers a wide range of courses, workshops, and resources to help

learners develop practical skills in areas such as programming, digital marketing, graphic design, and entrepreneurship.

1. The course list page of the above learning platform lists the courses for which the user has subscribed. Perform a SQL injection attack such that user can view unsubscribed courses also from the database. Write the SQL query that can cause the attack. How does parametrized queries prevent SQL injection attacks?
2. Suppose the web application is trying to access a file which is located at `/var/www/images/`. Explain an attack which is possible in this scenario
3. What is the purpose of cookies. Explain how cookies work. Differentiate between persistent and non-persistent cookies.
4. Explain how canonical path can prevent directory traversal attacks?
5. Explain HTML and URL context in XSS attack.

Q.III. Answer the following in detail (any 1)

1*10=10 Marks

1. Differentiate between CSRF and SSRF attack. Explain CSRF attack in detail. How can you prevent these attacks?
2. A retail website allows customers to leave product reviews, which are displayed on the product page for other users to read. The review form accepts basic text input, and users can rate products with star ratings. However, the form does not restrict what kind of text can be entered, and reviews appear exactly as written by users.

One day, some customers start noticing that when they view a particular product's reviews, a pop-up message appears saying, "You've won a \$500 gift card! Click here to claim your prize!"

The platform administrators confirm that no changes were made to the review system, and no known vulnerabilities were identified in their core software.

- a) Based on the information provided, how could the pop-up messages be appearing on the product page? What kind of vulnerability might be present in the review system that is allowing this behavior? [2]
- b) Explain different types of the vulnerability found above. [5]
- c) What security measures should the website implement to prevent this vulnerability from being exploited in the future? [3]

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY

School of Cyber Security and Digital Forensics

M.Sc. Cyber Security-Semester-I

Mid Semester Examination - October-2024

Subject Code: CTMSCS S1 P4

Date: 10-10-2024

Subject Name: Artificial Intelligence

Time: 1 hour 30 min

Total Marks: 50

43

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.

Q.I. Answer the following

10*2 = 20 Marks

- ✓ 1. What are the important Python libraries you use in artificial intelligence.. 2
- ✓ 2. What is structured and unstructured data? Give examples. 1
- ✓ 3. What is a matrix? Show basic arithmetic operations using 2*2 matrices as example. 2
- ✓ 4. What is the importance of loss function in machine learning? 1.5
- ✓ 5. Briefly explain linear regression. 2
- ✓ 6. Write python functions to calculate mean, median, mode, variance of sample data. 2
- ✓ 7. What is variance and standard deviation of a data sample. 2
- ✓ 8. How will you standarise the dataset in data preprocessing? 1
- ✓ 9. Write a python to create a Series and slice it. 2
- ✓ 10. Write a python program to create a dataframe with two columns. Plot a scatter plot of the data set with one column in X Axis and the other in Y Axis. 2

Q. II. Answer the following questions in short (any 4)

5*4= 20 Marks

- ✓ 1. Explain KNN algorithm with proper example. 4.5
- ✓ 2. What are the challenges in data handling?
- ✓ 3. Differentiate between training, testing and validation data. 4
- ✓ 4. Differentiate between classification and regression problem using proper examples and algorithms. 5
- ✓ 5. What is overfitting and underfitting in machine learning? How can overfitting be minimized? 4

Q.III. Answer the following in detail (any 1)

1*10=10 Marks

1.

- ✓ a) What is feature selection and normalization in machine learning. [3]
✓ b) Explain PCA Algorithm for dimensionality reduction. [4]
✓ c) Show how this can be implemented in Python. [3]
2. Examine the below dataset with age as the input variable and Purchased as a target variable with binary classes (0 and 1)

Age	Purchased
33	1
78	0
23	1
65	0
45	1

Apply Naïve Bayes Classification algorithm for the above dataset.

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY

School of Cyber Security and Digital Forensics

M.Sc. Cyber Security-Semester-I

Mid Semester Examination - October-2024

Subject Code: CTMSCS S1 P5

Date: 11-10-2024

Subject Name: Introduction to Forensic Science and Cyber Law

Total Marks: 50

Time: 1 hour 30 min

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.

Q.I. Answer the following

10*2 = 20 Marks

- ✓ 1. Describe the Term "Abettor" according to the definition given under Section 46 of Bhatiya Nyay Sanhita (BNS).
- ✓ 2. Comment on the provisions of law wherein one act is abetted, and a different act is done.
- ✓ 3. How is a rape to a minor woman different from a rape to an adult woman.
- ✓ 4. Is marital rape a crime under the existing provisions of law in our country. Elucidate.
- ✓ 5. Explain provisions given in BNS 2023 with respect to the offence of causing death due to rash and negligent driving and escaping without reporting to the law enforcement agencies.
- ✓ 6. Which years mark the establishment of the CBI and NIA?
- ✓ 7. Define Forensic Engineering.
- ✓ 8. Mention any 2 points regarding the need of Forensic science.
- ✓ 9. What is role of forensic science in the functioning of judiciary?
- ✓ 10. Explain the Law of individuality with a suitable example.

Q. II. Answer the following questions in short (any 4)

5*4= 20 Marks

- ✓ 1. List out the offenders for whom special provisions of punishment are prescribed for the offence of Rape under Section 64(2) of BNS.
- ✓ 2. As per the latest legal provisions given under Section 63 of BNS in the description of the crime of 'Rape', **consent** of the woman in question is a crucial factor. How will you determine whether the consent was valid or not, in law.
- ✓ 3. Why is there a need for BPR&D and CBI? Discuss in brief.

4. Write about the evolution of Forensic science in India.
5. Explain any 10 branches of Forensic science in brief.
6. Write a short note on National Crime Records Bureau.

Q.III. Answer the following in detail (any 1)

1*10=10 Marks

1. When is Culpable Homicide not termed as a Murder under section 101 of BNS. Illustrate your answer with appropriate examples.
2. Frame two cases of your own emphasizing the application of at least 4 laws of Forensic science.
3. Discuss Fingerprint Bureau in detail. Write about the scope of Forensic Science in brief.

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
School of Cyber Security and Digital Forensics

Mid Sem Practical Examination, Semester - I - Oct -2024

Subject Code: CTMSCS S1 L3

Date:16/10/2024

Subject Name: Artificial Intelligence Laboratory

Total Marks: 50

Time: 1 hour 30 min

Instructions:

1. Attempt all questions

I. Perform one Major Practical

$1*20 =20$ marks

Q.1. Load any dataset from scikit learn. Perform dimensionality reduction using PCA. Apply any two supervised learning algorithm and compare the accuracy.

II. Perform one minor Practical

$1*10=10$ marks

Q.2. Create a numeric dataframe from dictionary in Python with at least 5 columns. Calculate its mean, median, variance and standard deviation row wise and column wise.

III. Record

10 marks

IV. Viva

10 marks

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
School of Cyber Security and Digital Forensics

Mid Sem Practical Examination, Semester - I - Oct -2024

Subject Code: CTMSCS S1 L2

Date: 15/10/2024

Subject Name: Web Application Security Laboratory

Total Marks: 50

Time: 1 hour 30 min

Instructions:

1. Attempt all questions.

I. Perform one Major Practical

$1 \times 20 = 20$ marks

Q.1. Perform a Blind SQL Injection using Port Swigger and Burp suite

or

Q.1 Perform a Stored XSS in HTML context using Port Swigger and Burp suite.

II. Perform one minor Practical

$1 \times 10 = 10$ marks

Q.2. Perform database enumeration using Port Swigger and Burp Suite

Or

Q.2. Perform a basic SSRF attack using Port Swigger and Burp Suite

III. Record

10 marks

IV. Viva

10 marks

Enrolment No. _____

**NATIONAL FORENSIC SCIENCES UNIVERSITY
School of Cyber Security & Digital Forensics**

Mid Sem Practical Examination, Semester - I - Oct -2024

Subject Code: CTMSCS SI P1

Date: 14/10/2024

Subject Name: Essentials of Cyber Security and Cyber Warfare

Time: 11:00 AM TO 12:30 PM

Total Marks: 30

Instructions:

1. Attempt all questions.

Q.1.	How to capture network packets through Wireshark. Write steps and what filter and command we have to use.	20
Q.2.	Answer the following question in short (any 4) (a) Write steps, what are the ways to collect windows log write also about event log.	10