

NATIONAL FORENSIC SCIENCES UNIVERSITY**M. Tech. Cyber Security****Semester - I - January - 2024****Subject Code:** CTMTCS SI P2**Date:** 12/01/2024**Subject Name:** Network Security And Forensics**Total Marks:** 100**Time:** 11:00 AM to 2:00 PM**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.	08
(a) Differentiate IDS & IPS.	08
(b) What is Firewall. Discuss the types of Firewalls.	08
(c) Suresh, a security engineer looking for a solution for a firewall based on keyword-based filtration. Which category of firewall would Suresh be looking into. Discuss in detail.	08
(d) You are hired as an Intern at ABC Pvt Ltd where you are asked to explain DNS & its working. Kindly justify your explanation with appropriate diagram.	08
Q.2 Attempt any three.	08
(a) Explain SNMP & discuss its enumeration techniques.	08
(b) What is ARP Poisoning? Explain the attack with an example.	08
(c) Explain MAC Flooding and discuss ways to mitigate it.	08
(d) Describe three distinct types of network attacks commonly seen in cyber security. Provide a brief explanation of each attack type, highlighting their potential impact on an organization's network security, and suggest one effective mitigation strategy for each attack.	08
Q.3 Attempt any three.	08
(a) What is Cryptography? Discuss different types of Cryptographic Systems.	08
(b) Differentiate Hashing v/s Encryption.	08
(c) Explain potential sources of Network Artefacts over the system.	08
(d) Explain OSI Model in detail.	08
Q.4 Attempt any two.	07
(a) Explain OSCAR method.	07
(b) What are Active & Passive Attacks?	07

(c) Discuss the evidences collected from

- i) Routers
- ii) Firewalls
- iii) Switch

07

Q.5 Attempt any two.

(a) Write Nmap commands for the following scenarios:

- i) Stealth Scan
- ii) OS Info
- iii) Version Info
- iv) DOS using scripts
- v) Excluding targets provided in a list.txt file.

07

(b) Explain Network Penetration Testing Life cycle.

07

(c) Explain TCP Header.

07

--- End of Paper---

NATIONAL FORENSIC SCIENCES UNIVERSITY
M.Sc. Digital Forensics and Information Security
Semester – I – January - 2024

Subject Code: CTMSDFIS SI P3

Date: 16-01-2024

Subject Name: Incident Response Management

Time: 11:00 AM to 2:00 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) Illustrate the need and goals of an incident response. 08
- (b) What is malware and its various types? Explain about botnet identification. 08
- (c) There is an incident occurred in a windows-based computer system. What investigation you will do? What different windows-based artefacts should be analyzed and why? 08
- (d) Discuss about Log with their formats and types in detail. 08

Q.2

Attempt any three.

- (a) One Albania, the second-largest mobile operator in Albania with 1.36 million subscribers, confirmed in a Facebook post that it dealt with a cybersecurity incident on Christmas day. The hackers in a Telegram post claimed to have stolen data from the organizations. "The amount of data collected is enormous. Expect the worst to happen," the hackers warned. Apparently, the hacker group has a publicly accessible website where similar messaging is published. Explain the possible cyberattack(s) and methodology used by the criminal. 08
- (b) State the developing skills of Incident Response Team members. 08
- (c) Discuss Base Scoring of CVSS. 08
- (d) Write a detailed note on Incident Handling Process. 08

Q.3

Attempt any three.

- (a) What are various costs of an incident? Explain them in detail. 08
- (b) Write a detailed note on report writing. 08
- (c) During Ukraine Blackout (2016) cyber incident following details were observed technically by E-ISAC and SANS ICS team: 08

- Spear phishing to gain access to the business networks of the oblenergos
- Identification of BlackEnergy 3 at each of the impacted oblenergos
- Theft of credentials from the business networks
- The use of virtual private networks (VPNs) to enter the ICS network
- The use of existing remote access tools within the environment or
- The use of issuing commands directly from a remote station similar to an operator HMI
- Serial-to-ethernet communications devices impacted at a firmware level
- The use of a modified KillDisk to erase the master boot record of impacted organization systems as well as the targeted deletion of some logs
- Utilizing UPS systems to impact connected load with a scheduled service outage
- Telephone denial-of-service attack on the call center

Explain the loss of C-I-A & A-A-A triad & type(s) of information warfare with justified reasons.

- (d) Discuss any realworld cyber incident case study with all facts and technical findings. 08

Q.4

Attempt any two.

- (a) Discuss various signs of an incidents with 5 examples each. 07
- (b) What do you mean by network monitoring? How to analyze network data? 07
- (c) How can you collect live data for the investigation and what kind of measures should be considered? 07

Q.5

Attempt any two.

- (a) How can you collect live Microsoft events? What can you do afterwards for generating an incident alert? Discuss the process technically. 07
- (b) Explain Incident Response Team with it's various structure and dependencies. 07
- (c) Explain basics of windows registry. 07

--- End of Paper---

Seat No.: _____

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
M.TECH. ARTIFICIAL INTELLIGENCE & DATA SCIENCE
Semester – I – January - 2024

Subject Code: CTMTAIDS SI P3

Date: 16/01/2024

Subject Name: Incident Response and Audit Compliances

Time: 11:00 AM to 2:00 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)	What is an Incident? Explain any 5 types of incident.	08
(b)	Discuss any 4 types of malwares in detail.	08
(c)	Discuss the signs of an incident in detail.	08
(d)	Discuss the process of Post Incident Activities.	08
Q.2	Attempt any three.	
(a)	Discuss the Preparation phase of Incident Response Management.	08
(b)	Discuss the Identification phase of Incident Response Management.	08
(c)	Discuss the Containment and Eradication Phase of Incident Response Management.	08
(d)	<p>Scenario: On a Saturday afternoon, external users start having problems accessing the organization's public websites. Over the next hour, the problem worsens to the point where nearly every access attempt fails. Meanwhile, a member of the organization's networking staff responds to alerts from an Internet border router and determines that the organization's Internet bandwidth is being consumed by an unusually large volume of User Datagram Protocol (UDP) packets to and from both the organization's public DNS servers. Analysis of the traffic shows that the DNS servers are receiving high volumes of requests from a single external IP address. Also, all the DNS requests from that address come from the same source port.</p> <p>I. Whom should the organization contact, regarding the external IP address in question?</p> <p>II. What precursors of the incident, if any, might the organization detect?</p>	08

		<p>III. How would the incident response team analyze and validate this incident? What personnel would be involved in the analysis and validation process?</p> <p>IV. What strategy should the organization take to contain the incident? Why is this strategy preferable to others?</p> <p>V. What additional tools might be needed to respond to this particular incident?</p>	
Q.3		Attempt any three.	
	(a)	Discuss Incident Response Team Roles, Responsibilities and Structure.	08
	(b)	Write down the importance of Incident Response Policy and Explain key elements of Incident Response Policy.	08
	(c)	Briefly discuss the following terms: ISO/IEC 2700, COBIT, HIPAA, GDPR.	08
	(d)	Explain Project Initiation, Business Impact Analysis, Recovery Strategy Phase of Creating BCP.	08
Q.4		Attempt any two.	
	(a)	Explain Plan, Design & Development, Implementation and Testing phase of Creating BCP.	07
	(b)	You appeared for an interview at TC Ltd. for the position of SoC analyst. The interviewer has asked you to define the following terms: War Room, Threat, Vulnerability, SIEM. Explain each term in your own words.	07
	(c)	Your team has been dealing with an Incident Scenario. There are various different attack scenarios & you have to prioritize the Incident. Explain the team & the organizations how will you prioritize the Incident along with their relevant factors	07
Q.5		Attempt any two.	
	(a)	Write a note on Disaster Recovery Process.	07
	(b)	Write a note on IT Act 2000 and explain any 2 sections of it.	07
	(c)	Write a note on Business Continuity Planning. Why a Business require BCP?	07

--- End of Paper---

Seat No.: _____

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
M.Tech. Artificial Intelligence and Data Science
Semester - I - January - 2024

Subject Code: CTMTAIDS SI P4

Date: 17/01/2024

Subject Name: Fundamentals of Data Science and Machine Learning

Time: 11:00 AM to 2:00 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 (a) Both k-mean and k-medoids algorithm can perform effective clustering.	08
a. Illustrate the strength and weakness of k-means in comparison medoids.	08
b. Illustrate the strength and weakness AGNES clustering schemes.	08
(b) Determine the Jaccard distance, cosine similarity, and Euclidean distance between the vectors $x = (1,1,1,1)$ and $y = (2,2,2,2)$. Provide definitions for each of these distance measures.	08
(c) Explain the frequent itemset generation and rule generation in Apriori algorithm.	08
OR	
(c) Visualization additionally gives you sense of data distribution and relationships among variables. Explain different ways of visualizing data.	08
Q.2 (a) Consider the following dataset for $k=2$. (3,9), (5,4), (8,7), (9,3), (10,6), (6,8), (4,5), (7,9), (11,5), (12,6).	08
(b) As a quality control manager in a chocolate factory with three production lines as A, B, and C, instruct the team to construct a decision tree to identify which line is producing counterfeit chocolates and whether they are slightly heavier or lighter than the genuine ones.	08
(c) Elaborate on the various categories of regression techniques, providing insights into the distinct characteristics of each.	08
OR	
(c) How do 'Navies' contribute to Naive Bayesian Classifiers, and what are the strengths associated with employing the Naive Bayes Classifier?	08

- Q.3** (a) Provide an explanation on effectively visualizing hierarchical data with negative values. 08

- (b) Given an animal database X: 08

TID	Items
001	Cat, Dog, Frog, Goat
002	Ant, Bat, Cat, Dog
003	Ant, Cat, Dog, Frog
004	Cat, Dog, Elephant, Goat, Ant
005	Ant, Dog, Frog, Bat
006	Bat, Cat, Goat
007	Dog, Frog, Goat
008	Ant, Bat, Goat

Using the threshold values support = 25% and confidence = 60%.
find:

- i. All the frequent itemsets in database.
- ii. Strong association rules for database.

- (c) Discuss the challenges associated with the fundamental k-Nearest Neighbour algorithm. 08

OR

- (c) Provide concise real-world examples illustrating the applications of clustering, classification, and association rule mining in various contexts.

- Q.4** (a) How should missing data be addressed in the data cleaning process? 04

- (b) Consider the following set of training examples: 05

Instances	Classification	A1	A2
1	+	T	T
2	+	T	T
3	-	T	F
4	+	F	F
5	-	F	T
6	-	F	T

- a. What is the entropy of this collection of training examples with respect to the target function classification?
- b. What is the information gain of a2 relative to these training examples?

- (c) How can datasets be summarized and what are the various methods employed for this purpose? 05

OR

- (c) For different types of data, calculation of different correlation coefficients is known. Provide a brief with example for each type of data following correlation coefficient are applicable.

- a. Charles' Spearman's correlation coefficient (r_s).
- b. Kart Pearson's coefficient of correlation (r_p).
- c. Chi-square coefficient of correlation (χ^2).

- Q.5 (a) Discuss about GIS Data Visualizations. 04
- (b) Consider the following data for price attribute:
 $\{4,8,9,15,21,21,24,25,26,28,29,34\}$. Partition the same into bins using: 05
- Equi-depth binning.
 - Smoothing by bin means.
 - Smoothing by bin boundaries.
- (c) Explain how web social networks can be extracted and analyzed OR
How to handle the training examples with missing attribute values and differing costs in a decision tree learning

--- Best Of Luck ---

Seat No.: _____

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
MSc. (Cyber Security) - Semester –I (ATKT)- November 2023

Subject Code: CTMSCS SI P4

Date: 22/11/2023

Subject Name: Artificial Intelligence

Total Marks: 100

Time: 11.00 AM TO 2.00 PM

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	(a)	Explain the following terms : 1) NumPy 2) List 3) Dictionary 4) Pandas and 5) Matrices		06																												
		OR																														
		Discuss the machine Learning process with the help of Training, Testing and Validation Dataset.																														
	(b)	Consider following table for Data Pre Processing. List out all existing Data Quality Issues and give One solution for each issue.		06																												
		<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="text-align: left;">Driver License</th><th style="text-align: left;">Age in Years</th><th style="text-align: left;">Occupation</th><th style="text-align: left;">Monthly Salary (HKD)</th></tr></thead><tbody><tr><td>123</td><td>24</td><td>driver</td><td>10000</td></tr><tr><td>512</td><td>234</td><td>teacher</td><td>8000</td></tr><tr><td>345</td><td>34</td><td>lawyer</td><td>20000</td></tr><tr><td>41</td><td>10</td><td>assistant</td><td>12000</td></tr><tr><td>623</td><td>54</td><td></td><td>9500</td></tr><tr><td>542</td><td>42</td><td>banker</td><td>1.2</td></tr></tbody></table>	Driver License	Age in Years	Occupation	Monthly Salary (HKD)	123	24	driver	10000	512	234	teacher	8000	345	34	lawyer	20000	41	10	assistant	12000	623	54		9500	542	42	banker	1.2		
Driver License	Age in Years	Occupation	Monthly Salary (HKD)																													
123	24	driver	10000																													
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345	34	lawyer	20000																													
41	10	assistant	12000																													
623	54		9500																													
542	42	banker	1.2																													
	(c)	List out and discuss different static as well as dynamic features, which can be used for malware analysis using Machine Learning		08																												
Q.2	(a)	Discuss difference between following: (i) Dependent vs Independent variable (ii) Labelled vs Unlabelled Data		06																												
	(b)	Clearly bring out the difference between ML and DL based on different criteria.		06																												
	(c)	Use K-means clustering algorithm to divide the following data points {2,3,4,10,11,12,20,25,30} into TWO clusters. Consider initial cluster centres as $c1=4$, $c2=12$.		08																												
		OR																														
		What is Anomaly? Explain Anomaly Detection using ML?																														
Q.3	(a)	Define object tracking. List out and discuss types of object tracking. Explain object tracking algorithm with an example		10																												
		OR																														
		Explain RNN with its limitations. How LSTM can overcome the limitations of RNN. Explain with an example?																														

(b) Identify and briefly explain any one supervised machine learning model.

OR

Consider the following training data for the Naive Bayes Classifier.

10

chills	runny nose	headache	fever	flu?
Y	N	Mild	Y	N
Y	Y	No	N	Y
Y	N	Strong	Y	Y
N	Y	Mild	Y	Y
N	N	No	N	N
N	Y	Strong	Y	Y
N	Y	Strong	N	N
Y	Y	Mild	Y	Y

Which class is the candidate is classified in (Flu yes/ Flu No)? Show step by step execution.

Chills	Runny nose	Headache	Fever	flu
Y	N	Mild	Y	?

Q.4 (a) What is perceptron? Discuss Perceptron Learning Algorithm

06

(b) Write a short note on Face Detection methods and list any two applications of face detection.

06

(c) Explain in general the end-to-end steps in Natural Language Processing.

OR

Discuss the classification of Machine Learning systems

08

Q.5 (a) Discuss different types of Clustering. How do we measure similarity/proximity in cluster analysis? Discuss with the help of an example.

06

(b) Discuss Difference between following:

06

1) Prediction vs. Classification

2) Binary and multi-class classification

(c) Write a short note on the following:

08

i) Feed Forward (ii) Backpropagation algorithm

OR

Mention and explain different Performance Metrics of the Supervised Learning?

END OF PAPER

NATIONAL FORENSIC SCIENCES UNIVERSITY
M.Sc. Cyber Security - Semester - I - Nov-2023

Subject Code: CTMSCS-SI-P5**Date: 30/11/2023****Subject Name: Introduction to Forensic Science and Law****Time: 11:00 AM to 02:00 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	(a)	Explain the terms “MODUS OPERANDI” and “CORPUS DELICTI”	05
	(b)	Write short note on: Central Finger Print Bureau (CFPB) Or National Crime Records Bureau (NCRB)	05
	(c)	Briefly mention the roles and responsibilities of a Forensic Scientist.	07
Q.2	(a)	What is Chain of Custody? Highlight the significance.	05
	(b)	What is Narco-Analysis? Explain the procedure of conducting the test and also mention any two hypnotic drugs used for the same. Or Explain the organizational set-up of Central Forensic Science Laboratory.	05
	(c)	Elaborate about the various tools & techniques applied in the investigation of various physical evidences. Or Explain the collection, packaging techniques and transportation of cyber evidences found on and recovered from a scene of crime.	07
Q.3	(a)	Schematically explain the types of courts in India, the criminal and civil cases they handle, and the convictions they give. Or What is Cyber Crime and what are the latest fraudulent practices used by attackers to commit cyber-fraud?	08
	(b)	Write briefly on: i- Section 299 IPC ii- Section 302 IPC iii- Section 45A IEA iv- Section 138 IEA v- Section 293 CrPC	08

	vi-	Section 291A CrPC	
	vii-	Section 66A II ACT 2000	
	viii-	Section 66CII ACT 2000	
Q.4	(a)	Explain the three major Crime Programmes run by the INTERPOL.	05
	(b)	Highlight the main differences between Cognizable and Non-Cognizable offences.	05
	(c)	Explain in detail the 7 principles of Forensic Science.	07
Q.5	(a)	Explain in detail the components of a forensic science report.	05
	(b)	Elaborate Bailable offences and Non-Bailable offences with examples.	05
	(c)	Mention and thoroughly explain any 7 divisions or branches of Forensic Sciences.	07
Q.6	(a)	Explain the mentioned below: i- CCTNS ii- CDTS iii- NCRB iv- DFSS	08
	(b)	In a suspected murder case, the investigating officer recovered a 9-inch sharp knife near the victim's body. Blood stain produced by direct contact of knife blade was observed on the lower part of denim Jeans worn by the victim. Fingerprint expert lifted blood-stained fingerprint from a table lying near the victim. An open running laptop along with a smartphone was also present on the table. On exiting the premises, the I.O observed a CCTV installed just outside the main door of the house. All exhibits were collected, sealed and sent for forensic analysis. Answer the following: i- What information can be furnished by bloodstained fingerprint present on the table? ii- The investigation in this case should be carried out under which sections of IPC? Also, explain the sections. iii- Explain the recovery, preservation and examination the CCTV footage and other smart devices found from the scene of occurrence. iv- How will you establish the presence of attackers at the scene of crime considering the same scenario where CCTV footage and blood prints are not there present at the scene?	08

Seat No.: _____

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY

M.Tech. Cyber Security

Semester - I

Subject Code: CTMTCS SI P5

Date: 30/11/2023

Subject Name: Introduction to Forensic Science And Cyber Law

Time: 11:00 AM to 2:00 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	(a)	Discuss in brief the history of forensic science.	05
	(b)	Difference between bailable and non- bailable offences. OR Brief note on : CrPC, IPC, IEA	05
	(c)	Write the title of the following section : a) Sec 121A IPC b)Sec 302 c) Sec 324 IPC d) Sec 304A IPC	07
Q.2	(a)	Define: cognizable and non cognizable offences	05
	(b)	Describe various duties of forensic scientist.	05
	(c)	What are the different ways of data depiction? OR Illustrate the organizational structure of forensic science laboratory.	07
Q.3	(a)	Write about the basic principles of forensic science with examples.	08
	(b)	Discuss in detail about report writing.	08
Q.4	(a)	Brief note on : FIR OR Brief Note on : Cyber ethics	05
	(b)	Explain code of conduct of forensic scientists.	05
	(c)	Define forensic science and explain how is it related to other fields of science.	07
Q.5	(a)	Discuss about various police & detective training schools in India.	05

			05
	(b)	Write a short note on: (i) CCNTS and (ii) NCRB.	07
	(c)	Write a short note on INTERPOL.	
Q.6	(a)	Discuss in detail the tools and techniques used in forensic analysis.	08
	(b)	Describe your court appearance as a Forensic expert. OR Write a note on various cyber crimes.	08

END OF PAPER

Seat No.: _____

Enrolment No. _____

NATIONAL FORENSIC SCIENCES UNIVERSITY
M.Sc. (Cyber Security) - ATKT Semester –I- June 2023

Subject Code: CTMSCS SI P4**Date: 03/07/2023****Subject Name: Artificial Intelligence****Time: 11.00 am to 2.00 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	(a)	Write a short note on Face Detection methods and list any two applications of face detection.	05															
	(b)	Explain overfitting in machine learning. List ways to avoid overfitting.	05															
	(c)	Explain the various steps of malware detection using Machine learning.	07															
Q.2	(a)	Explain the following in detail: (i) Measures of central tendency in relation to data distribution. (ii) Standard deviation and variance	05															
	(b)	Solve the system of linear equation $x + y = 6$ and $2x + 4y = 20$ using Inverse Matrix approach. OR Explain any five ways to handle the missing values in data	05															
	(c)	Compare Spearman's and Pearson's correlation measure. How can Pearson's correlation be applied to determine the relationship between two variables? OR Compute the values for True Positive , True Negative , Sensitivity , Specificity , Precision , Recall and F1-Score for the following confusion matrix.	07															
		<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2"></th> <th colspan="2" style="text-align: center;">Predicted</th> </tr> <tr> <th colspan="2"></th> <th style="text-align: center;">Positive</th> <th style="text-align: center;">Negative</th> </tr> <tr> <th rowspan="2" style="text-align: center;">Actual</th> <th style="text-align: center;">Positive</th> <td style="text-align: center;">1880</td> <td style="text-align: center;">51</td> </tr> </thead> <tbody> <tr> <th style="text-align: center;">Negative</th> <td style="text-align: center;">40</td> <td style="text-align: center;">1003</td> </tr> </tbody> </table>			Predicted				Positive	Negative	Actual	Positive	1880	51	Negative	40	1003	
		Predicted																
		Positive	Negative															
Actual	Positive	1880	51															
	Negative	40	1003															
Q.3	(a)	Explain in detail the Convolutional Neural Network architecture (CNN). List any two applications of CNN. OR Discuss the Architecture and States of Long Short-Term Memory Network (LSTM)	08															
	(b)	Explain in brief the different types of layers in an ANN? Discuss difference between Biological Neuron vs Artificial Neuron	08															

Q.4	(a)	Define orthogonal vectors , orthonormal vector and orthogonal matrix . Given two vectors, how can you determine orthogonality? OR Write a short note on the following: (i) Perceptron and it's types (ii) Backpropagation algorithm	05
	(b)	Identify and briefly explain any one supervised machine learning model. OR Discuss the difference between the Training set, Validation set and Test set.	05
	(c)	Explain the Pattern Recognition process along with it's advantages and disadvantages	07
Q.5	(a)	Discuss different types of Clustering. What are the different applications of Cluster Analysis?	05
	(b)	Write a short note on the following: (i) Object detection (ii) Image segmentation	05
	(c)	Consider the following set of points: $\{(30, 60), (40, 80), (50, 100)\}$. Find the least square regression line for the given data points. OR Define an Intrusion Detection system (IDS). How can Machine learning be applied to IDS?	07
Q.6	(a)	Explain in general the end-to-end steps in Natural Language Processing.	08
		 OR Explain Various Data Pre-processing techniques	
	(b)	Discuss in detail the various types of Machine learning models.	08

END OF PAPER