



ARKA JAIN
University
Jharkhand

NAAC
GRADE
ACCREDITED UNIVERSITY

[24-06-2025]

END SEM EXAMINATION
School of Engineering & IT

Program	Bachelor of Computer Application (Cyber Security)		
Subject Name	End Point Security	Session	Even, 2024-2025
Semester	II	Year	June, 2025
Time: 3 Hour Max. Marks : 70	- Start writing from 2nd page onwards; don't Write on the 1st Page Backside - Answer all Questions of Section A (Compulsory) - Answer Any Four out of Six of Section B - Answer Any Three out of Five of Section C - Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation</u> of the <u>Paper(s)</u>.		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

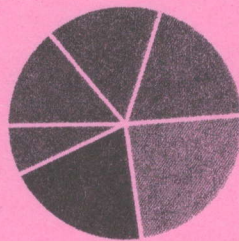
Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)

Q. N	QUESTIONS	Marks	COs	KL
1				
i	Define Advanced Persistent Threats (APTs).	02	CO2	K1
ii	What is Endpoint Detection and Response (EDR)?	02	CO5	K2
iii	How is threat hunting different from traditional reactive cyber security approaches?	02	CO5	K4
iv	Difference between MITRE ATTACK and Cyber Kill Chain.	02	CO6	K2
v	What are the Key Components of a Layered Defense Approach?	02	CO5	K3
vi	List the primary stages in the lifecycle of an Advanced Persistent Threat (APT) attack.	02	CO2	K1
vii	What is the main goal of threat hunting in cyber security?	02	CO5	K3
viii	What is vulnerability management, and why is it important for maintaining system security?	02	CO1	K6
ix	What is the primary goal of Data Loss Prevention (DLP) systems? Give one example.	02	CO1	K2
x	What is the Zero Trust security model? How does it differ from traditional perimeter-based security?	02	CO6	K4

CO1	Explain the fundamental concepts of endpoint protection and the nature of cyber threats targeting user devices in modern networks.
CO2	Describe the characteristics and lifecycle of Advanced Persistent Threats (APTs) with reference to real-world case studies and attack vectors.
CO3	Install, configure, and manage endpoint protection tools effectively using industry best practices to ensure endpoint security
CO4	Analyse the Tactics, Techniques, and Procedures (TTPs) used by APTs to evade detection and escalate privileges within a network.
CO5	Evaluate defence strategies such as threat hunting, EDR, and layered defence approaches to mitigate APT attacks.
CO6	Apply security models like MITRE ATT&CK, DETT&CT, and STRIDE to assess threats and design resilient endpoint defence mechanisms.

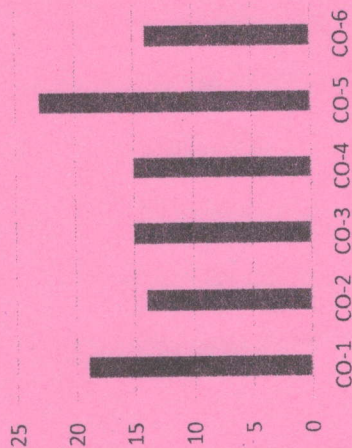
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



Section B (Answer any FOUR out of SIX) – 20 Marks

(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Describe APT- Lifecycle.	05	CO2	K2
3	Define Indicators of Compromise (IoCs) and Indicators of Attack (IoAs). How do they differ, and why are they important in cyber security?	05	CO4	K4
4	Describe Endpoint Protection technologies.	05	CO3	K2
5	Define attack vectors in the context of cyber security. List and briefly explain any five common attack vectors used by threat actors to compromise systems with example.	05	CO2	K3
6	What are the main differences between open-source and closed-source EDR tools?	05	CO5	K4
7	What is Robust Endpoint Security?	05	CO1	K6

Section C (Answer any THREE out of FIVE) – 30 Marks

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain how security teams can map Threat Actor TTPs (Tactics, Techniques, and Procedures) using the MITRE ATT&CK Framework.	10	CO4	K5
9	Explain the key stages involved in the anatomy of a cyber-threat and provide examples for each stage.	10	CO1	K3
10	Explain the steps involved in a typical threat hunting process with a suitable example.	10	CO5	K4
11	An employee receives an email saying "click here to update your password" and enters login details. The next day, their account is compromised. Identify what kind of attack this was. Explain how it works and suggest three ways such threats can be prevented in the future.	10	CO6	K5
12	List and explain cyber security terminologies and their roles in maintaining device and network security.	10	CO3	K1

	ARKA JAIN University Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY	[30-06-2025] END SEM EXAMINATION School of Engineering & IT
Program	Bachelor of Computer Application (Cyber Security)		
Subject Name	Network Defence	Session	Even, 2024-2025
Semester	II	Year	June, 2025
- Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> - Answer all Questions of Section A (Compulsory) - Answer Any Four out of Six of Section B - Answer Any Three out of Five of Section C - Possession of Mobile Phone or any kind of Written Material, <u>Arguments with the Invigilator or Discussion with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u>.			
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Time: 3 Hour
Max. Marks : 70

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)

Q. N	QUESTIONS	Marks	COs	KL
1				
i	What is SSH and how does it enhance security?	02	CO1	K2
ii	List two types of authentication mechanisms.	02	CO3	K1
iii	Mention two key security concerns in Telnet.	02	CO1	K2
iv	What are the key features of effective NSM tools?	02	CO2	K4
v	Define vulnerability and give one example.	02	CO1	K1
vi	Why are regular security audits important?	02	CO5	K3
vii	List two differences between IDS and IPS.	02	CO2	K2
viii	State two key difference between symmetric and asymmetric encryption.	02	CO3	K2
ix	Define Denial of Service (DoS) and Distributed Denial of Service (DDoS) attacks.	02	CO6	K2
x	List out Network Security Tool.	02	CO4	K1

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Explain what a hybrid access control model is and how it combines the strengths of multiple access control models of Offensive Tactics.	05	CO3	K4
3	How can software-defined networking (SDN) and network function virtualization (NFV) help resolve these challenges?	05	CO5	K5
4	What are the Network Security Threats and Attack Vectors?	05	CO1	K2
5	Explain the concept of Network Security Monitoring (NSM) and its importance in a modern network security strategy.	05	CO4	K2
6	Compare SSH and Telnet and justify why SSH is preferred.	05	CO6	K6
7	How do firewalls and IDS/IPS differ in network protection?	05	CO2	K3
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the concepts of Vertical Slicing, Horizontal Slicing, and Dynamic Slicing. How these concepts could be applied in the 5G NR-based network slicing model?	10	CO5	K5
9	Define Quantum-Safe Cryptography and explain how it can protect against threats posed by quantum computers.	10	CO1	K3
10	Explicate Installation, Configuration and Management of IDS/IPS.	10	CO2	K4
11	Illustrate the CIA Triad with real-life examples.	10	CO6	K2
12	Describe Authentication Mechanisms (any five with example).	10	CO3	K6

CO- Course Outcomes,		KL- Knowledge Level,	PO – Program Outcome
CO1	Explain the fundamental concepts of network technologies, protocols, and cyber security defence mechanisms.		
CO2	Apply network security tools and techniques such as firewalls, IDS, IPS, and VPNs to secure networks.		
CO3	Analyse access control models, authentication mechanisms, and identity management systems for effective network protection.		
CO4	Evaluate network defence strategies using Security Incident and Event Management (SIEM) systems and User Behaviour Analytics (UBA).		
CO5	Design and implement network hardening techniques and security policies to mitigate threats in wired, wireless, and mobile environments.		
CO6	Evaluate real-world case studies of network security breaches and develop appropriate recommendations and mitigation strategies.		
Course Outcomes			
GRAPHICAL REPRESENTATION			
Bloom's level wise Marks Distribution		Course Outcome wise Marks Distribution	
■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6		CO-1 CO-2 CO-3 CO-4 CO-5 CO-6	

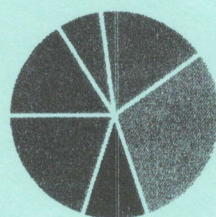
	ARKA JAIN University Jharkhand	NAAC A GRADE ACCREDITED UNIVERSITY	[21-06-2025] END SEM EXAMINATION School of Engineering & IT
Program	Bachelor of Computer Application (General & Cyber Security)		
Subject Name	Data Structure through C	Session	Even, 2024-2025
Semester	II	Year	June, 2025
Time: 3 Hour Max. Marks : 70	- Start writing from 2nd page onwards; don't Write on the 1st Page Backside - Answer all Questions of Section A (Compulsory) - Answer Any Four out of Six of Section B - Answer Any Three out of Five of Section C - Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u>.		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)				
Q.N	QUESTIONS	Marks	COs	KL
1				
i	What do you linear data structure? Give example.	02	CO1	K1
ii	What is the advantage of an ADT?	02	CO2	K1
iii	List the various operations that can be performed on data structure.	02	CO2	K1
iv	How Do You Search for a Particular Element in a Data Structure (Array)?	02	CO4	K2
v	Explain the difference between an array and a linked list.	02	CO2	K1
vi	What is a postfix expression, and how can a stack be used to evaluate it?	02	CO3	K1
vii	What is a dequeue and how is it different from a queue?	02	CO3	K3
viii	What is the difference between balanced binary tree and complete binary tree?	02	CO1	K1
ix	What is a stack underflow?	02	CO2	K1
x	What is a multidimensional array?	02	CO2	K1

CO1	Different operation can be implemented in data structure.
CO2	Prefix to postfix stack can be done on any given expression
CO3	Insertion or deletion of data using link list
CO4	Any expression can be converted into tree structure.
CO5	Minimize the over use of traversing.

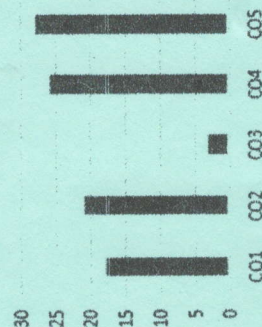
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome Wise Marks Distribution



Section B (Answer any FOUR out of SIX) - 20 Marks (Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	What is Stack? Explain all the operations in Detail.	05	CO5	K2
3	What is the importance of Searching in Data Structure Algorithm? Give an example with proper algorithm.	05	CO4	K3
4	Write the algorithm and code for insertion sort.	05	CO3	K4
5	How do you implement a stack using an array?	05	CO2	K4
6	Create an expression tree from the given expression : $(A+B)*A-C$	05	CO3	K4
7	What do you mean by Dynamic memory allocation? Explain Malloc(), Calloc() functions.	05	CO4	K4

Section C (Answer any THREE out of FIVE) - 30 Marks (Each question Carry 10 Marks)

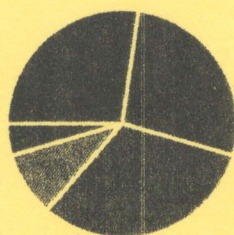
Q. No.	QUESTIONS	Marks	COs	KL
8	What are the different operations on queue? Write code for all the operations.	10	CO1	K5
9	Convert the following Infix Expression: $(AX + (B * C))$ to Postfix Expression and Prefix Expression:	10	CO4	K6
10	Write a Program to find Minimum and Maximum elements of an array using recursion.	10	CO5	K4
11	Explain Quick sort and sort the given array using quick sort 10 15 1 2 9 16 11	10	CO5	K3
12	Write a program to Find all the roots of a quadratic equation in C.	10	CO3	K6

JGI	ARKA JAIN University Jharkhand	NAAC A GRADE ACCREDITED UNIVERSITY	[26-06-2025] END SEM EXAMINATION School of Engineering & IT
Program	Bachelor of Computer Application (General/AIDL/Cyber Security)		
Subject Name	Object Oriented Programming with C++	Session	Even, 2024-2025
Semester	II	Year	June, 2025
Time: 3 Hour Max. Marks : 70	- Start writing from 2nd page onwards; don't Write on the 1st Page <u>Backside</u> - Answer all Questions of Section A (Compulsory) - Answer Any Four out of Six of Section B - Answer Any Three out of Five of Section C - Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Paper(s).		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)				
Q.N	QUESTIONS	Marks	COs	KL
1				
i	Define Object Oriented Programming	02	CO1	K1
ii	What is the difference between data abstraction and data encapsulation?	02	CO2	K2
iii	List any two advantages of Object-Oriented Programming.	02	CO2	K1
iv	Mention any two disadvantages of procedure-oriented programming languages.	02	CO2	K1
v	What do you mean by a class in C++?	02	CO1	K1
vi	Explain the term constructor in brief.	02	CO2	K2
vii	What is function overloading?	02	CO3	K1
viii	What is the use of the <i>this</i> pointer?	02	CO2	K2
ix	Define friend class with a simple example.	02	CO3	K2
x	What is a pure virtual function?	02	CO3	K2

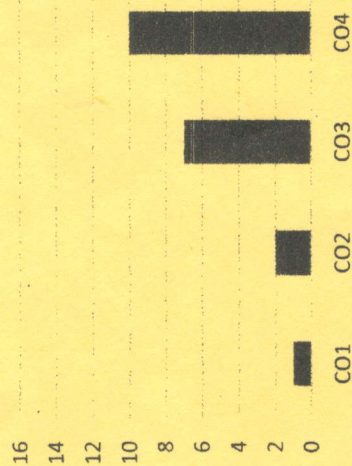
Course Outcomes	CO1	Analyze the logic of a given problem.
	CO2	Use branching control statements and iterative control statements using C++.
	CO3	Demonstrate the concepts of Reusability through the use of functions, Inheritance & Polymorphism.
	CO4	Analyze the problem statement and decide the logic to solve the problem using C++ Programming.
	GRAPHICAL REPRESENTATION	

Blooms Level Wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome Wise Marks Distribution



Section B (Answer any FOUR out of SIX) - 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain inheritance and describe any two types with examples.	05	CO3	K2
3	Write a program in C++ to demonstrate function overloading.	05	CO3	K3
4	Explain the concept of constructor overloading with an example.	05	CO2	K3
5	What are the differences between static and dynamic binding?	05	CO4	K4
6	How is exception handling done in C++ using try, catch, and throw?	05	CO2	K3
7	Describe the advantages of OOP paradigm over procedural programming.	05	CO1	K4

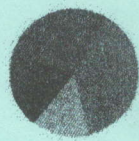
Section C (Answer any THREE out of FIVE) - 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Write a C++ program to demonstrate multiple inheritance. Explain constructor execution order.	10	CO3	K3
9	Explain operator overloading. Write a C++ program to overload + and == operators.	10	CO3	K3
10	Define virtual functions. Write a program to show runtime polymorphism using base class pointers.	10	CO3	K3
11	What are templates in C++? Write a program using function and class templates.	10	CO3	K6
12	Explain file handling in C++. Write a program to read and write student records using file streams.	10	CO4	K3

CO- Course Outcomes,		KL- Knowledge Level,	PO - Program Outcome
Course Outcomes	CO1	Understand and appreciate descriptive statistics	
	CO2	Understand the concepts of probability and random variable	
	CO3	Interpolation, approximation, and integration of Functions	
	CO4	Initial values problems governed by ordinary differential equations	

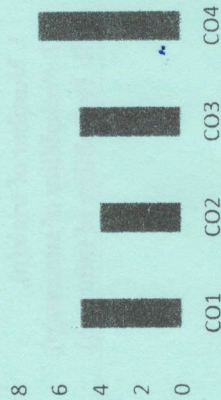
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ k1 ■ k2 ■ k3 ■ k4 ■ k5 ■ k6

Course Outcome wise Marks Distribution



JGI ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY		[02-07-2025] END SEM EXAMINATION School of Engineering & IT	
Program	Bachelor of Computer Application			(General/ AIDL / CS)	
Subject Name	Numerical & Statistical Methods			Session	Even, 2024-2025
Semester	II			Year	June, 2025
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; <u>don't Write on the 1st Page</u> • <u>Backside</u> • Answer all Questions of Section A (Compulsory) • Answer Any <u>Four</u> out of <u>Six</u> of Section B • Answer Any <u>Three</u> out of <u>Five</u> of Section C • Possession of <u>Mobile Phone</u> or any kind of <u>Written Material, Arguments</u> with the <u>Invigilator</u> or <u>Discussion</u> with <u>Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u>.				
	Knowledge Level (KL)	K1 : Remembering K2 : Understanding		K3 : Applying K4 : Analysing K5 : Evaluating K6 : Creating	

Time: 3 Hour
Max. Marks : 70

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)					
Q. N1	QUESTIONS	Marks	COs	KL	
i	Apply one iteration of the Newton-Raphson method for $f(x)=x^2-2$ with $x_0=1$.	2	CO4	K1	
ii	Apply one iteration of the Bisection Method to find a root of $f(x)=x^3-4$ in $[1, 2]$.	2	CO1	K2	
iii	Find the forward difference Δy from the data: $y(0) = 1$, $y(1) = 3$, $y(2) = 7$.	2	CO4	K3	
iv	Using Lagrange interpolation, estimate the value of $f(2)$ from: $(1, 2)$, $(3, 10)$.	2	CO3	K2	
v	Compute the absolute error and relative error if the exact value is 2.5 and approximate value is 2.45.	2	CO4	K4	
vi	Perform one iteration of the Gauss-Seidel method to solve the system: $4x+y=9$ $x+3y=5$ (Use initial guess $x=0$, $y=0$)	2	CO2	K2	
vii	Find the expected value $E(X)$ for a discrete random variable X with: $P(X=1)=0.2$ $P(X=2)=0.3$ $P(X=3)=0.5$	2	CO1	K3	
viii	Fit a straight line $y=mx+c$ using least squares method for the data: $(1, 2)$, $(2, 3)$. (Find m and c using the formulas for two points.)	2	CO3	K2	

ix	What is the primary use of the least-squares regression technique?	2	CO4	K2												
x	Write the formula for the expected value of a discrete random variable X.	2	CO2	K1												
Section B (Answer any FOUR out of SIX) - 20 Marks (Each question Carry 05 Marks)																
Q. No.	QUESTIONS	Marks	COs	K1												
2	Define truncation error and round-off error. Illustrate with suitable examples.	05	CO1	K2												
3	Explain Gauss-Seidel method for solving a system of linear equations. Apply it for two iterations to solve: $10x+y+z=12, 2x+10y+z=13, x+2y+10z=14$	05	CO4	K3												
4	Use Newton's Forward Interpolation to find the value of y at $x = 2.5$ for the following data: X : 1 2 3 4 Y: 1 4 9 16	05	CO3	K3												
5	Solve the equation $x^3 - x - 1 = 0$ using the Newton-Raphson method for one iteration.	05	CO4	K3												
6	A person measured a length as 3450 cm , where as its actual length is 3445 cm and another length as 145 cm where as its actual length is 140 cm compare their absolute and relative error	05	CO1	K5												
7	On the average, one in 400 items is defective. If the items are packed in the boxes of 100, what is the probability that any given box of items will contain: (i) Defective (ii) Less than 2 defective	05	CO2	K4												
Section C (Answer any THREE out of FIVE) - 30 Marks (Each question Carry 10 Marks)																
Q. No.	QUESTIONS	Marks	COs	K1												
8	Solve the following system of equation by Gauss-Jordan method? $10x - 7y + 3z = 6$ $-6x + 8y - z = 5$ $3x + y + 4z = 2$	10	CO4	K3												
9	a) Explain Forward and Backward Differences with their formulas. b) Given the data: <table><tr><td>x</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>f(x)</td><td>2</td><td>6</td><td>15</td><td>26</td><td>40</td></tr></table>	x	1	2	3	4	5	f(x)	2	6	15	26	40	10	CO3	K2
x	1	2	3	4	5											
f(x)	2	6	15	26	40											

	Construct the forward difference table.			
10	Using Lagrange's formula. Find the polynomial which fits the following data $(-1, 7), (1, 5)$ and $(2, 15)$.	10	CO3	K3
11	Using graphical method solve following LP problems Max $Z = 5x_1 + 3x_2$ Subject to $3x_1 + 5x_2 \leq 15$ $5x_1 + 2x_2 \leq 10$ $x_1, x_2 \geq 0$	10	CO1	K4
12	The mean of binomial distribution is 40 and the Standard Deviation is 6. Calculate - I. Number of trials(n), II. Probability of success(p), III. Probability of failure(q).	10	CO2	K5