ARKA JAIN University Jharkhand — NAAC GRADE A ACCREDITED UNIVERSITY			**[21-06-2025] END SEM EXAMINATION School of Engineering & IT**
Program	**Computer Science and Engineering**	**Branch**	**Diploma**
Subject Name	**Computer Network**	**Session**	**Even, 2024-2025**
Semester	**IV**	**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 Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
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 Q1-x) – 20 Marks

Q. N 1	QUESTIONS	Marks	COs	KL
i	Mention two types of network topologies.	2	CO1	K1
ii	Write the difference between TCP and UDP (1 point)?	2	CO2	K1
iii	What is the purpose of the Presentation Layer?	2	CO1	K2
iv	Explain the function of the Session Layer?	2	CO2	K4
v	What is the role of DNS in networking?	2	CO4	K1
vi	What is the function of a NIC?	2	CO4	K2
vii	What does SNMP stand for?	2	CO3	K3
viii	What is the main purpose of TCP?	2	CO4	K1
ix	State one function of a switch.	2	CO3	K2
x	Define IP address.	2	CO1	K1

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain the use of Microwave transmission in networks.	5	CO3	K1
3	Describe the concept of encapsulation in networking.	5	CO3	K2
4	Explain the structure of IPV4 header.	5	CO1	K3
5	How does RIP protocol work?	5	CO3	K3
6	Write a short note on IPv4 addressing.	5	CO1	K3
7	List and explain the common network topologies.	5	CO2	K1

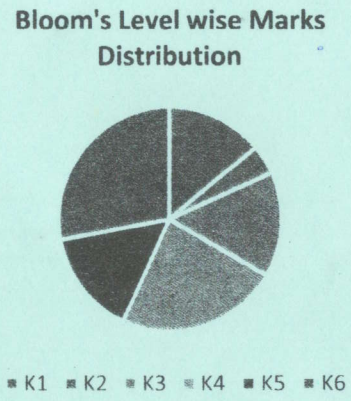
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

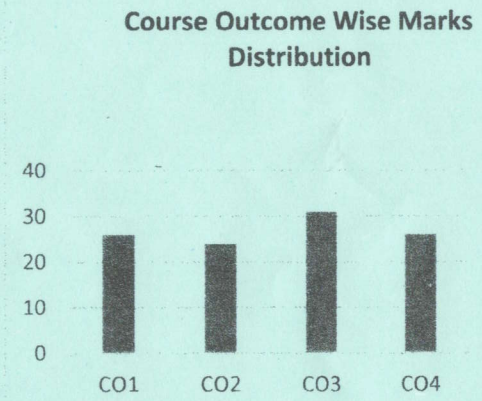
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the OSI Reference Model layer by layer with diagrams and examples.	10	CO1	K1
9	Discuss the design and working of wired and wireless transmission media.	10	CO3	K1
10	Explain the working of the RIP and OSPF routing protocols with diagrams.	10	CO2	K2
11	Explain the Transport Layer design issues. Describe how TCP solves them.	10	CO4	K2
12	Describe the TCP/IP model in detail and compare it with the OSI model.	10	CO4	K1

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Understanding of computer networks, issues, limitations, options available.
	CO2	Understanding of the care that needs to be taken while developing applications designed to work over computer networks
	CO3	Able to configure basic LAN and connect computers to it.
	CO4	For a given problem related TCP/IP protocol developed the network programming.

GRAFICAL REPRESENTATION





ARKA JAIN University, Jharkhand — NAAC GRADE A			[24-06-2025] END SEM EXAMINATION School of Engineering & IT
Program	Computer Science and Engineering	Branch	Diploma
Subject Name	Operating Systems	Session	Even, 2024-2025
Semester	IV	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 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 1	QUESTIONS	Marks	COs	KL
i	Define and explain threads and its types in OS	2	CO2	K2
ii	What is a Scheduler? Also, give its types.	2	CO2	K1
iii	Explain the concept of booting and its types.	2	CO1	K2
iv	List four major activities of an OS with regard to secondary storage management	2	CO5	K2
v	Differentiate between internal and external fragmentation.	2	CO5	K2
vi	Name the 4 necessary conditions for a deadlock situation to arise.	2	CO4	K1
vii	Elaborate the terms IPC, RPC, FCFS, and LRU.	2	CO5	K1
viii	Differentiate between SJF and RR Scheduling.	2	CO3	K2
ix	How does Real-Time OS differ from Batch OS?	2	CO1	K2
x	Define the terms critical section and mutual exclusion.	2	CO4	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Write down the steps in Banker's Algorithm	05	CO4	K3
3	Compare the working of C-SCAN and SCAN disk scheduling.	05	CO5	K4
4	What is disk scheduling? Throw some light on the Critical Section Problem	05	CO4	K3
5	Discuss and explain two solutions to solve the critical section problem	05	CO4	K3
6	Differentiate between Deadlock and Starvation. How can we resolve starvation?	05	CO4	K3
7	Mention the jobs performed by a kernel. Also, provide 2 differences between monolithic and microkernels.	05	CO1	K2

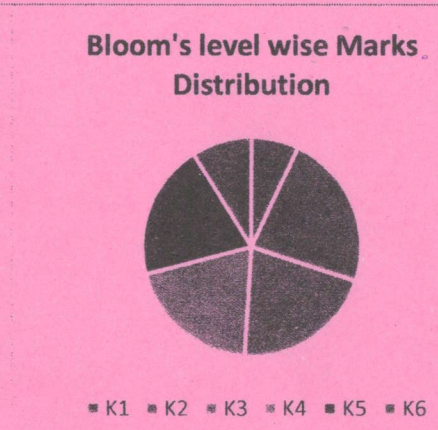
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

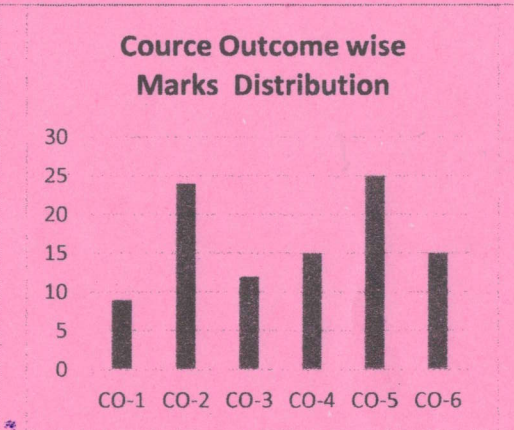
Q. No.	QUESTIONS	Marks	COs	KL
8	What is PCB? What is a scheduler, and what are its types	10	CO2	K1
9	Discuss the process of booting and compare Batch OS with Multiprocessing OS	10	CO1	K2
10	What is Convoy Effect? Using Optimal page replacement scheme, calculate the page fault, miss ratio, and hit ratio for the given reference string: 4,7,6,1,7,6,1,2,7,2. (Page frames = 4)	10	CO5	K3
11	Using FIFO page replacement scheme, calculate the page fault, miss ratio, and hit ratio for the given reference string: 7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0. (Page frames = 3)	10	CO5	K3
12	Describe any two in detail: i. Shared Memory Model ii. Message Passing Model iii. Context Switch	10	CO2	K3

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Familiarize and compare different operating systems.
	CO2	Understand and differentiate between program, process, and ad threads.
	CO3	Implement basic process scheduling algorithms.
	CO4	To understand and implement deadlock avoidance algorithms
	CO5	Familiarize with disk scheduling and memory management by the concept of paging.

GRAPHICAL REPRESENTATION





ARKA JAIN University, Jharkhand	NAAC GRADE A	[26-06-2025] END SEM EXAMINATION School of Engineering & IT	
Program	Computer Science and Engineering	Branch	Diploma
Subject Name	Introduction to DBMS	Session	Even, 2024-2025
Semester	IV	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 **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 1	QUESTIONS	Marks	COs	KL
i	Define Primary Key.	2	CO1	K1
ii	What do you mean by Data Dictionary?	2	CO1	K1
iii	What is the difference between DDL & DML?	2	CO2	K1
iv	What is Meta data?	2	CO1	K1
v	What do you mean by logical data Independence?	2	CO1	K1
vi	Define Normalization.	2	CO2	K2
vii	Differentiate database management system and file management system.	2	CO2	K2
viii	Define functional dependency.	2	CO2	K1
ix	Define ER model.	2	CO3	K2
x	Define Schema.	2	CO2	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	What is weak entity. Explain how weak entity is converted into a relation(table).	05	CO1	K2
3	Explain 1NF, 2NF & 3NF with suitable example.	05	CO1	K2
4	Draw an ER diagram for a university database that includes entities like Student, Course, and Instructor with their relationships.	05	CO3	K5
5	Write SQL commands to create a table for storing employee details (EmployeeID, Name, Department, Salary).	05	CO4	K5
6	Explain the difference between strong entity set and weak entity set.	05	CO2	K3
7	Discuss the role of DBA.	05	CO2	K2

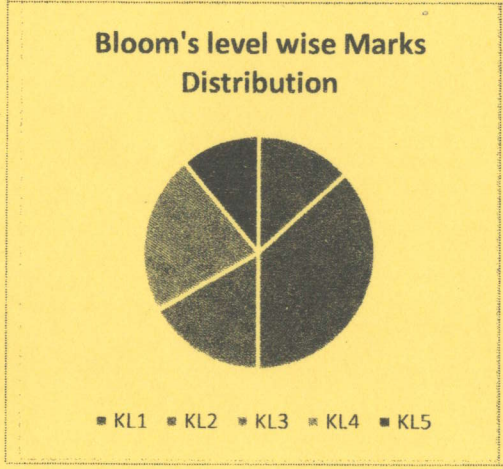
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

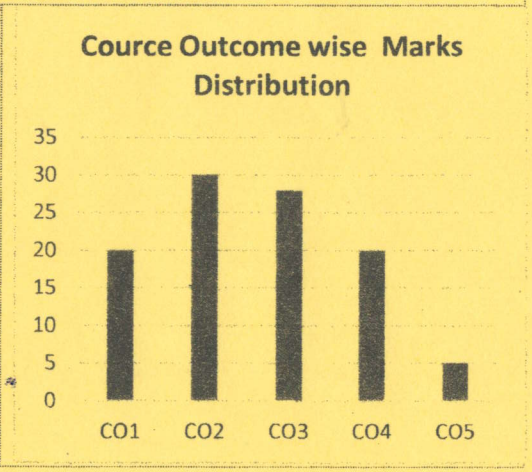
Q. No.	QUESTIONS	Marks	COs	KL
8	Consider the following relational database schema consisting of the four relation schemas: passenger (pid, pname, pgender, pcity) agency (aid, aname, acity) flight (fid, fdate, time, src, dest) booking (pid, aid, fid, fdate) Answer the following questions using relational algebra queries; a) Get the complete details of all flights to New Delhi. b) Get the details about all flights from Chennai to New Delhi.	10	CO5	K4
9	Explain about Aggregate operators in sql with examples	10	CO2	K4
10	Determine the closer of the following set of functional dependencies for a relation scheme R(A,B,C,D,E,F,G,H), F={ AB→C, BD→EF, AD→G, A→H} List the candidate keys of R.	10	CO3	K4
11	What is normalization? What are the conditions are required for a relation to be in 1NF, 2NF and 3NF explain with examples.	10	CO3	K3
12	Explain about Selection, Projection, Rename, division and Cartesian product operations in relational algebra. Explain Set operations of Relational Algebra with examples.	10	CO4	K2

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Have a broad understanding of database concepts and database management system software
	CO2	Have a high-level understanding of major DBMS components and their function
	CO3	Be able to model an application"s data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model.
	CO4	Be able to write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.
	CO5	Be able to program a data-intensive application using DBMS APIs.

GRAPHICAL REPRESENTATION





JGI	**ARKA JAIN University** Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY	**[04-06-2025] END SEM EXAMINATION School of Engineering & IT**	
Program	**Computer Science & Engineering**		**Branch**	**Diploma**
Subject Name	**Artificial Intelligence and Machine Learning**		**Session**	**Even, 2024-2025**
Semester	**IV**		**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 **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 1	QUESTIONS	Marks	COs	KL
i	Explain the goals of AI?	2	CO1	K2
ii	Define environment with example.	2	CO1	K1
iii	Discuss the issues in Machine Learning.	2	CO2	K2
iv	How can AI impact society?	2	CO3	K3
v	Write the features of hill climbing algorithm?	2	CO2	K1
vi	Name the types of Machine Learning	2	CO2	K1
vii	Differentiate between Training data and Testing Data.	2	CO4	K4
viii	Explain different types of interrupts.	2	CO1	K2
ix	Write some common AI use cases in business.	2	CO3	K3
x	Differentiate the supervised and reinforcement Learning.	2	CO2	K4

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Write the differences between uninformed and informed search.	05	CO2	K2
3	Differentiate between local maximum and global maximum in the context of optimization algorithms.	05	CO3	K2
4	Explain the types of uninformed search.	05	CO2	K2
5	Explain Greedy search algorithm with examples.	05	CO2	K3
6	Write the difference between classification and regression with example.	05	CO3	K2
7	Define simple rational agent and Goal based agents.	05	CO4	K2

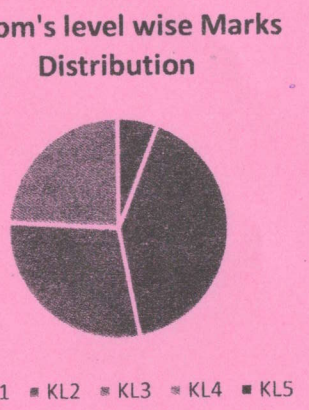
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

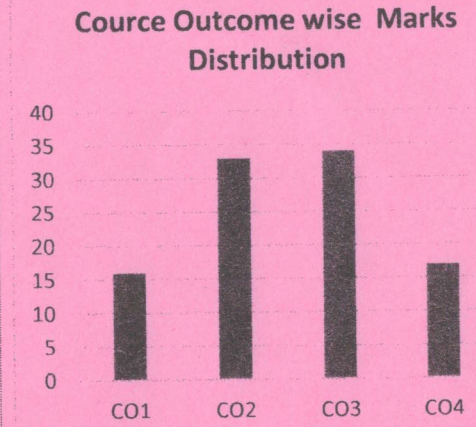
Q. No.	QUESTIONS	Marks	COs	KL
8	Describe DFS and BFS algorithm with their advantages and disadvantages. Explain the various stages involved in designing a learning system.	10	CO4	K4
9	Briefly explain the properties of Environment. Explain the Heuristics function.	10	CO1	K2
10	Define the terms goal formulation and problem formulation. Explain about convolutional neural network (CNN).	10	CO3	K3
11	Define bias in machine learning, and why is it important. Explain interrupts.	10	CO3	K3
12	Explain the uniform cost search. Explain the various stages involved in designing a learning system	10	CO2	K4

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Understanding the basics of Data Analysis skills through artificial intelligence
	CO2	Understanding and Creating AI/ML solutions for various fundamental problems.
	CO3	To inculcate nontrivial understanding of the real-world problems.
	CO4	Able to understand and apply various Data decomposition and analysis schemes.

GRAPHICAL REPRESENTATION





ARKA JAIN University Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY	[30-06-2025] END SEM EXAMINATION School of Engineering & IT	
Program	Computer Science and Engineering	Branch	Diploma
Subject Name	Software Engineering	Session	Even, 2024-2025
Semester	IV	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 **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)

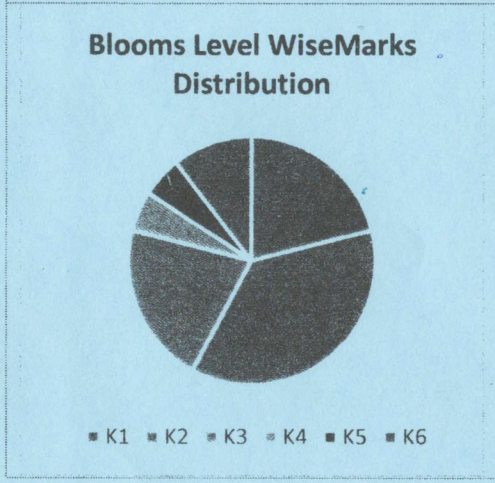
Q. N 1	QUESTIONS	Marks	COs	KL
i	Define Software Engineering and mention two key objectives of it.	02	C1	K1
ii	Differentiate between Traditional and Agile process models with suitable examples.	02	C1	K2
iii	Apply effective debugging techniques to identify and fix a logical error in a simple code snippet.	02	C1	K3
iv	List any two software architectural styles	02	C2	K1
v	Define unit testing and state its purpose.	02	C3	K1
vi	Differentiate between integration testing and system testing with examples.	02	C3	K2
vii	Write two test cases for a login form accepting username and password.	02	C3	K3
viii	What is configuration management in software projects?	02	C4	K1
ix	Explain the purpose of version control systems like Git in software development.	02	C4	K2
x	Identify two key metrics used in software project management and explain their importance.	02	C4	K3

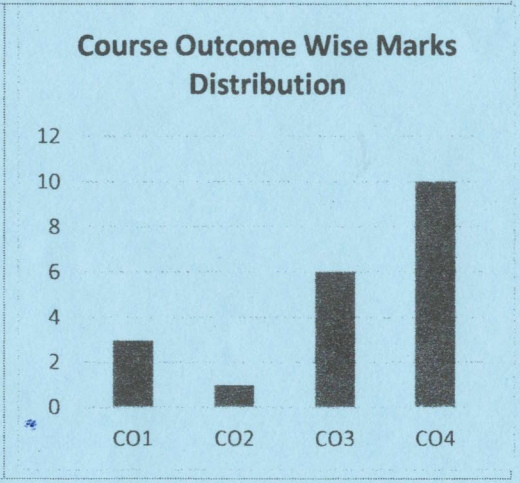
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	**QUESTIONS**	**Marks**	**COs**	**KL**
2	Differentiate between Unit Testing, Integration Testing, and System Testing with examples.	05	C3	K4
3	Describe Stress Testing. Why is it important in software quality assurance? Provide an example scenario.	05	C3	K3
4	Discuss the role of Configuration Management and Release Management in software project delivery.	05	C4	K2
5	Evaluate the significance of using version control tools like Git in collaborative software development.	05	C4	K5
6	Create a basic Release Plan for a small software project, including key milestones and versioning.	05	C4	K6
7	Explain the process of writing and executing test cases. What are the essential elements of a good test case?	05	C3	K2
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	**QUESTIONS**	**Marks**	**COs**	**KL**
8	Explain how effective debugging techniques improve software reliability.	10	C2	K2
9	Explain the key phases of Software Project Management. How do Project Metrics help in tracking and controlling a project's progress?	10	C4	K2
10	Compare and contrast various version control systems with a focus on Git. Illustrate how Git supports Release Planning and Change Management in a team environment.	10	C4	K4
11	Create a detailed configuration and release management plan for a medium-scale software project, including version control strategy, release milestones, and post-release maintenance.	10	C4	K6
12	Discuss the role of version control systems like Git in software project management. How does it support release planning, configuration management, and collaborative development?	10	C4	K4

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Inculcate essential technology and software engineering knowledge and skills
	CO2	Describe the Requirements Gathering and Analysis, Design Concepts for software development
	CO3	Describe various aspects and types of testing a software and its phases.
	CO4	For a given model, executing a test cases for quality assurance & To understand various techniques of project management.

GRAPHICAL REPRESENTATION





JGI **ARKA JAIN University** Jharkhand — NAAC GRADE A			[02-07-2025] END SEM EXAMINATION School of Engineering & IT
Program	**Computer Science and Engineering**	**Branch**	**Diploma**
Subject Name	**Web Technologies**	**Session**	**Even, 2024-2025**
Semester	**IV**	**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 **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 1	QUESTIONS	Marks	COs	KL
i	List two advantages of PHP.	2	CO5	K1
ii	Define an array.	2	CO5	K1
iii	What is a protocol? Give two examples.	2	CO1	K2
iv	What is a session in web applications?	2	CO5	K2
v	Define DOM. Why is it important?	2	CO4	K2
vi	What is JSP? Give any two uses.	2	CO2	K1
vii	Define WWW.	2	CO1	K1
viii	List the names of any three web browsers and mention one feature of each.	2	CO1	K2
ix	Define PHP Function with syntax.	2	CO5	K1
x	What is CSS? State one of its uses with an example.	2	CO4	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Discuss proxy servers in detail and their application in web security.	5	CO2	K3
3	Explain the types of arrays used in PHP with syntax and examples.	5	CO5	K3
4	What is an 'event'? How are events handled in JavaScript with examples?	5	CO4	K3
5	Justify the differences between Servlets and JSP with suitable examples.	5	CO2	K4
6	Write advantages of JavaScript and give two use cases.	5	CO4	K2
7	What do you mean by Hypertext and Hyperlink? Illustrate with example.	5	CO1	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the structure of an HTML webpage with an example.	10	CO4	K4
9	Write PHP code to create a login page with username/password validation.	10	CO5	K4
10	Explain the 3-Tier Architecture of web applications with a neat diagram and its significance.	10	CO2	K4
11	Evaluate the architecture of Web Services. What are its components and how do they interact?	10	CO2	K5
12	Explain how to configure a basic LAN setup in a computer lab. Include the required hardware, software tools, and steps for configuration.	10	CO3	K4

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outc

Course Outcomes	CO1	Understanding the basics of internet and its connections, web browsers
	CO2	Understanding client-server architecture and use in internet
	CO3	Able to configure basic LAN and connect computers to it.
	CO4	Able to combine HTML, CSS, javascript for form validation
	CO5	Understanding the implementation of PHP with database

GRAPHICAL REPRESENTATION