

	ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY		END SEM EXAMINATION School of Engineering & IT	
Subject Name	Branch	CSE	Program		M. Tech	
		Cloud Infrastructure and Services	Semester		II	
Time: 3 Hour Max. Marks : 70			Year		2025/Even	
	• Start writing from 2nd page onwards; <u>don't</u> Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any <u>Four</u> out of Six of Section B • Answer Any <u>Three</u> out of Five of Section C • <u>Graf Paper / Drawing Sheet/ Log Book/ Ledger</u> (please Mention if any) • Possession of <u>Mobile Phone</u> or any kind of Written Material, Arguments with the <u>Invigilator</u> or <u>Discussion</u> with <u>Co-Student</u> will comes under <u>Unfair Means</u> and will Result in the <u>Cancellation of the Paper(s)</u>.					
Knowledge Level (KL)	K1 : Remembering		K3 : Applying		K5 : Evaluating	
	K2 : Understanding		K4 : Analysing		K6 : Creating	

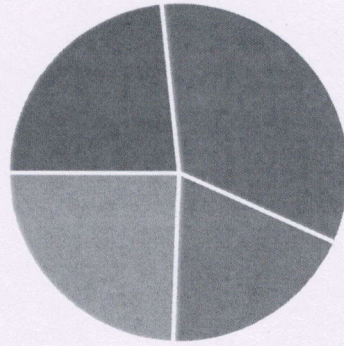
Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)					
Q. N1	QUESTIONS	Marks	COs	KL	
i	Define scalability in cloud services.	2	CO1	K2	
ii	What is Cloud Computing?	2	CO2	K1	
iii	What is virtualization?	2	CO4	K2	
iv	Differentiate between public and private cloud.	2	CO2	K1	
v	List any two cloud security best practices.	2	CO5	K2	
vi	Define object storage with one example.	2	CO2	K3	
vii	Name any two popular cloud service providers.	2	CO2	K2	
viii	Mention any two benefits of using Docker.	2	CO1	K1	
ix	What is the role of APIs in cloud services?	2	CO3	K4	
x	Mention any two cloud storage providers.	2	CO2	K2	
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)					

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

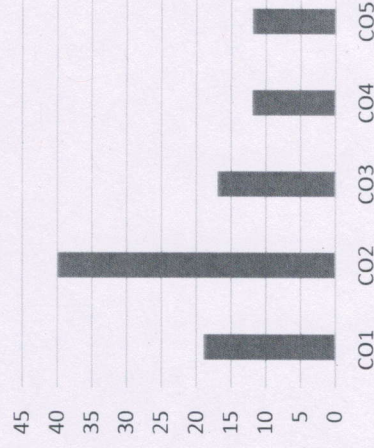
CO1	Analyze the transformation let to the evolution of Cloud computing, it's impact on the enterprises and list the different services offered by service providers.
CO2	Design different Cloud Computing system architecture, workflows according to requirements applying map reduce model.
CO3	Compare performance of virtual machines, Virtual machine security.
CO4	Create combinatorial auctions for cloud scheduling algorithms for computing clouds.
CO5	Assess the Cloud security, the risks involved, its impact and cloud service providers.

GRAPHICAL REPRESENTATION

Bloom's Taxonomy



Course Outcomewise Marks Distribution



Q. No.	QUESTIONS	Marks	COs	KL
2	What are the Cloud Computing Delivery Models?	05	CO1	K1
3	Compare IaaS and PaaS in terms of functionality, use cases, and advantages.	05	CO2	K2
4	Compare and contrast the different cloud deployment models: Public, Private, Hybrid, and Community.	05	CO3	K3
5	Explain Cloud Vulnerabilities and Security Concerns.	05	CO5	K4
6	What are the different Cloud Computing Paradigms?	05	CO5	K4
7	Describe the three main cloud service models (IaaS, PaaS, and SaaS) with suitable examples.	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	Describe various use cases of cloud computing in education, healthcare, and finance.	10	CO2	K4
9	What is a security policy in cloud computing? Design a sample policy for a cloud-hosted web application.	10	CO4	K3
10	Explain the concept of virtual machine provisioning and its importance in cloud environments.	10	CO1	K1
11	What are the Storage Diversity in Cloud Computing	10	CO2	K2
12	Describe the architecture of cloud infrastructure and explain how it supports scalability and elasticity.	10	CO3	K2

	ARKA JAIN University Jharkhand		NAAC A GRADE ACCREDITED UNIVERSITY		END SEM EXAMINATION School of Engineering & IT	
	Branch	Computer Science & Engineering		Program	M.Tech	
	Subject Name	Big Data Analytics		Semester	2 nd	Year 2025
Time: 3 Hour Max. Marks : 70		- 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 - Graf Paper / Drawing Sheet/ Log Book/ Ledger (please Mention if any) - Possession of <u>Mobile Phone</u> or any kind of <u>Written Material</u>, Arguments with the Invigilator or <u>Discussion with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Paper(s)</u>.				
Knowledge Level (KL)	K1 : Remembering		K3 : Applying		K5 : Evaluating	
	K2 : Understanding		K4 : Analysing		K6 : Creating	

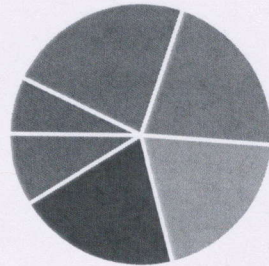
Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)						
Q. N1	QUESTIONS			Marks	COs	KL
i	Explain the purpose of Namenodes in HDFS.			2	CO1	K2
ii	What is the function of the Resource Manager in YARN?			2	CO2	K2
iii	What is speculative execution in Hadoop?			2	CO3	K2
iv	What is the role of an Interceptor in Flume?			2	CO4	K2
v	What is the Grunt Shell in Pig?			2	CO5	K1
vi	What is the role of a Combiner in MapReduce?			2	CO1	K3
vii	Define the Writable interface in Hadoop I/O.			2	CO2	K1
viii	List the different types of Schedulers in YARN.			2	CO3	K1
ix	Define Delivery Guarantees in Flume.			2	CO4	K1
x	What is the function of the DAG in Spark Job Execution?			2	CO5	K2

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

Course Outcomes	CO1	To take typical BigData, filter and wrangle the data. (PO1,3,4)
	CO2	To recognize the domain for analysis. (PO1,3,4)
	CO3	To identify the type of domain-specific analytics to be deployed.(PO1,3,4)
	CO4	To carry out mathematical approach in analytics. (PO1,3,4)
	CO5	To be ready as a Data Scientist leading towards suitable job inanalytics in industry or to pursue research towards higher degree. (PO1,3,4)

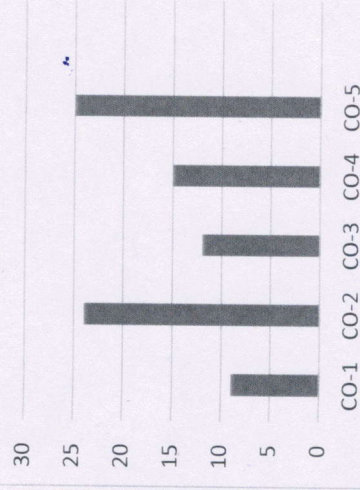
GRAPHICAL REPRESENTATION

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	Explain the anatomy of a file read in HDFS.	05	CO1	K4
3	What is the purpose of MapReduce Web UI, and how is it used?	05	CO2	K3
4	Explain the task execution process in MapReduce.	05	CO3	K4
5	Describe the Flume architecture and its core components.	05	CO4	K3
6	What is the role of Accumulators in Spark applications?	05	CO5	K3
7	Describe the Capacity Scheduler and its key features.	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	Discuss the architecture of Hadoop and how it supports Big Data processing.	10	CO1	K4
9	Compare and contrast different Hadoop schedulers (FIFO, Capacity, and Fair schedulers) and their impact on job execution.	10	CO2	K5
10	Provide a detailed explanation of the anatomy of a MapReduce job run.	10	CO3	K4
11	Describe the steps to install and configure Flume and its integration with HDFS.	10	CO4	K3
12	Illustrate the anatomy of a Spark job run with an example.	10	CO5	K4

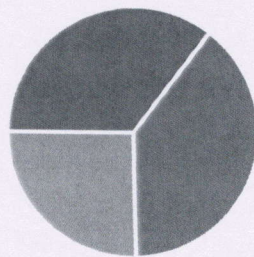
JGI ARKA JAIN University Jharkhand		NAAC A GRADE ACCREDITED UNIVERSITY		END TERM EXAMINATION School of Engineering & IT		
Branch		Computer Science and Engineering		Program	M. tech	
Subject Name		Software Engineering & Modelling		Semester	2 nd	
Time: 3 Hour Max. Marks : 70				Year	Even June/2025	
Knowledge Level (KL)		• 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 • Graph Paper / Drawing Sheet/ Log Book/ Ledger (please Mention if any) • 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.				
		K1 : Remembering		K3 : Applying		
		K2 : Understanding		K4 : Analysing		
				K5 : Evaluating		
				K6 : Creating		
Section A (Each question Carry 02 Marks from Q1-i to Q1-x) – 20 Marks						
Q. N1		QUESTIONS		Marks	COs	KL PO
i	What is a software requirement?			2	CO2	K1 PO2
ii	What is software maintenance?			2	CO6	K2 PO1
iii	Define and explain Unified Modeling Language (UML).			2	CO1	K2 PO5
iv	What is a use case diagram?			2	CO3	K4 PO1
v	What is a data flow diagram and how it is different from control flow diagram?			2	CO2	K1 PO1
vi	What are the benefits of using models in software development?			2	CO1	K2 PO1
vii	What is modularization?			2	CO2	K4 PO4
viii	What is the difference between verification and validation?			2	CO4	K2 PO5
ix	What is an entity-relationship diagram?			2	CO5	K4 PO5
x	What is model-driven engineering? Explain with an example			2	CO4	K2 PO1

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

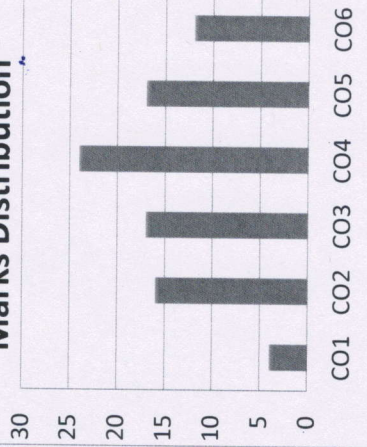
CO1	Apply the knowledge of Object Oriented Concepts to system analysis and design.
CO2	Demonstrate the knowledge of application analysis for solving problem
CO3	Applying the concept of domain and application analysis for designing UML Diagrams.
CO4	Compare the different communication patterns through object oriented models.
CO5	Examine structural and behavioral diagrams for designing different aspects of a project.
CO6	Create component and deployment diagrams for modeling the real time projects.

GRAPHICAL REPRESENTATION

Bloom's Level wise Marks Distribution



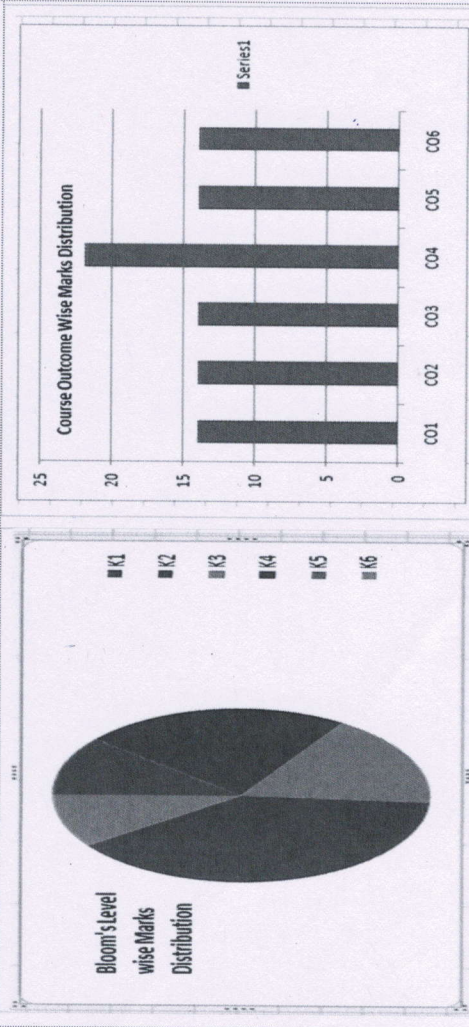
Course Outcome Wise Marks Distribution



Section B (Answer any FOUR out of SIX) - 20 Marks (Each question 5 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Analyze and explain association, aggregation, composition, inheritance in case of UML relationship	5	CO3	K1	PO2
3	What is the purpose of a Sequence Diagram in UML? Provide an example scenario where it would be useful	5	CO3	K2	PO5
4	Explain the difference between an abstract class and an interface in UML	5	CO3	K2	PO1
5	How would you model a generalization/specialization relationship in a UML class diagram?	5	CO4	K4	PO1
6	Sketch an example to explain state diagram.	5	CO5	K1	PO2
7	Explain in detail about Scenario-based Modeling.	5	CO4	K4	PO4
Section C (Answer any THREE out of FIVE) - 30 Marks- (Each question Carry 10 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Explain COCOMO model and its stages in detail.	10	CO4	K1	PO2
9	What is software quality? Discuss software quality attributes.	10	CO6	K2	PO5
10	What is prototyping? Explain advantages and problems of prototyping in details.	10	CO2	K2	PO1
11	List and explain the steps in Risk Management Process	10	CO5	K4	PO1
12	Define Regression Testing and how it differ from Retesting	10	CO6	K1	PO2

CO1	Explain the basic concepts of Natural language processing and its important terminologies
CO2	Interpret the key role of syntactic parsing and semantic analysis in natural language processing.
CO3	Infer the importance of corpus creation in natural language processing
CO4	Analyze the statistical techniques used in natural language processing.
CO5	Classify the words based on concept of Part-of-Speech tagging in English
CO6	Summarize the application of natural language processing in sentimental analysis and in biological sciences

GRAPHICAL REPRESENTATION



	ARKA JAIN University Jharkhand			END SEM EXAMINATION School of Engineering & IT	
Program	M.Tech	Natural Language Processing		Branch	CSE
Subject Name	2 nd		Session	Even, 2024-2025	
Semester	• Start writing from 2nd page onwards; don't Write on the 1st Page Backside		Year	June, 2025	
Time: 3 Hour Max. Marks : 70	• 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 • Graf Paper / Drawing Sheet/ Log Book/ Ledger (please Mention if any) • 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	What is Natural Language Processing? Discuss with some applications.	2	CO1	K1
ii	What is meant by the semantics of a natural language, and how this differs from the pragmatics?	2	CO6	K1
iii	Differentiate between top-down and bottom-up parsing	2	CO1	K3
iv	What is meant by Lexicon? How is it useful in NLP?	2	CO2	K2
v	Define Term Frequency (3) c) Inverse Document Frequency	2	CO3	K2
vi	State the difference between hypernymy and hyponymy and give an example of each.	2	CO3	K4
vii	Explain the Bayes' rule on conditional probability of an event A given an event B.	2	CO2	K1
viii	What are the key components of an Information Retrieval System (IRS)?	2	CO5	K4

12	Write different applications where NLP is used.	10	CO1	K1
----	---	----	-----	----

ix	What is natural language processing (NLP)? List down the various stages involve in NLP?	2	CO6	K2
x	Define Part- of-speech(POS) tagging.	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	Analyse Uni-gram, Bi-gram and tri-gram Model with example.	05	CO4	K4
3	What is Natural Language Processing? Discuss with some applications.	05	CO1	K2
4	Define and relate the following with respect to Information Retrieval: a) Vector Space Model b) Term Frequency c) Inverse Document Frequency	05	CO4	K3
5	Differentiate between different morphemes, with examples.	05	CO2	K4
6	What is the difference between word tokenization and sentence tokenization in NLP?	05	CO3	K3
7	Write a short note on Natural Language Processing Pipeline.	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	Write short note on i) Sentiment analysis ii) Machine Translation.	10	CO5	K2
9	Demonstrate POS tagging with example	10	CO5	K5
10	Analyze text summarization and multiple document text summarization with neat diagram.	10	CO6	K4
11	State and explain Zipf's law.	10	CO4	K2

	ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY		END SEM EXAMINATION School of Engineering & IT	
	Program	M.Tech		Branch	Computer Science Engineering	
	Subject Name	Machine Learning		Session	Even, 2024-2025	
	Semester	MTC32005		Year	June, 2025	

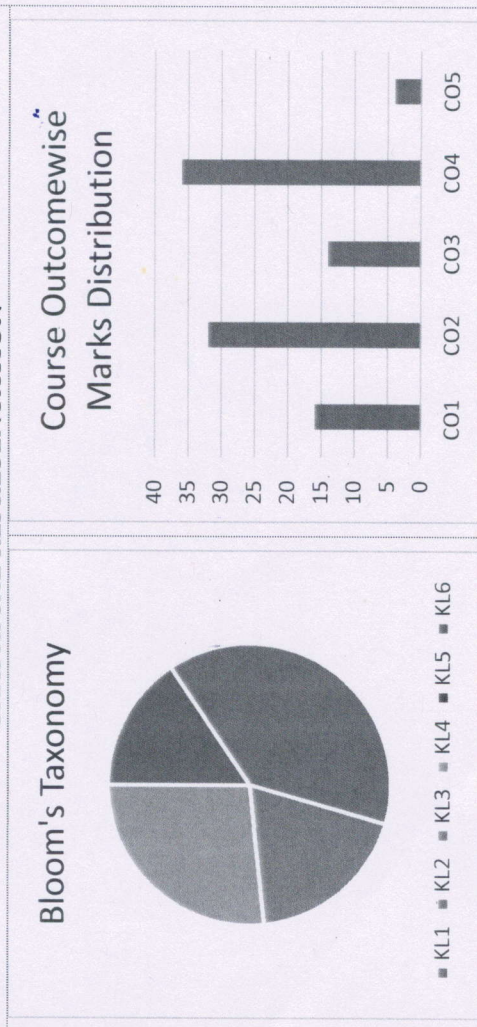
• Start writing from 2nd page onwards; don't Write on the 1st Page Backside
 • Answer all Questions of Section A (Compulsory)
 • Answer Any Four out of Six of Section B
 • Answer Any Three out of Five of Section C
 • Graf Paper / Drawing Sheet/ Log Book/ Ledger (please Mention if any)
 • Possession of 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).

Time: 3 Hour
 Max. Marks : 70

Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

CO1	Distinguish between, supervised, unsupervised and semi-supervised learning. (PO1,3,4)
CO2	Apply the appropriate machine learning strategy for any given problem. (PO1,3,4)
CO3	Suggest tree and probabilistic learning algorithms for any given. Problem. (PO1,3,4)
CO4	Modify existing machine learning algorithms to improve classification efficiency. (PO1,3,4)
CO5	Design systems that uses the appropriate graph models of machine learning (PO1,3,4)

GRAPHICAL REPRESENTATION



Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)				
Q.N	QUESTIONS	Marks	COs	KL
i	Define a perceptron.	2	CO1	K1
ii	Define bias in the context of linear regression.	2	CO4	K2
iii	What is the role of the kernel in SVM?	2	CO3	K2
iv	What is the sigmoid function used for in logistic regression?	2	CO4	K3
v	Define a perceptron.	2	CO1	K1
vi	What is the Apriori principle?	2	CO1	K2
vii	Define k-means clustering.	2	CO2	K2
viii	Define the Naive Bayes Classifier.	2	CO4	K4
ix	Define a hypothesis in the context of machine learning.	2	CO3	K2
x	What is the purpose of the EM Algorithm?	2	CO5	K4

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Explain how to choose the right machine learning algorithm for a problem	05	CO2	K4
3	Discuss the significance of the activation function in genetic algorithms.	05	CO4	K2
4	What is the importance of optimization in logistic regression?	05	CO4	K3
5	Briefly explain Principal Component Analysis (PCA).	05	CO2	K4
6	Explain the bias/variance trade-off in machine learning.	05	CO1	K2
7	Explain the working of the back propagation algorithm.	05	CQ1	K2
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain in detail the design of a learning system and perspective issues in machine learning.	10	CO2	K3
9	Describe the decision tree representation and discuss appropriate problems for decision tree learning.	10	CO2	K1
10	Write in detail about Artificial Neural Networks with reference to perceptron and back propagation algorithm.	10	CO3	K2
11	Describe reinforcement learning and compare Q-learning and temporal difference learning.	10	CO4	K4
12	Discuss the process and use of genetic algorithms in machine learning.	10	CO4	K3